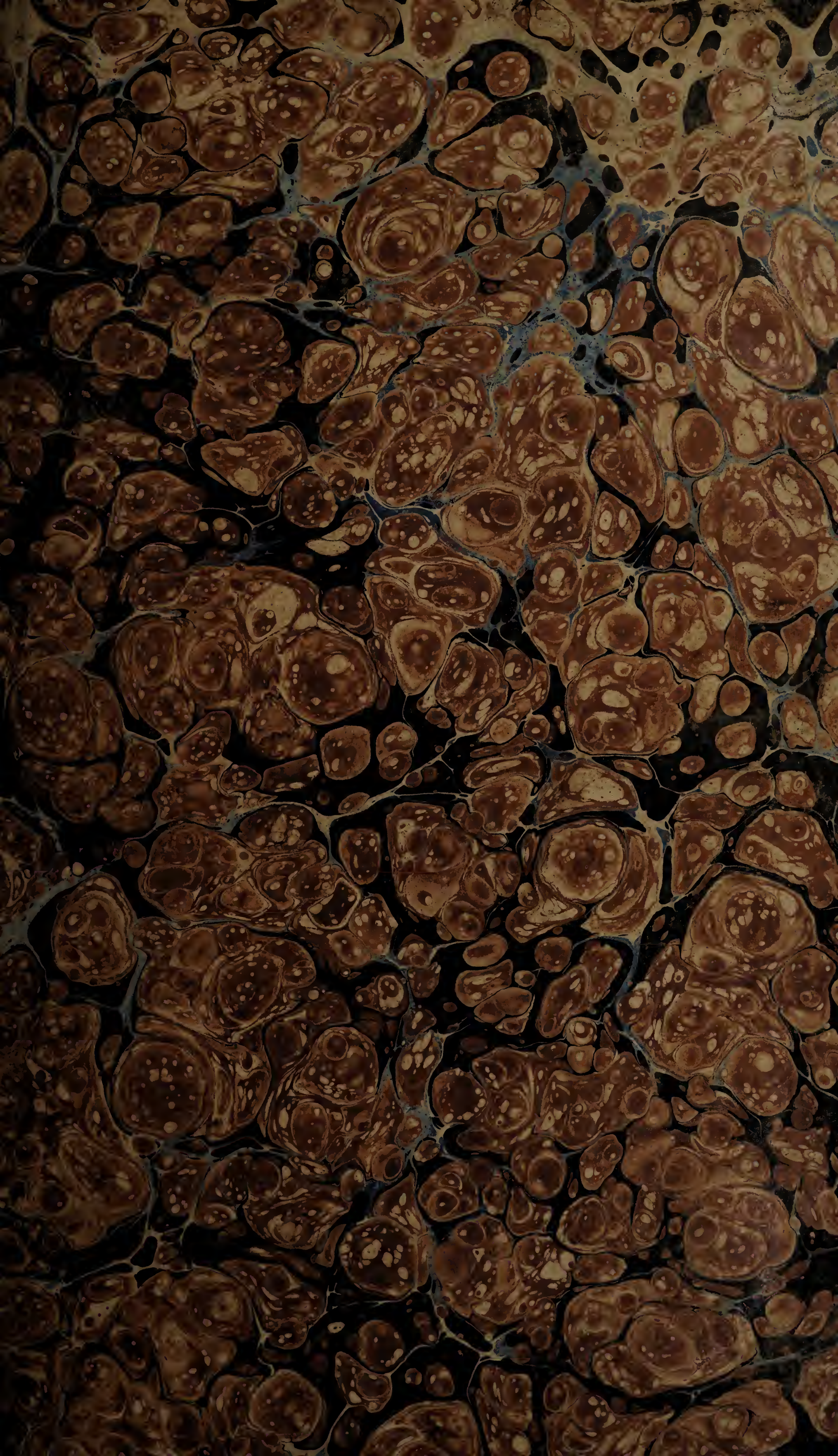








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THE
GARDENER'S AND BOTANIST'S
DICTIONARY;

CONTAINING

THE BEST AND NEWEST METHODS OF CULTIVATING AND IMPROVING THE
KITCHEN, FRUIT, AND FLOWER GARDEN, AND NURSERY;

OF PERFORMING THE

PRACTICAL PARTS OF AGRICULTURE;

OF MANAGING VINEYARDS,

AND

OF PROPAGATING ALL SORTS OF TIMBER TREES.

BY THE LATE

PHILIP MILLER, F.R.S.

GARDENER TO THE WORSHIPFUL COMPANY OF APOTHECARIES AT THEIR BOTANIC GARDEN IN CHELSEA,
AND MEMBER OF THE BOTANIC ACADEMY AT FLORENCE.

TO WHICH ARE NOW FIRST ADDED,

A COMPLETE

ENUMERATION AND DESCRIPTION OF ALL PLANTS HITHERTO KNOWN,

WITH THEIR

GENERIC AND SPECIFIC CHARACTERS,

PLACES OF GROWTH, TIMES OF FLOWERING, AND USES BOTH MEDICINAL
AND ECONOMICAL.

THE WHOLE CORRECTED AND NEWLY ARRANGED,

WITH THE ADDITION OF ALL THE MODERN IMPROVEMENTS IN LANDSCAPE GARDENING, AND IN THE
CULTURE OF TREES, PLANTS, AND FRUITS,

PARTICULARLY IN THE VARIOUS KINDS OF HOT HOUSES AND FORCING FRAMES:

WITH PLATES EXPLANATORY BOTH OF THEM, AND THE PRINCIPLES OF BOTANY.

BY

THOMAS MARTYN, B.D. F.R.S.

REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF CAMBRIDGE.

IN TWO VOLUMES.

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VOL. II. PART I. K—P.

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L O N D O N:

PRINTED FOR F. C. AND J. RIVINGTON, J. JOHNSON, C. AND W. NICOL, R. BALDWIN, W. J. AND J. RICHARDSON,
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BY LAW AND GILBERT, ST. JOHN'S SQUARE, CLERKENWELL.

M DCCC VII.

T H E

G A R D E N E R ' s A N D B O T A N I S T ' s

D I C T I O N A R Y .

K A E

K ADALI. See *Osbeckia*.
 KADANAKU. See *Aloe*.
 KADENPULLU. See *Carex*.
KÆMPFERIA. (So named by Linneus from Engelbert Kämpfer, a celebrated traveller; he published *Amoenitates exoticæ* 1712. and *Travels into Japan*, 1727.)
Lin. gen. n. 7. Reich. 7. Schreb. 9. Juss. 64.
 Class. I. I. Monandria Monogynia.
 Nat. order of *Scitamineæ*.—*Cannæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* superior, obscure.
COR. one-petalled; *Tube* long, slender. *Border* flat, six-parted: the *three alternate divisions* lanceolate, equal; the *other two divisions* ovate; the *upper one* two-parted, the divisions obcordate: all equal in length.
STAM. *Filament* one, membranaceous, subovate, emarginate; *Anther* linear, doubled, entirely adnate, scarce emerging from the tube of the corolla.
PIST. *Germ* roundish. *Style* the length of the tube. *Stigma* two-plated, roundish.
PER. *Capsule* roundish, three-sided, three-celled, three-valved.
SEEDS several.

OBS. *It rarely bears fruit. The germ is seated near the root.*

ESSENTIAL CHARACTER.

Cor. six-parted, three of the parts larger, spreading, one two-parted. *Stigma* two-plated.

SPECIES.

1. *Kæmpferia Galanga. Galangale.*
Lin. spec. 3. syst. 51. Reich. 1. 5. fl. zeyl. n. 8. hort. upf. 2. cliff. 2. t. 3. Lour. cochinch. 12.
Soncorus. Rumph. amb. 5. 173. t. 69. f. 2.
Wanhom. Kämpf. amoen. 901. t. 902.
Katsjula kelengu. Rheed. mal. 11. 81. t. 41.
Calceolus philippensis. Petiv. gaz. t. 19. f. 7.
Contrajerva, &c. Raii suppl. 647.
Leaves ovate sessile, segments of the corolla lanceolate-linear.
2. *Kæmpferia rotunda.*
Lin. spec. 3. Reich. 1. 5. fl. zeyl. n. 9. mat. med. 35. Blackw. t. 399. Woodv. med. bot. 361. t. 133. Plenck, ic. t. 5.

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Zedoaria rotunda. Bauh. pin. 36. Raii hist. 1340.
Malan-kua. Rheed. mal. 11. 17. t. 9. Raii suppl. 648.

Leaves lanceolate petioled, segments of the corolla linear.

DESCRIPTIONS, &c.

[1. This is an annual, stemless, juicy plant. Root bulbous, palmate, creeping, with ovate smooth lobes, and awl-shaped thick simple fibres. Leaves broad-ovate, forming a ring next the ground, quite entire, smooth, with many longitudinal grooves, dark green, on short, membranaceous, subterraneous petioles, embracing the inner ones. Flower radical, solitary, sessile, juicy, very white, with a large violet spot in the middle. Calyx inferior, spathes many, awl-shaped, imbricate, but no proper perianth. Corolla salver-form; tube long, slender, curved; border spread out, horizontal; six-parted, three segments lanceolate-linear, curved inwards a little, equal, longer, two alternate, ovate, the lowest broader, very blunt, shortly quadrifid. Nectary tubular, bifid, reflex both ways, rounded at the tip, longer than the tube of the corolla. Filament none. Anther oblong, lateral, fixed to the nectary. Germ roundish, inferior, very small, abortive: style capillary, the length of the tube: stigma blunt. The smell of the whole plant is aromatic, pleasant and permanent; the taste is sharpish; the colour of the root white within, purple on the outside; the quality stomachic, cephalic, diaphoretic and alexiterial: but discarded from European practice.

Linneus's elegant figure in his *Hortus Cliffortianus* is from a young plant; when more advanced the leaves are almost round, and not acuminate; then also the root is palmate, with ovate lobes growing round it: the lower segment of the corolla appears also in that figure to be bifid, whereas it is four-toothed^a.

Native of the East Indies.—The roots were obtained from India in 1724, by Charles DuBois, Esq. of Mitcham in Surry, who communicated them to several curious persons in England, and they have since been sent to many in Holland, France and Germany^b.]

^a Loureiro.

^b Miller's figures.

K A L

2. The second sort has roots somewhat like those of the first, but shorter, growing in large clusters, covered with an ash-coloured skin, but within white; from the roots arise the leaves, which fold over each other at their base; they are six or eight inches long, and three broad in the middle, gradually ending in acute points; the flowers arise immediately from the roots, each having a spathe at bottom cut into two segments, which closely embrace the foot-stalk; they have six petals, the three lower which decline downward are long and narrow, the two upper are divided so deeply as to appear like a flower with four petals, and the side petal is bifid; they are of mixed colours, blue, purple, white and red, having a fragrant odour: they flower in July and August, but do not produce seeds in England.

Native of the East Indies. Cultivated by Mr. Miller in 1768.

PROPAGATION AND CULTURE.

These plants being natives of hot countries, will not bear the open air in England, and require a warm stove to preserve them through the winter; but as their leaves decay in the autumn, the plants should not have too much wet while they are in an inactive state. If the plants are placed in the bark-stove, and treated in the same manner as is directed for the Ginger, they will thrive, and produce plenty of flowers every summer. They are both propagated by parting their roots; the best time for this is in the spring, just before they begin to put out their leaves.

[KAKA-PU. See *Torenia*.

[KAKA-TODDALI. See *Paullinia*.

KAKU-MULLU. See *Pedaliium*.

KAKU-VALLI. See *Dolichos*.

KALE. See *Brassica*.

KALI. See *Aizoon*, *Batis*, *Chenopodium*, *Galenia*, *Gypsophila*, *Mesembryanthemum*, *Plantago*, *Reaumuria*, *Salicornia*, *Salifolia*, *Trianthema*.]

KALMIA. (So named by Linneus in honour of Peter Kalm, Professor at Abo in Sweden. Author of *Travels in America*, 1753.)

Lin. gen. n. 545. *Reich.* 590. *Schreb.* 743. *Gartn.* t. 63. *Juss.* 158.

Class. 10. 1. Decandria Monogynia.

Nat. order of Bicornes.—*Rhododendron*, *Juss.*

GENERIC CHARACTER.

Cal. Perianth five-parted, small, permanent: segments subovate, acute, rather columnar.

Cor. one-petalled, salver-funnel-form. Tube cylindric, longer than the calyx. Border with a flat disk; the margin upright, half-five-cleft; ten nectariferous hornlets projecting outwardly from the corolla, and surrounding it where the border of it is upright.

Stam. Filaments ten, awl-shaped, upright-spreading, rather shorter than the corolla, inserted into the base of the corolla. Anthers simple.

Pist. Germ roundish. Style thread-form, longer than the corolla, bent down. Stigma obtuse.

Per. Capsule subglobose, depressed, five-celled, five-valved, five-partile.

SEEDS numerous.

Obs. The horned nectaries projecting outwardly from the corolla, and surrounding it, abundantly distinguish this genus from the *Bicornes*. Adanson and Gartner refer this genus to *Rhododendron*, as too artificial.

ESSENTIAL CHARACTER.

Cal. five-parted. *Cor.* salver-form; with the border five-horned beneath. *Caps.* five-celled.

SPECIES.

1. *Kalmia latifolia*. Broad-leaved *Kalmia*.

Lin. spec. 560. *Reich.* 2. 288. *amoen.* 3. 13. *Kalm. it.* 2. 43. & 3. 148. *Gron. virg.* 2. 65. *Gartn. fruct.* 1. 305. *Gron. virg.* 1. 160. (*Andromeda*) *Catesb. car.* 2. 98. (*Chamaedaphne*) *Trew ebret. t.* 38. f. 1. (*Ledum*) *Pluk. mant. t.* 379. f. 6. (*Cistus*) *Curt. magaz.* 175.

Leaves ovate, elliptic, by threes and scattered, corymbs terminating.

2. *Kalmia angustifolia*. Narrow-leaved *Kalmia*.

Lin. spec. 561. *Juss.* 404. *Reich.* 2. 288. *amoen.* 3. 14. *Gron. virg.* 2. 6. *Kalm. it.* 3. 147. *Mill.*

K A L

illustr. Curt. magaz. 331. *Gron. virg.* 21. (*Azalea*) *Catesb. car.* 3. t. 17. f. 1. (*Chamaedaphne*) *Trew ebret. t.* 38. f. 2. (*Ledum*) *Pluk. mant. t.* 339. f. 10. (*Cistus*) *Cold. noveb.* 100. (*Andromeda*).

α. *Rubra*. Red-flowered narrow-leaved *Kalmia*.

β. *Carnea*. Pale-flowered narrow-leaved *Kalmia*.

Leaves lanceolate, corymbs lateral.

[3. *Kalmia glauca*. Glaucous *Kalmia*.

Ait. hort. kew. 2. 64. t. 8. *L'Herit. stirp. nov.* 2.

t. 9. *Curt. magaz.* 177.

Leaves opposite oblong levigated, glaucous underneath revolute, corymbs terminating, branchlets ancipital.

4. *Kalmia hirsuta*. Hairy *Kalmia*.

Curt. magaz. 138.

Leaves ovate, attenuated to both ends, peduncles axillary one-flowered.]

DESCRIPTIONS, &c.

1. Broad-leaved *Kalmia* rises with a branching stalk to the height of ten or twelve feet; with very stiff leaves, which are two inches long and one broad, of a lucid green on their upper side, but of a pale green on their under; they have short foot-stalks, and stand without order round the branches; between these the buds are formed for the next year's flowers, at the extremity of the branches; these buds swell during the autumn and spring months, till the beginning of June, when the flowers burst out from their empalements, forming a round bunch, or corymbus, sitting very close to the branch; they are of a pale bluish colour, the outside of the petal of a peach colour. The corolla is cut into five roundish segments, studded with purple spots, which are prominent; the germ becomes an oval capsule, crowned by the style. This shrub in its native soil continues flowering great part of the summer, and is one of the greatest ornaments to the country; but it is not so well naturalized to our climate as could be wished, though the plants are not injured by the cold.

In North America this shrub sends out plenty of suckers from the roots, so that it forms almost impassable thickets: but in England it has not generally produced suckers, nor do the seeds come to maturity. At Whitton, however, where the plants stood unre-moved a considerable time, they put out suckers in plenty.

[It is described in the *Amoenitates Academicæ* as a tree six feet in height, the thickness of the human arm; with roundish branches, proliferous-compound at top, usually in threes. Leaves alternate, ovate-oblong, attenuated to both ends, coriaceous, smooth, shining, quite entire, almost veinless, petioled. Bractes eight-leaved, very short, acute. Peduncles filiform, naked, with glutinous hairs scattered over it. Corollas pale purple, before they unfold concealing under each horn of the nectarium a single anther.—Capsule globular, the size of a large pea, scarcely or very obscurely five-cornered, tomentose, glewy: partitions doubled, and formed from the edges of the valves bent in. Receptacle central, fungose, thick, five-lobed; lobes rounded. Seeds very many, small, ovate, smooth, brown^a.

According to Catesby, this evergreen shrub rises usually to the height of five or six feet, but sometimes to twice that height: the stems of some are as big as the small of a man's leg, though generally they are smaller; they are covered with a rough brown bark: the wood is very close grained, heavy and hard, like Box: the limbs in general are crooked and grow irregular, but are thick clothed with stiff smooth leaves, of a shining bright green. The flowers grow in bunches on the tops of the branches, on peduncles of three inches in length; they are white stained with purplish red.

This shrub is a native of Carolina, Virginia, and other parts of North America; (Pennsylvania, New Jersey, New York. *Kalm*), but only in particular places; on rocks, hanging over rivulets, and on the sides of barren hills on the most sterile soil.

The noxious qualities of this elegant shrub lessen that esteem which its beauty claims: for though Deer

^a Gartner.

feed on its green leaves with impunity, yet when cattle and sheep, by severe winters deprived of better feed, eat the leaves, many die annually. It blossoms in may, and continues in flower a great part of the summer^b.

The wood, being very hard, is very useful in smaller works. The Indians are said to make small dishes, spoons and other domestic utensils out of the roots: these are large, of a soft texture, and easily wrought when green; but when dry become hard and smooth^c.

After several unsuccessful attempts to propagate it by seeds, Mr. Catesby procured plants of it at several times from America, but with little better success, till Mr. Peter Collinson procured some plants of it from Pennsylvania, which climate being nearer to that of England, some bunches of blossoms were produced in July 1740, and in 1741, in Mr. Catesby's garden at Fulham.

According to the Kew catalogue it was introduced by Mr. Peter Collinson in 1734.]

2. Narrow-leaved *Kalmia* rises from three to six feet high, dividing into small woody branches, which are very close, and covered with a dark-gray bark. Leaves stiff, about two inches long, and half an inch broad, of a lucid green, placed without order upon the branches, on slender foot-stalks. Flowers in loose bunches on the side of the branches, upon slender peduncles: they are bright red when they first open, but afterwards fade to a blush or peach-bloom colour. Capsule roundish, compressed, crowned by the style; and filled with small, roundish seeds.

[In the *Amoenitates* it is said to be a shrub half a foot in height, the thickness of a finger. Leaves lanceolate or lanceolate-ovate, only half the breadth of the preceding, and of less substance. Flowers in lateral or axillary corymbs, not terminating, as those of the preceding are; smaller and deeper coloured.

The varieties, with pale and deep-red flowers, differ in their habit: the latter, the most humble of the two, not only produces the most brilliant flowers, but in greater abundance^d.

This also is reputed poisonous to sheep and cattle in North America, of which it is a native. Introduced in 1736, by Mr. Collinson^e. Catesby says, it flowered at Peckham in 1743.

3. Glaucous *Kalmia* is much inferior in size to *latifolia*, rarely exceeding two feet in height. It is a native of Newfoundland, where it was discovered by Sir Joseph Banks, and by him introduced into this country in 1767. It flowers in April and May^f.

4. Hairy *Kalmia* in its general appearance bears some resemblance to *Andromeda Daboecii*. Its usual height seems to be from two to three feet, and it grows upright. The flowers are about the same size with those of the preceding, are of a purple colour, and grow in racemes. Mr. Curtis calls this new species *hirsuta*, the stalk, leaves and calyx being covered with strong hairs. It was imported from Carolina in the spring of 1790, by Mr. Watson, nursery-man at Islington, with whom several plants of it flowered about the middle of September^g.]

PROPAGATION AND CULTURE.

These shrubs multiply by their creeping roots in North America, and throw up suckers here, if the plants are not removed. The seeds seldom ripen in England, and those which are sent from America lie in the ground a whole year before the plants appear, and afterwards make a very slow progress. The late Mr. James Gordon was the first who succeeded in raising the plants from seed. The plants that come from suckers are more likely to produce others, and come to flower much sooner.

[The propagation and culture of these shrubs not being well understood in Mr. Miller's time, they were then not common in England.

They succeed best in a northern aspect, well sheltered, in a soil composed of loam and bog earth, in a

situation moderately moist, and where the air is perfectly pure.

The first sort, being with difficulty propagated by suckers or layers, is most commonly raised from American seeds.

The second is extremely hardy, thrives best in bog earth, and is propagated most commonly by layers.

The third is propagated in the same manner, and requires the same treatment as the first.

The fourth is scarcely to be kept alive in this country by the most skilful management hitherto known^h.

KALMIA. See *Rhododendron*.

KANSJIRAM-MARAVARA. See *Epidendrum*.

KAPA-MAVA. See *Anacardium*.

KAPPA-KELENGU. See *Convolvulus Batatas*.

KARATAS. See *Bromelia*.

KARIL. See *Sterculia*.

KARIL-KANDEL. See *Rhizophora*.

KARIN-POLA. See *Arum*.

KARINTA-KALI. See *Psychotria*.

KARI-WELLI-PANNA. See *Polypodium*.

KATOU-ALOU. See *Ficus*.

KATOU-CONNA. See *Mimosa*.

KATOU-INDEL. See *Elaté*.

KATOU-INSCHI-KUA. See *Amomum*.

KATOU-KARUA. See *Laurus Cinnamomum*.

KATOU-TSJACA. See *Nauclea*.

KATOU-TSJOLAM. See *Zizania*.

KATSJI-KELENGU. See *Dioscorea*.

KATSJULA-KELENGU. See *Kæmpferia*.

KATTU-KELENGU. See *Dioscorea & Convolvulus*.

KATTUKO-KELANG. See *Clusia*.

KATTU-TAGERA. See *Indigofera*.

KATU-BALA. See *Canna*.

KATU-BELOEREN. See *Hibiscus*.

KATU-KAPEL. See *Aletris*.

KATU-KARA-WALLI. See *Pisonia*.

KATU-KATSJIL. See *Dioscorea*.

KATU-PITJEGAM-MULLA. See *Jasminum & Nyctanthes*.

KAVARA-PULLU. See *Cynosurus*.

KAUKI. See *Mimulus*.

KAWARA-FISAGI. See *Bignonia Catalpa*.

KEDALI. See *Melastoma*.

KEIRI. See *Cheiranthus & Erysimum*.

KEMPFERA. See *KÆMPFERIA*.

KERPA. See *Saccharum*.]

KETMIA. See [*Bombax, Hermannia*,] *Hibiscus*.

[KIDNEY-BEAN. See *Phaseolus*.

KIDNEY-BEAN TREE. See *Glycine*.

KIDNEY-VETCH. See *Anthyllis*.

KIDNEY-WORT. See *Saxifraga*.]

KIGGELARIA. (So named by Linneus from Francis Kiggelar of Holland; author of *Hortus Beaumontianus*, 1690, and *Observations on Commelin's Hort. Amstle.* 1697.)

Lin. gen. n. 1128. Reich. 1233. Schreb. 1538.

Gærtn. t. 44. Juss. 387.

Class. 22. 9. Dioecia Decandria.

Nat. order of *Columniferae*.—*Euphorbiæ*, Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth one-leafed, five-parted, concave: divisions lanceolate, concave.

COR. Petals five, lanceolate, concave, rather longer than the calyx, and forming with it a pitcher-shaped figure.

Nectary: glandules obtusely three-lobed: middle lobe largest, depressed, coloured, each growing to the claw of each petal.

STAM. Filaments ten, very small. Anthers oblong, shorter than the calyx, gaping at the tips with two holes.

* Female.

CAL. as in the male.

COR. as in the male.

PIST. Germ roundish. Styles five, simple. Stigmas obtuse.

PER. Capsule leathery, globose, rough, one-celled, five-valved.

SEEDS about eight, roundish, cornered on one side; covered by a proper coat.

^h Ibid.

ESSEN-

^b Catesby.

^c Cutler in mem. amer. 1.

^d Curtis.

^e Hort. kew.

^f Curtis & Hort. kew.

^g Curtis.

K I G

ESSENTIAL CHARACTER.

MALE. *Cal.* five-parted. *Cor.* five-petalled: glands five, three-lobed. *Anthers* perforated at the tip.
FEM. *Cal.* and *Cor.* as in the male. *Styles* five. *Caps.* one-celled, five-valved; many-seeded.

SPECIES.

1. *Kiggelaria africana*.

Lin. spec. 1466. *syft.* 891. *Reich.* 4. 268. *hort. cliff.* 462. *t.* 29. *Gärtn. fruct.* 1. 206. *Mill. illustr. Sterb. citr.* 246. *t.* 12. (*Laurus*). *Herm. lugdb.* 239. *Pluk. phyt. t.* 176. *f.* 3. (*Euonymo affinis*).

DESCRIPTION, &c.

[This is a tree exceeding the height of a man, with the trunk and branches gray. Leaves alternate, lanceolate, petioled, smooth, stiff and straight, sharply serrate, acute, spreading; petioles roundish without stipules, one eighth of the length of the leaves; at the back of the leaf, where the larger lateral vessels come out, in the sinus or axil, there is a slight pubescence with a cavity, which forms a prominence on the upper surface of the leaf. On the male plant, one or two branched peduncles bear several flowers, nodding, in a panicle; the petals are white, and the nectaries yellow. The female produces a single flower on a simple peduncle^a.

The fruit is a globular rugged one-celled berried capsule, with a thick coriaceous rind, pubescent on the outside, and rugged, with granular atoms; within, by the drying of the pulp, it is formed into cells adapted to the seeds, and when ripe it is five-valved: pulp thin, cellular-membranaceous, rufescent. There is no receptacle, but the seeds are immersed in the pulp; they are about eight in number, rather large, convex on one side, variously angular on the other, rufescent^b.]

This plant grows naturally at the Cape of Good Hope, where it rises to be a tree of middling stature; but as it will not live in the open air here, it cannot be expected to grow to a great magnitude in England. There were plants of it in the Chelsea garden upwards of ten feet high, with strong woody stems and pretty large heads; the branches have a smooth bark, which is first green, but afterwards changes to a purplish colour; the leaves are about three inches long and one broad, of a light green colour, and sawed on their edges, standing upon short foot-stalks alternately. The flowers come out in clusters from the side of the branches, and hang downwards; they are of an herbaceous white colour, and appear in may, at which time the plants are thinly garnished with leaves, for most of the old leaves drop just before the new ones appear. The male flowers fall away soon after their farina is shed, but the hermaphrodite (or female) flowers are succeeded by globular fruit about the size of common red Cherries; the cover of these is very rough, and of a thick consistence, opening in five valves at the top, having one cell filled with small angular seeds. These fruits have grown to their full size in the Chelsea garden, but the seeds have rarely come to maturity here.

[It was cultivated in 1690, in the royal garden at Hampton Court; but it appears from Ray's letters (p. 171.) that it was cultivated in 1683^c.]

PROPAGATION AND CULTURE.

These plants were not very common in Europe some years past, being very difficult to propagate, unless by seeds, which some plants both in Holland and England have lately produced, so that they are now much more plenty than they were in both countries; for when any of the young branches are laid down, they are two years before they put out roots, and scarce one in five will then have any roots; nor do the cuttings succeed better, for not one in twenty of them will take root, when planted with the utmost care: the best time to plant the cuttings is in the spring, just before the plants begin to shoot; these should be planted in pots filled with a soft loamy earth, and plunged into a very moderate hot-bed, covering them close with a glass, to exclude the air from them, and

^a Linn. cliff.

^b Gärtner.

^c Hort. kew.

K L E

shade them every day from the sun; they should have very little water after their first planting. If any of them grow, they should be planted into separate small pots, filled with loamy earth, and may be exposed to the air in a sheltered situation till autumn, when they must be removed into the green-house, and treated in the same manner as Orange-trees.

[KING'S-SPEAR. See *Asphodelus*.

KIRGANELI. See *Phyllanthus Niruri*.

KITJAP, vulgo Cetchup. See *Dolichos Soja*.

KLEINHOFIA. (So named by Linneus from Kleinboff, who cultivated a botanic garden in Java.)

Lin. gen. n. 1024. *Reich.* 1113. *Schreb.* 827.

Gärtn. t. 137. *Cavan. diff.* 288. *t.* 146. *Juss.* 278.

Class. 20. 6. Gynandria Decandria.

— 11. 1. Dodecandria Monogynia. *Schreb.*

Nat. order of *Columniferae*.—*Malvaceae*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* five-leaved; *leaflets* oblong, nearly equal; the lower one rather shorter; deciduous.

COR. *Petals* five, lanceolate, sessile, rather longer than the calyx: the upper one shorter, wider, and arch-truncated.

Nectary central; seated on a column of the length of the calyx, surrounded at the base by glandules, ascending at the tip, bell-shaped, very small, half-five-cleft, *divisions* recurved.

STAM. *Filaments* fifteen, very small, three of them fitting on each division of the nectary. Two of them being terminal, the third rather lower. *Anthers* twin.

PIST. *Germ* in the hollow of the nectary, ovate, five-cornered. *Style* simple. *Stigma* somewhat crenated.

PER. *Capsule* five-lobed, five-cornered, ten-valved? inflated.

SEEDS solitary, roundish, subechinated.

Obs. Allied to *Ayenia*, but very distinct.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* five-petalled. *Nect.* bell-shaped, peduncled, stamiferous. *Caps.* inflated, five-lobed.

SPECIES.

1. *Kleinhovia Hospita*.

Lin. spec. 1365. *syft.* 825. *Reich.* 4. 63. *Gärtn.*

fruct. 2. 261. *Cavan. diff.* 288. *t.* 146. *Rumph.*

amb. 3. 177. *t.* 113. (*Catimarus*.)

DESCRIPTION, &c.

Linneus describes it as a tree, with alternate petioled cordate acuminate scarcely serrate naked leaves; flowers in some degree allied to those of *Ayenia*; and the fruit of *Cardiospermum*: from the receptacle of the flower arises a declining column, ascending at top beyond the tip of the uppermost petal, bearing a very small bell-shaped nectary, within which are the stamens and pistil.

According to Gärtner, the calyx is simple and five-parted (not five-leaved); the five petals inserted into the stem of the germ; the stamens united into a bell-shaped, five-cleft pitcher, with the anthers by threes on each division; germ on a long stipe; capsule filiform-peduncled, membranaceous, inflated, from a narrow base globularly turbinate, deeply umbilicate at top, rounded-five-cornered, five-celled, five-valved; the valves on the outside marked with a deep groove, and within having a longitudinal septum. Seeds solitary, subglobular, muricated with short distant little prickles, with a mamillary tubercle at the base, and an umbilical process standing out very much on the inner side, cinereous brown or blackish; according to Rumphius, red; or, as Cavanilles has it, at first green purple, and then red.

Cavanilles says that the trunk is the height of a common apple-tree, thick, incurved and knobbed; the branches smooth, as is the whole plant. Leaves alternately scattered, longer than the petioles, subcordate, broad, ovate-acuminate, entire, seven-nerved, with arched veins. Stipules lanceolate. Flowers in racemes, small, numerous, bright purple. Calyx five-leaved. The globule of genitals is scarcely so big as a mustard seed; the characters therefore are not examined without difficulty, especially in a dry specimen.

Rumphius

Rumphius observes that the leaves when bruised have a smell like violets, especially the young ones.

Native of Java, Amboina, and the Philippine islands, where it flowers frequently in the year, and has commonly fruit on it, but most abundantly in the month of october.

KLEINIA. See *Cacalia* and *Eupatorium*.

KNAPWEED. See *Centaurea*.

KNAUEL. See *Scleranthus*.]

KNAUTIA. (So named by Linneus, from Christopher Knaut, physician at Hall in Saxony; author of *Flora Halensis*, 1687.)

Lin. gen. n. 116. Reich. 122. Schreb. 150. Gærtn. t. 86. Juss. 195.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Aggregatæ*.—*Dipsacæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* common containing the floscules disposed in a simple orb, simple, cylindric, oblong, upright: divisions awl-shaped, approximated, of the number of the floscules. *Perianth proper* very small, crowning the germ, quite entire, coriaceous, pervious at top.

COR. *universal* equal. *Proper* one-petalled, unequal. *Tube* the length of the calyx. *Border* unequal, four-cleft; the exterior *segment* larger and ovate.

STAM. *Filaments* four, longer than the tube of the corolla, inserted into the receptacle. *Antthers* oblong, incumbent.

PIST. *Germ* inferior. *Style* filiform, length of the stamens. *Stigma* thickish, two-cleft.

PER. none.

SEEDS solitary, four-sided, crowned with the down, and covered with the proper involucre of the flower.

REC. *common* scarcely remarkable, flat, naked.

OBS. *This genus is distinguished from Scabiosa by the tubulated calyx, and the simple orbit of flowers.*

ESSENTIAL CHARACTER.

Cal. *common* oblong, simple, five to ten-flowered: *proper* simple, superior. *Corollets* irregular. *Recept.* naked.

SPECIES.

1. *Knautia orientalis*.

Lin. spec. 146. Juss. 147. Reich. 1. 287. hort. cliff. 32. upf. 27. mant. 329. Gærtn. fruct. 2. 36. Boerb. lugdb. 1. 131. (Lychni-Scabiosa) Vaill. act. 1722. p. 178. (Scabiosa).

Leaves gasbed, corollets in fives, longer than the calyx.

2. *Knautia propontica*.

Lin. spec. 1666. Juss. 147. Reich. 1. 288. Houtt. hist. nat. 7. t. 39. Tilli. pis. 153. t. 48. Tournef. cor. 35. (Scabiosa).

Upper leaves lanceolate, quite entire, corollets in tens, equal to the calyx.

[3. *Knautia palæstina*.

Lin. Juss. 147. Reich. 1. 288. mant. 197.

Leaves entire, calyxes six-leaved, seeds pappose.

4. *Knautia plumosa*.

Lin. Juss. 147. Reich. 1. 288. mant. 197.

Upper leaves pinnate, calyxes ten-leaved, seeds pappose.]

DESCRIPTIONS, &c.

1. This rises with an upright branching stalk four feet high; the branches terminated by single peduncles, each supporting one flower, with the florets of a bright-red colour.

[The leaves on the middle of the stem are pinnatifid; the rest are only ferrate. Flowers radiate, with five florets. (Mr. Miller says, four only). Chaffs none. The calyx consists of about ten linear leaflets. Seeds compressed, hairy, many-toothed at top. Down a concave crown, with bristle-shaped, many, unequal teeth^a.

The fruit is thus more particularly described by Gærtner. Pericarp none, besides the proper involucre of the flower, coriaceous, ovate-oblong, compressed like a lens, of a yellow bay colour, with a few hairs on it, opening by a transverse chink at top, and terminated by twelve bristle-shaped teeth, four of which are longer than the rest; furnished at bottom with a callose, white, three-grooved base. Common recep-

^a Linn. mant.

tacle narrow, naked; proper none. Seed much shorter than its involucre, oblong, compressed like a lens, ending in a short stipe that bears the down; which is cupular, silky-white, villose, very short.

It is an annual plant, a native of the Levant, and was cultivated here in 1713. It flowers from June to September^b.

2. Stem biennial, the thickness of a finger, two feet high, villose, the stature of *Cheiranthus incanus*. Leaves somewhat hairy, rugged and ferrate, except the upper ones, which are quite entire, and a span long. Calyxes oblong, cylindrical, consisting of eight or ten lanceolate leaflets, awl-shaped at the tip. Corollas not longer than the calyx, four-cleft, the marginal ones larger, with the outer segment larger, purple: middle corollets often four, smaller, less irregular: anthers purple. Filaments and pistils white. It differs from *K. orientalis* in having the (upper) leaves undivided; corollets (about) ten, instead of five, and they not longer than the calyx. The crown of the seed is fifteen-toothed and ciliate.

Observed in the Levant by Forskahl^c.

Cultivated by Mr. Miller in 1768.

3. Stem upright, straight, round, brachiate, somewhat hairy, scarcely a foot high. Leaves opposite, lanceolate, quite entire, hairy, subpetioled. Peduncles solitary, very long, upright, leafless. Calyx upright, composed of six lanceolate, acuminate leaflets, more hairy at the base. Corolla radiate, with several florets; those of the ray larger and irregular, those of the disk almost regular. The down of the seed has eight villose rays.

It is an annual plant, and was found in Palestine by Hasselquist.

4. Stem upright, straight, round, brachiate, pubescent, a foot and half high. Leaves opposite, sub lanceolate, subtomentose, veined, spreading; the lower broad-lanceolate, undivided, deeply ferrate, tomentose at the base, the upper rather pinnatifid, with the segments lanceolate-linear. Peduncles solitary, very long, straight, leafless. Calyx cylindric-oblong; leaflets ten, upright, linear-lanceolate, the inner a little shorter. Florets fifteen. Corolla pale blue: marginal corollets irregular, five-cleft, the three outer segments larger, not longer than the calyx: corollets of the disk smaller. Down of the seed (without the calycle) of twelve rays, hairy all round, and long.

It differs from *Scabiosa papposa* in having the leaves of the calyx lanceolate, not ovate and acuminate; the down sessile without an awn, not sitting on the calycle with an awn by it; the lower leaves lanceolate, ferrate, not pinnate and linear.

It is an annual plant, and a native of the Levant^d.]

PROPAGATION AND CULTURE.

These plants are easily propagated. If the seeds be permitted to scatter in the autumn, the plants will come up soon after; and if some of them be planted in the borders of the pleasure-garden, or among low shrubs near the walks, in october, the plants will live through the winter, and flower in June. Their seeds will ripen at the end of July, or the beginning of August; and there is no culture required but to keep the plants clean from weeds. Those who wish to gather the seeds must observe, that they fall as soon as they are ripe.

[KNAUEL. See *Cerberia*, *Scleranthus*, *Velexia*.

KNEE-HOLLY or KNEE-HOLM. See *Ruscus*.

KNOT-GRASS. See *Illecebrum* & *Polygonum*.

KNOXIA. (So named by Linneus from Robert Knox, who lived many years on the island of Ceylon, and published a relation of it in 1681.)

Lin. gen. n. 123. Reich. 130. Schreb. 160. Gærtn. t. 25. Juss. 197.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatæ*. *Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved, superior, small, deciduous; leaflets sharp-pointed: one lanceolate, thrice the size of the rest.

^b Hort. kew

^c Linn. spec.

^d Linn. mant.

COR. one-petalled, funnel-form. Tube filiform, long. Border four-parted: *divisions* equal, somewhat oblong, rounded.

STAM. *Filaments* four, capillary, within the mouth of the corolla. *Anthers* oblong, equal.

PIST. Germ roundish, inferior. Style filiform, length of the stamens. *Stigmas* two, headed.

PER. Fruit naked, subglobose, sharp-pointed, furrowed.

SEEDS two, roundish, sharp-pointed, outwardly convex, marked with three streaks; inwardly flat, connected at the upper part to a thread-form receptacle.

ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form. Seeds two, grooved. Cal. one leaflet larger.

SPECIES.

1. *Knoxia zeylanica*.

Lin. spec. 151. *fyst.* 149. *Reich.* 1. 298. *fl. zeyl.* n. 400. *Burm. ind.* 34. t. 13. f. 2. *Raii suppl.* 246. (*Dentellaria*). *Pluk. phyt.* t. 114. f. 2. (*Veronicae affinis*).

DESCRIPTION, &c.

This plant has the appearance of a *Plumbago* or a *Lychnis*. Stem upright, a foot high, smooth, jointed. Leaves opposite, lanceolate, subsessile, veinless, smooth. Spikes long, narrow, with scattered sessile flowers.—Native of Ceylon^a.

Gärtner has another species from the Banksian herbarium, which he names *Knoxia stricta*. He describes the fruit as a very small inferior capsule ovate, flattened-rhomb-shaped, smooth, two-celled, bipartite: segments three-sided, bay-coloured on the outside, within black and polished, spontaneously or with a slight pressure opening in three parts at the top, coriaceous. Common receptacle filiform, bifid at top, as in the umbellate plants; proper none, except a little scar at the bottom of each cell, to which the seeds are fixed. Seed in each cell one, subovate, acuminate to both ends, three-sided, smooth, rufescent. According to him it was sent from Ceylon by Koenig. That is doubtful; it is however a native of the East Indies.

KOBBE. See *Rhus*.

KODDA-PAIL. See *Pistia*.

KOELREUTERIA. (So named by Laxmann, in honour of Joseph Gottlieb Koelreuter, who published *De plantis quibusdam rarioribus*, Tubing. 1755, qu. with a dissertation de Insectis coleopteris. He also made many experiments on the pollen of flowers, hybridous plants, &c.)

Lin. gen. Schreb. n. 1589. *Laxmann. in nov. Comm. Petrop.* 16. p. 561. t. 18. *L'Herit. fert.* t. 19. *Juss.* 451.

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Tribilatae*.—*Sapindi*, Juss.

GENERIC CHARACTER.

* *Hermaphrodite Flowers*.

CAL. *Perianth* five-leaved, inferior: leaflets ovate, blunt, concave, membranaceous, unequal, ascending towards the upper side, gaping below.

COR. *Petals* four equal, ascending towards the upper side, the two lower opposite; claws roundish, upright, the length of the calyx; borders lanceolate, recurved at the tip, spreading.

Nectary: scalelets four, upright, two-parted, fastened to the claws of the petals, forming a crown at the opening.

Glands three, between the stamens and pistil.

STAM. *Filaments* eight, awl-shaped, upright, fixed to a columnar receptacle. *Anthers* oblong, blunt.

PIST. Germ oblong, three-sided, placed on the columnar receptacle. Style simple, three-cornered, ascending, the length of the petals. Stigma trifid, spreading, small.

PER. Capsule oblong, three-celled, placed on the column.

SEEDS in pairs.

* *Males*, superior.

CAL. COR. and STAM, as in the hermaphrodite.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. four. Nect. double, four scalelets and three glands. Stam. eight, fixed to a co-

^a Linn. zeyl.

lumn. Germ three-sided, fixed to the same column. Caps. three-celled, with two cells in each cell.

SPECIES.

1. *Koelreuteria paullinioides*.

L'Herit. fert. 18.

K. paniculata. *Laxm. in nov. comm. petrop.* 16. p. 561. t. 18.

Sapindus chinensis. *Lin. fyst.* 380. *suppl.* 228.

DESCRIPTION, &c.

Trunk arboreous, upright, round, smooth, branched, exceeding the height of a man. Branches scattered, spreading, twisted, when young having dotted glands scattered over them. Buds from the axils of the leaves, very resinous, cone-shaped with imbricate scales. Petioles scattered, spreading very much, club-shaped at the base, channelled towards the top, very long. Leaves unequally pinnate, with six pairs of leaflets, which are ovate, lacinate, serrate, acute, smooth, flat. Peduncles terminating, scattered, spreading, branched into many pedicels. Flowers panicled, three or more on each pedicel^b.

It is a polygamous tree, and a native of China^c.

KOENIGIA. (So named by Linneus, in honour of John Gerard Koenig, M.D. of Courland, who first found the plant in Iceland.)

Lin. gen. *Reich.* n. 111. *Schreb.* n. 137. *Gärtn.* t. 128. *Juss.* 83.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Holoraceae*. *Polygoneae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved: leaflets ovate, concave, permanent.

COR. none.

STAM. *Filaments* three, capillary, shorter than the calyx. *Anthers* roundish.

PIST. Germ ovate. Styles none. Stigmas three (often two), approximated, villose, coloured.

PER. none: but the calyx protects the seed, without entirely covering it.

SEEDS single, ovate, naked, length of the calyx, terminated by the permanent stigmas.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. none. Seed one, ovate, naked.

SPECIES.

1. *Koenigia islandica*.

Lin. fyst. 129. *Reich.* 1. 247. *mant.* 35. *Gärtn.* *fruct.* 2. 212. *Fl. dan.* t. 418.

DESCRIPTION, &c.

This is an annual plant. The herb has the appearance of *Polycarpon*. Stem a finger's length, somewhat succulent, with very few branches, opposite to the leaves, and spreading very much. Leaves alternate, subpetioled, obovate, quite entire, blunt, somewhat succulent, the length of the internodes of the stem. Stipules solitary, sheathing (after the manner of *Perficaria*), intrafoliaceous, campanulate, permanent. Terminating leaves in fours. Flowers terminating, very many, in a sort of fascicle, on short peduncles, separated by membranaceous bractes. It varies with two and three stigmas.—Native of Iceland, where it was found by Koenig in 1765, in clayey soils overflowed, both on the mountains and the coast^d. Introduced in 1773, by Sir Joseph Banks, Bart. It flowers in april^e.

KONDAM-PALLU. See *Impatiens*.

KONNI. See *Abrus*.

KRAMERIA. (So named in memory of John George Henry and William Henry Kramer, father and son, M.D. of Vienna. The former published *Tentamen botanicum*, 1728 & 1744. The latter, *Flora Austriæ*, 1756.)

Lin. gen. n. 101. *Reich.* n. 172. *Schreb.* n. 217. *Leoff. it.* 195. *Juss.* 425.

Class. 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

CAL. none, unless you call the corolla such.

COR. *Petals* four, equal, spreading, oblong, acute: the uppermost wider; the lateral ones ovate.

Nectaries two: the upper superior; erect, linear, three-parted; *divisions* linear, thickish, ovate at

^b Laxmann.

^c L'Heritier.

^d Linn. mant.

^e Hort. kew.

K U H

the tips, membranaceous. The lower inferior, two-leaved; leaflets linear, convex, clavated, wrinkled.

STAM. Filaments four, within the nectary, ascending. Anthers small, with two foramina at the tip.

PIST. Germ ovate. Style awl-shaped, ascending, length of the stamens. Stigma acute.

PER. Berry dry, globose, unilocular, echinated on all sides with stiff hairs directed backwards.

SEED single, ovate, smooth, hard.

ESSENTIAL CHARACTER.

Cal. none. Cor. four-petalled. Neet. upper three-parted, lower two-leaved. Berry dry, echinated, one-seeded.

SPECIES.

1. Krameria Ixina.

Lin. spec. 177. Syst. 165. Reich. 1. 345. Loefl. itin. 195.

DESCRIPTION, &c.

This is a shrub, with alternate, lanceolate leaves. Flowers alternate, in terminating racemes.—Found in South America by Loefling.

KRAMERIAE AFFINIS. See *Acena*.

KRASCHENINNIKOVIA. See *Diotis*.

KUHNIA. (So named by Linneus from Adam Kuhn, a traveller in America, who sent seeds of the plant from Pennsylvania.)

Lin. gen. n. 237. Reich. n. 254. Schreb. n. 322.

Juss. 177. Critonia. Brown. Gært. t. 174.

Class. 19. 1. Syngenesia Polygamia Æqualis.

5. 1. Pentandria Monogynia. Lin.

Nat. order of Compositæ Discoideæ. Corymbiferae, Juss.

GENERIC CHARACTER.

CAL. Perianth common oblong, imbricated; scales very many, unequal, lanceolate, gibbose, permanent.

COR. Common equal: floscules from ten to fifteen. Corollets one-petalled, funnel-form, twice the length of the calyx. Border five-cleft, upright.

STAM. Filaments five, capillary, very short. Anthers sub-cylindric, shorter than the tube of the corollet, gaping with a lip at the top.

PIST. Germ inferior. Style the length of the stamens. Stigmas two, clubbed.

PER. Calyx unchanged.

SEEDS solitary, oblong, columnar, striated, smooth; crowned with a feathery down, longer than the calyx or seed.

REC. naked, scrobicular, somewhat rugged.

OBS. The compound flower is allied to Eupatorium, but the anthers are very dissimilar. Gærtner however affirms that they are by no means separate, or even separable without force.

ESSENTIAL CHARACTER.

Flowers floscular. Cal. imbricate, oblong, cylindrical. Down plumose. Recept. naked. Style deeply bifid. Stigmas club-shaped. Anthers distinct?

SPECIES.

1. Kuhnia eupatorioides.

Lin. syst. 217. Reich. 1. 487. Lin. fil. dec. 21. t. 11.

Critonia Kuhnia. Gært. fruct. 2. 411.

Eupatorium alternifolium. Ard. spec. 2. 40. t. 20.

Eupatoria conyzoides. Pluk. phyt. t. 87. f. 2.

DESCRIPTION, &c.

Stems a foot and half high, upright, even, stiffish. Leaves alternate, petioled, broad-lanceolate, naked, somewhat wrinkled, veined underneath, somewhat toothed, with the middle serratures larger. Branches alternate from the middle of the stem. Corymbs small, terminating, frequently also on the lateral branches. Corollas white. Stamens yellowish white.

The plant resembles a Eupatorium, but there is no instance of club-shaped pistils, and distinct cylindrical anthers in a compound flower. It differs also from Eupatorium in having alternate leaves.

The anthers, according to Gærtner, so far from being separate, adhere so pertinaciously, as to keep together after being macerated twenty-four hours in water. Hence, the Linnean character being fictitious, and the plumose down forbidding its being associated

f Linn.

K Y L

with the Eupatoriums. Gærtner refers it to the Critonia of Brown.

Native of Pennsylvania.

KYLLINGIA. (From Petrus Kylling, a Dane; 1696. Aët. dan. 10. 408.)

Lin. gen. Schreb. n. 91. Rottb. gram. 12. Linn.

fil. nov. gen. gram. 24. suppl. 11. Thunb. jap. 3.

Juss. 27.

Class. 3. 1. Triandria Monogynia.

Nat. order of Gramina. Cyperoideæ, Juss.

GENERIC CHARACTER.

CAL. Ament ovate or oblong, imbricated, scales oblong, distinguishing the flowers.

Glume unequal, compressed, bivalve; valves lanceolate, channelled, acute, much shorter than the corolla: the one shorter than the other.

COR. Glume longer than the calyx, compressed, bivalve: valves keeled, unequal, divaricated at the tips, of which one is larger, lanceolate, very sharp, complicated, embracing the margin of the other; the other shorter, narrower.

STAM. Filaments three, awl-shaped, flat. Anthers linear, erect.

PIST. Germ obovate, flattened, gibbose on one edge. Style filiform. Stigmas two or three, capillary.

PER. none, the glumes of the corolla preserving the seed till ripe.

SEED oblong, three-sided, destitute of villi.

ESSENTIAL CHARACTER.

Ament ovate or oblong, imbricate. Flowers with a bivalve calyx and corolla.

SPECIES.

1. Kyllingia monocephala.

Lin. syst. 101. suppl. 104. Rottb. gram. 13. t. 4.

f. 4. Swartz obs. 32. Thunb. jap. 35. Brown.

jam. 172. 2. (Cyperus).

Schoenus coloratus. Lin. syst. ed. 13. 82. Reich. 1. 120. 10.

Culm filiform three-sided, head globular sessile, involucre three-leaved very long.

2. Kyllingia triceps.

Lin. syst. 101. suppl. 104. Rottb. gram. 14. t. 4.

f. 6. Swartz obs. 33. Thunb. jap. 35. Brown.

jam. 128. 7. (Cyperus). Sloan. jam. 1. t. 78.

f. 2.

Schoenus niveus. Lin. syst. Reich. 1. 120. 9.

Heads terminating in threes or thereabouts glomerate sessile.

3. Kyllingia panicea.

Lin. syst. 101. suppl. 105. Rottb. gram. 15. t. 4.

f. 1.

Mariscus biglumis. Gært. fruct. 12. t. 2.

Umbel terminating with spikes sessile and peduncled cylindrical imbricated, universal involucre four-leaved or thereabouts, partial none.

4. Kyllingia filiformis.

Swartz prodr. 20.

Umbel terminating simple, spikes sessile and peduncled ovate, spikelets ovate acute, involucre three-leaved, partial none.

5. Kyllingia umbellata.

Lin. syst. 101. suppl. 105. Rottb. gram. 15. t. 4.

f. 2.

Umbel terminating, spikes sessile and peduncled cylindrical squarrose, universal involucre many-leaved, partial three-leaved.

6. Kyllingia fumatrensis.

Retz. obs. 4. 13. n. 27.

Umbel terminating, spikes sessile and peduncled cylindrical squarrose, universal involucre many-leaved, partial none.

7. Kyllingia cyperina.

Retz. obs. 6. 21. n. 19.

Culm three-sided striated leafy at the base, umbel simple, spikes strict sessile, universal involucre many-leaved very long, partial none.

DESCRIPTIONS, &c.

1. Culm a foot high, three-sided, strict, grooved. Leaves the length of the culm, linear, keeled, even, sheathing at the base. Involucre three-leaved: upper leaflet upright, long; lateral ones horizontal; one of them three or four times shorter than the rest, ciliate

at the edge. Head glomerate, roundish; spikelets very many ovate acuminate compressed green. Glumes one-flowered, only bivalve: valves awnless, scarcely unequal, one a little larger, ovate acute keeled. Filaments, one, two or three, ovate, thickish. Anthers linear, upright not versatile, yellow. Germ roundish-compressed. Style cloven to the middle. Stigmas simple, reflex. Seed compressed, involved in the permanent glume.

Native of the West Indies, where it is very common^a; also of Japan, according to Thunberg, and the Society isles, according to Forster.

2. Culm half a foot high, commonly decumbent at the base, naked, three-cornered. Leaves radical, shorter than the culm, sheathing, linear, keeled, smooth. Involucre three-leaved, terminating. Leaflets linear-lanceolate, keeled, minutely serrate; one superior, short. Heads three or four sessile, one in the middle oblong, larger. Spikelets clustered not imbricate. Glumes two, the outer ones very minute, two inner, larger, one-flowered: valves equal, ovate, acute, keeled, white at the edge. Two white bristles within the keel of the valves. Filaments three, very short. Anthers yellow. Germ compressed. Style bifid. Stigmas reflex. Seed compressed, shining^b. It resembles the preceding very much, but differs in having a three-lobed head^c.

Frequent in moistish meadows in Jamaica. In both Indies, according to Linneus's supplement and the Kew catalogue; in Japan, according to Thunberg; in the Society isles according to Forster. Introduced in 1776, by Monf. Thouin^d.

3. Culm setaceous, three-sided, a span high, without knots, leafy at bottom, naked above. Leaves equal to the culm, linear-setaceous, keeled, soft, reflex at the edge: sheaths entire surrounding the culm. Involucre four-leaved; leaflets unequal, the largest four or five times as long as the umbel. Spikes one or two subsessile, and about as many pedicelled, cylindrical; flowers small, striated, acuminate, three-sided, imbricate in five rows. One glume of the calyx ovate and very small; the other longer and acuminate. Valves of the corolla lanceolate-ovate, acuminate, concave, one broader embracing the edge of the other. Germ three-sided, oblong. Style trifid with capillary reflex segments. Stigmas simple. Seed incurved, acutely three-sided, without bristles^e.

According to Gärtner, the culm is three-sided. The universal involucre many-leaved and very long: partial none, or with narrow short leaflets. Umbel terminating, simple or radiate. Spikelets cylindrical, imbricate with ovate-oblong, angular, short florets. The two lower glumes smaller, unequal, barren; the two upper larger, ovate, striated, concave, fertile; there is often a fifth terminating, barren. Fruit (Nucula) small, oblong, acuminate at both ends, three-sided, very minutely dotted, ferruginous. Seed the figure of the nut, pale.

Native of the East Indies. Koenig found it in Malabar. Forkahl also found it in the Levant^f.

4. Native of Jamaica, and Hispaniola^g.

5. Culm three-sided, striated, slender, a foot high and more, leafy at the base, naked above. Leaves about five, linear-lanceolate, striated, keeled, soft, rugged backwards along the edge and keel, longer than the culm, sheathing at the base, purple pale green or glaucous. Universal involucre ten-leaved or thereabouts, three times as long as the umbel: partial three-leaved; leaflets three, linear, deciduous, shorter than the spikes. Peduncles about fifteen, strict, three-sided, decreasing towards the centre. Spikes cylindrical, imbricated on every side with flowers in clusters, spreading very much or reflex, awl-shaped, striated, small, brownish green, all except one or two in the middle which are sessile, terminating the rays of the umbel. Valves of the calyx ovate, very small, deciduous, one a little longer than the other.

It is distinguished from the third species by the size of all the parts, the structure and hardness of the habit,

the multitude of leaves in the involucre, rays and flowers, and by the partial involucre.—Found in the East Indies by Koenig^h.

6. This differs from *K. umbellata* of Rottboell only in the want of a partial involucre. It was found in Sumatra by Wennerbergⁱ.

7. Culms a foot high and more, leafy at the base, three-sided, striated. Leaves also twice the length of the culm, narrow, sheathing at the base; the sheath truncated. Umbel terminating, simple, fastigate. Involucre many-leaved, leaflets very long, unequal; partial none. Spikes an inch long, strict, subcylindric, green. Calyx sessile, two-glumed, compressed, much shorter than the corolla; one glume broader embracing the other; both acute. Corolla upright, awl-shaped; outer valve shorter, blunt, embracing the inner, which is a third part longer and convolute. Stamens three with long anthers. Germ minute. Style the length of the flower.—Native of the East Indies^k.

L.

LABATIA. (From *J. Baptiste Labat*, a Dominican Friar, a great writer and traveller.—*Voyage aux Antilles*. Par. 1721. & 1743. 12°. Haye, 1724. 4°.—*Voyages en Espagne & en Italie*. Par. 1730. & *Amst.* 1731. 12°.)

Lin. gen. Schreb. n. 1724. *Swartz prodr.* 32.

Pouteria. Aubl. t. 33. *Juss.* 156.

Class. 4. 1. *Tetrandria Monogynia.*

Nat. order of Guajacana; Juss.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved, permanent: the two opposite leaflets erect: the two smaller ones ovate, obtuse, concave.

COR. one-petalled, subcampanulated. Tube shorter than the calyx. Border quadrifid; divisions upright, obtuse, small; with two opposite smaller divisions, situated in the partition of the corolla.

STAM. *Filaments* four, length of the corolla, upright, awl-shaped, contiguous to the pistil. *Anthers* sharp-pointed, upright.

PIST. *Germ* roundish, minute, superior. *Style* awl-shaped, length of the stamens. *Stigma* simple, obtuse.

PER. *Capsule* large, roundish, rough, four-celled.

SEEDS solitary, oblong, compressed.

ESSENTIAL CHARACTER.

Cal. four-leaved, inferior. *Cor.* subcampanulate, four-cleft, with two minute segments in the divisions of the corolla. *Caps.* four-celled. *Seeds* solitary.

SPECIES.

1. *Labatia sessiliflora.*

Swartz prodr. 32.

Flowers sessile.

2. *Labatia guianensis.*

Pouteria guianensis. Aubl. guian. 86. t. 33.

Flowers peduncled.

DESCRIPTIONS, &c.

1. Native of Hispaniola^l.

2. This is a tree forty feet in height and more, and three feet in diameter, with a russet-coloured, wrinkled bark, and a whitish, hard, compact wood. Branches straight, long, subdivided. Leaves alternate, heaped, entire, smooth, firm, ovate-oblong, ending in a blunted point: petiole long, firm: the largest leaves are eight inches long and three wide. Flowers axillary or on the branches in pairs or threes, each on its pedicel. Corolla greenish. It is called *Pourama-Pouteri* by the Caribs, whence Aublet has taken his name.—Native of Guiana, in the forests by the river Sinemari, forty leagues from its mouth; flowering and fruiting in november^m.

^a Swartz.

^b Ibid.

^c Linn. suppl.

^d Hort. kew.

^e Rotboell.

^f Ibid.

^g Swartz.

^h Rottboell.

ⁱ Retzius.

^k Ibid.

^l Swartz.

^m Aublet.

LABIUM VENERIS. See *Dipsacus*.

LABLAB. See *Dolichos*.

LABRADOR TEA. See *Ledum*.]

LABRUM VENERIS. See *Dipsacus*.

LABRUSCA. See *Vitis*.

LABURNUM. See *Cytisus*.

[LAC or GUM LAC. See *Croton*.

LACCA HERBA. See *Impatiens*.

LACE-BARK. See *Daphne*.

LACHENALIA. (From *Wernerus de La Chenal* of Switzerland. Specimen obs. medicarum. Bas. 1759. 4°.—*Observationes botanicae* in vol. 4. act. Helv.)

Lin. gen. Schreb. n. 1744. *Jacqu. in act. belv.* 9. p. 38. t. 2. f. 3.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariae*. *Asphodeli*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals six, erected into a tube, oblong, connate at the base, unequal: the three exterior ones shorter, often callous at the tip.

STAM. Filaments six, awl-shaped, upright, growing to the base of the petals, and of the same length with them. Anthers oblong.

PIST. Germ superior, subovate. Style awl-shaped, length of the stamens. Stigma simple.

PER. Capsule subovate, three-winged, three-celled.

SEEDS several, globose, affixed to the receptacle.

ESSENTIAL CHARACTER.

Cor. six-parted; the three outer petals difform. Caps. three-winged; cells many-seeded. Seeds globular, affixed to the receptacle.

SPECIES.

1. *Lachenalia orchioides*. Spotted-leaved *Lachenalia*. *Ait. hort. kew.* 1. 460. *Jacqu. ic. vol. 2. collect.* 3. 241.

Phormium Hyacinthoides. *Lin. suppl.* 204. *synt.* 336.

P. orchioides. *Thunb. nov. gen.* 5. 95.

Hyacinthus Orchioides. *Lin. spec.* 455.

Corollas bell-shaped, the three inner petals longer, flowers sessile, leaves lanceolate shorter than the scape.

2. *Lachenalia pallida*. Pale-flowered *Lachenalia*.

Ait. hort. kew. 1. 460.

L. mediana. *Jacqu. ic. vol. 2. collect.* 3. 242.

Corollas bell-shaped, the three inner petals longer, flowers on very short peduncles horizontal, leaves linear-oblong longer than the scape.

3. *Lachenalia contaminata*. Mixed-coloured *Lachenalia*.

Ait. hort. kew. 1. 460.

Corollas bell-shaped, the three upper petals longer, flowers peduncled, leaves linear-awl-shaped channelled.

4. *Lachenalia tricolor*. Three-coloured *Lachenalia*.

Ait. hort. kew. 1. 461.

Phormium Aloides. *Linn. suppl.* 205. *Thunb. nov. gen.* 5. 94. *synt. veg.* 336.

α. With linear-lanceolate leaves, the inner petals red at the tip. Narrow-leaved three-coloured *Lachenalia*.

L. tricolor. *Jacqu. ic.* 1. t. 61. *Syst. veget.* 314.

β. With oblong-lanceolate leaves, corollas yellow red at the base, green at the tip. Broad-leaved three-coloured *Lachenalia*.

L. tricolor. *Curt. magaz.* 82.

L. luteola. *Jacqu. ic.* 2. collect. 4. 148?

Corollas cylindrical, the three inner petals twice the length of the others emarginate, flowers peduncled pendulous.

5. *Lachenalia pendula*. Pendulous *Lachenalia*.

Ait. hort. kew. 1. 461. *Jacqu. ic. vol. 2. collect.* 3. 239.

Phormium bulbiferum. *Cyrrill. neap.* 1. 35. t. 12.

Corollas cylindrical, the three inner petals longer entire; flowers peduncled pendulous.

6. *Lachenalia viridis*. Green-flowered *Lachenalia*.

Ait. hort. kew. 1. 462.

Hyacinthus viridis. *Lin. spec.* 454. *Jacqu. ic.* 1. t. 66. *nisc.* 2. 331.

Corollas cylindrical, the three outer petals very long awl-shaped.

VOL. II.

7. *Lachenalia orthopetala*.

Jacqu. ic. vol. 2. collect. 3. 240.

Corollas funnel-form-tubular, the three outer petals a little shorter bluntish, flowers erect subpedicelled.

8. *Lachenalia pustulata*.

Jacqu. ic. vol. 2. collect. 3. 244.

Corollas cylindrical, the three inner petals one fourth longer than the outer blunt, flowers erect subsessile, leaves lanceolate-linear pustuled.

9. *Lachenalia violacea*:

Jacqu. ic. vol. 2. collect. 4. 147.

Corollas cylindrical-three-sided, the three inner petals reflex a little longer than the outer, flowers pendulous peduncled, leaves oblong, spotted on the back.

10. *Lachenalia patula*:

Jacqu. ic. vol. 2. collect. 4. 149.

Corollas bell-shaped, inner petals spreading or reflex longer than the outer, flowers erect peduncled, leaves linear-lanceolate shorter than the scape unspotted.

11. *Lachenalia punctata*.

Jacqu. ic. vol. 2. collect. 2. 323.

Corollas tubular incurved, inner petals a little longer than the outer, the lowest a little shorter than the two others, flowers nodding peduncled, leaves lanceolate-linear dotted.

12. *Lachenalia hirta*:

Thunb. prodr. cap. 64.

Corollas bell-shaped peduncled, leaves linear rough-haired.

DESCRIPTIONS, &c.

1. Bulb roundish, whitish. The whole of the plant is smooth. Leaves usually two from the bulb, from six inches to a foot in length, one always much narrower than the other, sharpish, thick, spreading at top, flattish, sheathing and channelled at bottom, rough and cartilaginous at the edge, dirty green, marked with lines on the inside, and having dusky spots scattered over them. Scape round upright, pale green with dusky spots, commonly longer than the leaves. Bractes lanceolate, acuminate, concave at the base, spreading very much, white. Flowers almost upright, the upper ones in the spike abortive. Outer petals white with green tips; inner pale yellow. Anthers yellow.

Native of the Cape of Good Hope^a. Cultivated in 1752, by Mr. Miller^b.

2. Bulb roundish, flattened a little, the size of a hazel nut. Root-leaves two, a foot long and more, acute, channelled and sheathing at bottom, flat at top, linear-lanceolate, almost equal in length, one near an inch in width, the other much narrower, deep green on both sides, unspotted, shining, quite entire and not rough about the edge. Scape round, shining, pale green, unspotted, almost upright, weak. Raceme upright, three inches long, with about twenty flowers, somewhat remote, and inodorous. Bractes sessile, concave, acuminate, whitish. Pedicels one-flowered, round, almost upright, the length of the bractes at least. Petals whitish, the three outer wholly green above the middle, the inner marked there only with a green line. Filaments white. Anthers greenish with a yellow pollen. Germ green. Style white^c. *Jacqu* named it *mediana*, because he supposed it to be an intermediate species between *orchioides* and *pallida*. It seems however to be the same with the latter.

Native of the Cape of Good Hope. Introduced 1782, by George Wynch, Esq.^d

3. Leaves smooth, with dusky red spots scattered over the upper surface, longer than the scape. Scape upright, semicylindric, scarcely a span high, with dirty red spots. Raceme many-flowered: peduncles erect, filiform, white, a line and half in length. Bracte at the base of each peduncle, from a broad base ovate, acuminate, concave, spreading very much, whitish, shorter than the peduncle. Outer petals connected at the base into a tube which is gibbous on the outside, oblong, blunt, white, red at top, with a retuse bump below the tip; the uppermost next the scape, three lines long; the two lower shorter. Inner petals ob

^a *Jacqu. collect.*

^b *Hort. kew.*

^c *Jacqu. collect.*

^d *Hort. kew.*

long, less blunt, with a red keel near the tip; the two upper ones the same length with the uppermost of the outer ones: the lowest the same length with the shorter outer ones.

Found at the Cape by Masson, and introduced in 1774^c.

4. Leaves two, radical, lanceolate, like those of the common white Lily, thin not fleshy, dusky-spotted on the upper surface. Scape round, like that of the garden Hyacinth, scarcely a foot high, dusky-spotted. Flowers alternate. Petals lanceolate, unequal; the three outer fastened to the inner ones, which do not at all cohere at the base. Filaments declining, inserted into the receptacle. Anthers blood-red. Stigma white. The stem is almost comose with the abundance of awl-shaped bractes that spring out below the upper rudiments of flowers. It varies with yellow, saffron-coloured, blood-red purple at the tip, and greenish yellow corollas; also in the proportion between the inner and outer petals^f; and in the breadth of the leaves.

Mr. Curtis remarks, that it is only at the middle period of its flowering, that the three colours which give this plant its trivial name, are very distinguishable, for as it advances, the brilliant orange of the upper flowers dies away. The spots also on the leaves, as it advances into bloom, become less conspicuous. Jacquin observes, that in his *luteola*, which is probably not different from this, scarcely two plants in a hundred had spotted leaves.

Native of the Cape. Introduced in 1774, by Mr. Francis Masson^e.

5. Leaves oblong-lanceolate, succulent, even, a span long. Scape upright, round, the thickness of a goose quill, a little longer than the leaves, having a few reddish spots above the middle. Flowers in a raceme, few, distant, drooping. Peduncles filiform, red, half an inch long. Bracte at the base of each peduncle, ovate, acute, very short. Outer petals connate at the base into a trigibbous tube, red with green tips; the apex of the lowest thickened, arched within, depressed above. Inner petals very blunt, yellowish at bottom with a red dorsal line, red-purple at top with the edges and middle green.

Found at the Cape by Masson, and introduced in 1774^h.

6. Bulb roundish, of the same form and size as the garden Hyacinth. The whole plant inodorous and smooth. Leaves few, linear, a foot long, sharpish, quite entire, keeled. Scape slender, round, solitary, suberect, green, about the length of the leaves, terminating in a long raceme. Bractes awl-shaped. Peduncles short. Corolla wholly green. Anthers linear, green, the length of the tubeⁱ.

Native of the Cape of Good Hope. Introduced by Masson in 1774^k.

7. Bulb roundish, whitish. Leaves generally four, a foot long, flaccid, about four lines wide at bottom, awl-shaped above the middle, thickish, channelled, acute, smooth, with dusky obsolete spots on the lower surface. Scape half a foot high, round, pale brownish red, upright, ending in a many-flowered upright spike. Flowers upright, on short pale pedicels, inodorous, about thirty, the upper ones abortive. Bractes cup-shaped, growing to the scape. Petals white with a green perpendicular line on the outside below the tip. Filaments white. Anthers purple. Germ green.—Native of the Cape of Good Hope.

8. Bulb roundish, somewhat flattened, with a brown skin. Root-leaves two, smooth, unspotted, acute, quite entire, almost a foot long, flaccid, reclining on one side, channelled and embracing at the base, flat above, revolute towards the end, from the middle to the tip having raised round scattered pustules on the upper surface. Scape the length of the leaves, the whole reclining, weak, glittering, three-sided, three-grooved, one side very narrow, and hence appearing as if compressed. Spike terminating, close, many-flowered. Bractes concave, from a broad base end-

ing in a point, pale, smooth, small; the terminating ones barren, lanceolate-linear, acuminate, rose-coloured, longer. Flowers inodorous, subseffile, patulous. Petals whitish, the outer greenish underneath at the top, the inner having a narrow greenish-yellow band at top on both sides. Anthers yellow. Stigma whitish. Native of the Cape of Good Hope.

9. Bulb roundish, white, larger than a hazle nut. The whole of the plant is smooth. Root-leaves two, opposite, sharpish, thick, spreading, quite entire, sheathing at the base and together forming a cylinder, marked with lines, spotted all over the back, those on the pale sheath ferruginous, the upper surface unspotted, almost a foot long with the sheath, one only half the width of the other. Scape a foot and half high, round, having oblong, brownish spots scattered over it, ascending. Raceme upright, half a foot and more in length, terminated at top by sterile bractes. Pedicels numerous, one-flowered, slender, half an inch long, white, spreading very much. Bractes small, acute, patulous, concave at the base. Flowers small, drooping, three-sided with the base flattened, having the finell of Rue. Outer petals green; inner with the filaments and style violet. Anthers rufous.—Native of the Cape.

10. Bulb roundish, brown, the size of a pea. The whole plant smooth. Root-leaves two, sharp, channelled, quite entire, very thick, pulpy and fleshy, embracing and upright at bottom, reflex above the middle, dark green. Scape a span high, round, almost upright, green obscurely variegated with ferruginous spots, racemed and many-flowered at top. Pedicels slender, white, almost upright, the third of an inch in length. Bractes minute, rounded, concave, very blunt, green with a transverse ferruginous band at top; that of the lowest flower acuminate and larger. Corolla, filaments and style white: the petals on both sides below the tip having a little longitudinal line, which in the outer ones is green, in the inner rose-coloured. Anthers and germ yellow.—Native of the Cape.

11. Bulb roundish, white. The whole of the plant smooth. Root-leaves two, sharpish, channelled, quite entire, upright, half a foot long, having bay-brown spots scattered over them on both sides, dusky blood-red on the back, glaucous-green on the upper surface, whitish at the base with red dots and spots. Scape ten inches high, round, upright, shining, with red and pale spots all over it, few-flowered at top. Peduncles one-flowered, whitish, patulous, with minute whitish bractes, about three, the uppermost abortive. Flowers elegant, inodorous, more than an inch long. Corolla whitish, the outer petals sprinkled very thickly with red dots all over both surfaces; the inner only at top, with a middle dorsal line below. Anthers reddish; the barren ones blackish.—Native of the Cape^l.

12. Native of the Cape of Good Hope, where it was observed with several others not yet described by Thunberg^m.

Other species are figured by Professor Jacquin, which will be described in the fifth volume of his *Collectanea*, not yet arrived in English, march 31st, 1797.

PROPAGATION AND CULTURE.

These plants must be preserved with other Cape bulbs in a warm border covered with glasses, or in a dry stove, or glass-case. They will mostly bear forcing, and their flowering may be hastened by being kept warm in the stove. They are increased by offsets from the bulbs, or by seeds, when they produce any.

LACHNÆA. (From *λαχνη* *lanugo*, *λαχναίος*, *lanuginosus*, woolly or hairy.)

Lin. gen. n. 490. *Reich. n.* 531. *Schreb. n.* 669. *Juss.* 77.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Vepreculæ*. *Thymelææ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, permanent. *Tube* long and slender. *Border* four-parted, unequal: the upper segment the smallest: the other three segments reflex: the middle one larger.

^c Hort. kew. ^f Linn. suppl. ^g Hort. kew. ^h Ibid.
ⁱ Jacqu. misc. ^k Hort. kew.

^l Jacqu. collect.

^m Prodr. cap.

COR. none.

STAM. *Filaments* eight, setaceous, upright, nearly the length of the flower. *Antthers* simple.

PIST. *Germ* ovate. *Style* filiform, inserted into the side of the germ: length of the stamens. *Stigma* headed, hispid.

PER. none. *Fruit* in the bottom of the calyx.

SEED single, ovate, obliquely acute.

OBS. *This genus differs from Passerina only in having an unequal calyx.*

ESSENTIAL CHARACTER.

Cal. none. Cor. four-cleft, with an unequal border. Seed one like a berry.

SPECIES.

1. *Lachnæa eriocephala*. Woolly-headed *Lachnæa*.

Lin. spec. 514. *Reich.* 2. 199.

Passerina eriocephala. *Thunb. prodr. cap.* 75.

Heads solitary woolly, *leaves* imbricate in four rows—linear, convex.

2. *Lachnæa conglomerata*. Cluster-headed *Lachnæa*.

Lin. spec. 514. *Reich.* 2. 200. *Pluk. mant.* 179.

Raii dendr. 54. (*Thymelæa*). *Breyn. cent.* 18.

t. 7. (*Sanamunda*).

Passerina glomerata. *Thunb. prodr. cap.* 75.

Heads clustered, *leaves* lax—cylindric, truncate, in four rows.

DESCRIPTIONS, &c.

1. Leaves three-cornered, gibbous. Heads of flowers terminating, tomentose, surrounded with white wool^a.

2. These are both shrubs, and natives of the Cape of Good Hope. The latter was introduced here in 1773, by Messrs. Kennedy and Lee^o.]

LACHRYMA JOBI. See COIX.

[LACIS. (*From λαις fissura, so called on account of the leaves being elegantly cut.*)

Lin. gen. Schreb. n. 924.

Mourera. Aubl. 233.

Class. 13. 2. Polyandria Digynia.

GENERIC CHARACTER.

CAL. none.

COR. none.

STAM. *Filaments* very many, (forty) capillary, winged on both sides below, inserted into the receptacle which is girt with twelve spines. *Antthers* oblong, bifid at the base, acute, incumbent.

PIST. *Germ* oblong, angular-friated. *Styles* two, incurved. *Stigmas* obtuse.

PER. *Capsule* ovate, eight-freaked, one-celled, bivalve.

SEEDS very many, very small, affixed to a free ovate receptacle.

ESSENTIAL CHARACTER.

Cal. none. Cor. none. Filam. winged on both sides below. Recept. girt with twelve spines. Caps. ovate, eight-freaked, one-celled, two-valved, many-seeded.

SPECIES.

1. *Lacis fluviatilis*.

Lin. syst. Gmel. 834.

Mourera fluviatilis. Aubl. guian. 582. t. 233.

DESCRIPTION, &c.

Stems branching, decumbent. Branches cylindrical, rough to the touch. Leaves sessile, alternate, cut deeply into several lobes which are again equally cut into curled lobes: they are rough to the touch on both sides, divided their whole length by a large salient nerve, whence arise lateral nerves that diverge over each of the larger lobes; and these throw out others which spread over the smaller lobes. The larger leaves are two feet and a half in length, and one foot in breadth: underneath, at each angle formed by the nerves, there is a spine four or five lines in length. At the ends of the stem and branches come out the flowering-branches, two feet long and more, the upper part of which for a foot in length is convex on one side, and channelled on the other; the flowers are placed along each edge of this imbricately in two rows: the bottom is cylindrical, naked, and has only one or two small leaves near its origin. Bractes to each flower three, two internal opposite, covered by a larger one,

falling off soon after the expansion of the flower. Peduncle an inch long, with a membranaceous sheath and three scales at the base. Filaments purple with yellow anthers.

This plant is called *Mourerou* by the Caribs, and thence Aublet, as is usual with him, has formed his generic name. It is a native of Guiana, and has been found only on the rocks of the great cascade of the river Sinemari, the whole always under water, except the flowering branches. It is attached to the rocks by packets of small fibres^p.

LACISTEMA. (*From λαις, fissura, and στήμα, stamen. The filaments being bifid at top.*)

Lin. gen. Schreb. n. 1707. *Swartz prodr.* 12.

Class. 1. 2. Monandria Digynia.

GENERIC CHARACTER.

CAL. Ament common imbricated on all sides; columnar. Scales one-flowered, ovate, concave; two small, linear squamules being placed at the sides beneath the corolla within the scale.

COR. one-petalled, four-parted. Tube none. Divisions lanceolate, sharp, suberect.

Nectary one-leaved, rotate, entire, smaller than the corolla, concave.

STAM. *Filaments* single, situated in the middle of the nectary with the germ, upright, incurved above the middle over the germ, bifid at the top. *Antthers* minute, roundish.

PIST. *Germ* globose. *Styles* two, very short, recurved. *Stigmas* simple.

PER. Berry footstalked, obovate, oblong, one-celled, SEED single, oblong.

ESSENTIAL CHARACTER.

Cal. Scale of the ament. Cor. four-parted. Filam. bifid. Berry pedicelled, one-seeded.

SPECIES.

1. *Lacistema Myricoides*.

Swartz prodr. 12.

Piper aggregatum. Berg. in act. helv. 7. 131. t. 10.

DESCRIPTION, &c.

Stem arborescent. Branches round, somewhat knotty, ash-coloured, naked, smoothish, spreading, branched: branchlets greenish, leafy, smooth. Leaves alternate, ovate, acuminate, smooth, somewhat wrinkled with very minute transverse veins, quite entire, four inches long, spreading, with a longitudinal waving nerve. Petioles short, flattish, channelled. Spikes only two or three lines in length, aggregate, round, straight, sessile, partly from the axils of the leaves, partly lateral from the scars of the branches. Observed in Surinam by Rolander^q, and Jamaica by Swartz.

LACTUCA, (*of Pliny, &c. à lacte, from its milkiness.*)

Lin. gen. n. 909. *Reich.* 988. *Schreb. n.* 1234.

Tournef. t. 267. *Vaill. act. gall.* 1721. 17.

Juss. 169, *Gertn. t.* 158.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semisfculosæ*. — *Cichoraceæ*, *Juss.*

GENERIC CHARACTER.

CAL. Common imbricated, cylindric; scales very many, sharp, membranaceous on the margin.

COR. Compound imbricated, uniform. Corollets hermaphrodite very many, equal.

Proper one-petalled, ligulate, truncated, four or five-toothed.

STAM. *Filaments* five, capillary, very short. *Anther* cylindrical, tubular.

PIST. *Germ* subovate. *Style* filiform, length of the stamens. *Stigmas* two, reflex.

PER. none. *Calyx* converging, ovate-cylindric.

SEEDS solitary, ovate, acuminate, even, compressed. Down capillary; on a long stipe, attenuated below.

REC. naked.

ESSENTIAL CHARACTER.

Cal. imbricate, cylindrical, with a membranaceous margin. Recept. naked. Seeds even, with a simple, stipitate down.

^a Linn.

^o Hort. kew.

^p Aublet.

^q Bergius.

SPECIES.

1. *Lactuca quercina*. Oak-leaved Lettuce.
Lin. spec. 1118. *Reich.* 3. 624. *fl. succ. n.* 691.
Krock. files. n. 1255.
L. foliis quernis. Raii hist. 221.
Leaves runcinate toothletted acute even underneath, stem smooth.
2. *Lactuca intybacea*. Endive-leaved Lettuce.
Lin. syst. 713. *Jacqu. ic.* 1. 162. *collect.* 1. 53.
Leaves runcinate tooth-ciliate blunt embracing, stem panicled.]
3. *Lactuca fativa*. Garden Lettuce.
Lin. spec. 1118. *Reich.* 3. 625. *mat. med.* 178.
hort. cliff. 384. 3. *upf.* 242. *Rob. ic.* 187.
Gärtn. fruct. 2. 362. *Blackw. herb. t.* 88.
Baub. pin. 122. *Ger.* 239. *f.* 1, 2. & 240.
f. 3—6. *emac.* 306. *f.* 1, 2. & 307. *f.* 5, 6.
Park. parad. 498. *t.* 497. *f.* 5—8. *Raii hist.* 220.
n. 1—7. *Mor. hist.* 3. *f.* 7. *t.* 2. *f.* 1—9. *Dod. pempt.* 644, 645. *Fuchf. hist.* 299, 300.
Leaves rounded, stem-leaves cordate, stem corymbed.
4. *Lactuca Scariola*. Prickly Lettuce.
Lin. spec. 1119. *syst.* 713. *Reich.* 3. 625. *amoen.* 4. 328. *Gärtn. fruct.* 2. 361. *Huds. angl.* 338.
Wither. arr. ed. 3. 677. *Relb. cant. n.* 563.
Engl. bot. 268. *Hall. helv. n.* 14. *Neck. gallob.* 324. *Pollich pal. n.* 728. *D'Affo arag. n.* 754.
Villars dauph. 3. 156. *Krock. files. n.* 1256.
Rob. ic. 189. *Allion. pedem. n.* 820.
L. sylvestris. Fuchf. hist. 301. *Dod. pempt.* 646.
Baub. hist. 2. 1003.—*costa spinosa. Baub. pin.* 123.
Raii hist. 222. *syn.* 161. *Mor. f.* 17. *Petiv. brit. t.* 15. *f.* 3.
L. fylv. fol. dissectis. Ger. emac. 309. *f.* 3.
L. fylv. laciniata. Park. theat. 814. *f.* 2.
Leaves vertical prickly on the keel.
5. *Lactuca virofa*. Strong-scented Lettuce.
Lin. spec. 1119. *syst.* 713. *Reich.* 3. 625. *hort. cliff.* 384. *Gärtn. fruct.* 2. 362. *Huds. angl.* 337.
Wither. arr. ed. 3. 677. *Relb. cant. n.* 562.
Hall. helv. n. 15. *Scop. carn. n.* 960. *Villars dauph.* 3. 155. *Krock. files. n.* 1257. *Allion. pedem. n.* 821. *Rob. ic.* 188. *Gouan hort.* 408.
L. sylvestris odore viroso. Baub. pin. 123. *Mor.* 7. 2. 16.
L. fylv. major odore opii. Ger. emac. 309. 1. *Raii hist.* 221. *syn.* 161. *Petiv. brit. t.* 15. *f.* 2.
L. virofa. Park. theat. 813.
L. atra. Casalp. 515.
L. fylv. lato folio succo viroso. Baub. hist. 2. 1002.
Leaves horizontal prickly on the keel and toothed.
6. *Lactuca faligna*. Least Lettuce.
Lin. spec. 1119. *syst.* 713. *Reich.* 3. 626. *amoen.* 1. 150. *Gärtn. fruct.* 2. 362. *Huds. angl.* 338.
Wither. arr. ed. 3. 678. *Relb. cant. n.* 564.
Hall. helv. n. 13. *jen.* 207. *t.* 4. *Scop. carn. n.* 961. *Pollich pal. n.* 724. *Jacqu. austr.* 3. *t.* 250. *Villars dauph.* 3. 153. *Krock. files. n.* 1259. *Allion. pedem. n.* 822.
L. sylvestris laciniata minima. Raii cant. hist. 222. *syn.* 160. *Petiv. brit. t.* 15. *f.* 4.
Chondrilla viscosa humilis. Baub. pin. 130. *prodr.* 68. 1. *Mor.* 7. 6. 18. *Park. theat.* 783. 4.
Leaves hastate-linear sessile prickly on the keel.
7. *Lactuca tuberosa*. Tuberous-rooted Lettuce.
Lin. syst. 713. *Jacqu. hort.* 1. 18. *t.* 47.
Leaves spinulose-toothed, stem almost simple, root tuberous manifold.
8. *Lactuca canadensis*. Canadian Lettuce.
Lin. spec. 1119. *syst.* 713. *Reich.* 3. 626. *Tournf. inst.* 474. *Rob. ic.* 190. 191. *Raii suppl.* 137. (*Sonchus*).
Leaves lanceolate-ensiform embracing toothed unarmed.
9. *Lactuca indica*. Indian Lettuce.
Lin. syst. 713. *Reich.* 3. 627. *mant.* 278.
Leaves lanceolate-ensiform sessile unequally toothed.
10. *Lactuca perennis*. Perennial Lettuce.
Lin. spec. 1120. *Reich.* 3. 627. *hort. cliff.* 384. *Scop. carn. n.* 962. *Pollich pal. n.* 730. *Gouan monsp.* 409. *Villars dauph.* 3. 156. *Krock. files. n.* 1258. *Allion. pedem. n.* 824. *Mill. fig.* 105. *t.* 157.

Chondrilla altera. Dod. pempt. 637.—*cærulea. Tabern. hist.* 176. *Baub. hist.* 2. 1019. *Raii hist.* 227. *Ger.* 224. *emac.* 286. *Park. theat.* 785, *f.* 1.—*altera Cichorii fylv. folio, & latifolia laciniata. Baub. pin.* 130.

Leaves linear tooth-pinnate, segments toothed upwards.

11. *Lactuca augustana*.

Allion. pedem. n. 823. *t.* 52. *f.* 1.

L. longo & valde angusto folio. Baub. hist. 2. 999.

L. folio oblongo acuto. Baub. pin. 123.

Leaves entire toothed sharply hooked, the midrib smooth.

DESCRIPTIONS, &c.

1. Root perennial, fleshy. Stem upright, narrow, usually from one to two feet in height, but sometimes six feet high, even, unbranched, terminated by an upright narrow raceme of flowers. Lower leaves runcinate; upper pinnatifid, with toothletted, acute segments; they are not at all prickly underneath, and resemble those of *Sonchus oleraceus*, or common Sow-thistle. Flowers as in *L. fativa*, yellow. Calyx smooth, sometimes dotted with red. Corollets five-toothed. Down white^a.

Ray, who cultivated it in his garden at Cambridge, remarks, that the leaves resemble those of the Oak, are of a deeper green than those of the garden Lettuce, smaller, and few at the root, before it grows up into a stalk. In its whole habit it approaches nearer to the wild than the garden Lettuce^b.

Native of Sweden and Germany.

2. The whole plant is smooth and milky. From an annual root the stem rises two or three feet in height, round, upright, green, leafy at bottom, dividing at top into rod-like leafless branches. Leaves runcinate, hastate-embracing, blunt, little toothletted, spinulose-ciliate about the edge but not prickly. Root-leaves from oblong narrowed towards the base and entire. Flowers scattered along the branches on short peduncles. Calyx green, with concave scales. Corollets sulphur-coloured. Anthers yellow. Seeds linear-lanceolate, acute, rugged at the edge. Down hairy, close, sessile.

Native of South America^c.

3. Leaves large, milky, frequently wrinkled, usually pale green, but varying much in colour, form, &c. in the different varieties. Stem strong, round, two feet or three quarters of a yard in height, bearing abundance of small yellow flowers. The seeds are a little smaller than in *L. Scariola*, but more turgid, narrowing very much below, marked with seven crenulate streaks, ash-bay-coloured or whitish. The down is very soft and fugacious, and placed on a stipe the length of the seed^d.

The native place of the Garden Lettuce is unknown, and it is not improbable that it may be a mere creature of cultivation, from one of the wild ones.

The first printed authority we have for its cultivation in England is that of Turner in 1562^e; but we probably had it much earlier.

The common or cultivated Lettuce has long been celebrated for its cooling and wholesome properties; and as it contains a quantity of a milky juice of an opiate nature, it in consequence promotes sleep. Lettuce is also in some degree laxative and aperient, and is proper in hot, bilious dispositions. The seeds of Lettuce are of an emollient nature, and are ranked amongst the cold seeds of the old *Materia Medica*. They unite with water by trituration, into an emulsion or milky liquor, which has nothing of the aperient bitterness of the milky juice of the leaves, and is nearly similar to the emulsion of Almonds: this emulsion of Lettuce has however been supposed of a more refrigerating nature than that of Almonds, and hence has been preferred in heat of urine and other disorders arising from acrimony or irritation.]

The several varieties cultivated in kitchen gardens for use are, 1. Common or Garden Lettuce. 2. Cabbage Lettuce. 3. Cilicia. 4. Dutch Brown. 5. Aleppo. 6. Imperial. 7. Green Capuchin. 8. Versailles or upright white Cos. 9. Black Cos.

^a Linn. succ. and Krock.

^d Gärtn.

^b Hist.

^e Hort. kew.

^c Jacquin.

10. Red Capuchin. 11. Roman. 12. Prince. 13. Royal. 14. Egyptian Cos.

[Garden Lettuce is named in German *Gartensalat*. In Dutch *Tuinsalade* or *Latuw*. In French *La Laitue cultivée* ou *commune*. *Lactuca* a little changed is the prevailing word in the European languages for Lettuce. In Russian, Danish, and Swedish it is *Laktuk*. In Italian *Lattuga*. In Spanish *Lechuga*. In Portuguese *Leituga*.

4. Root biennial, very full of milky juice, as is every part of the plant. Stem erect, two or three feet high, round, prickly, leafy, branched at the top into a sort of panicle, consisting of numerous, pale-yellow flowers. Leaves embracing, toothed and prickly on the margin; the mid-rib set with numerous parallel spines along the back; the lowermost deeply lobed and sinuated; those on the stem turned perpendicularly, and not horizontal as in most plants. Calyx smooth. Flowers small^f. Receptacle flattish, hollow-dotted, smooth. Seeds ovate, attenuated to each end, compressed, marked with seven longitudinal, crenulate streaks, of a ferruginous blackish colour. Down very soft, silky white, equal to the seed, fugacious; on a setaceous stipe the length of the seed^g.

The stem-leaves have constantly deeper winged clefts than those of *L. virosa*: the flowering-branches do not spread out but point upwards: the flowers are smaller; and the stipe of the down is much shorter^h.

Native of the southern parts of Europe: with us in the Isle of Ely, on the borders of fields, as near Denny Abbey, &c.

5. Root biennial. Stem from two to four feet high, prickly below. Root-leaves oblong-wedge-shaped, toothed at the edge: stem-leaves sagittate, embracing, either entire or pinnatifid, sharply toothed: floral-leaves sagittate, half embracing, broad at the base, tapering to a sharp point, one at the base of each flowering branch. These are spreading. Flowers numerous, yellow, sessile, or on short peduncles, with a small leaf at the base of each, and others still smaller on them. Calycine scales unequal, lanceolate. Seeds furrowed and roughⁱ; very like those of *L. fativa* in all respects, except that the edges and streaks near the top of the seed are rendered rough by very minute prickles^k.

According to Gerard and Haller this is a variety of the preceding, which though bitter, acrid and fetid in some degree, is however much milder than this, and may easily be distinguished from *L. virosa* by its paler colour, its less spreading branches, and its vertical leaves^l.

Native of the southern parts of Europe, by hedges, ditch-banks and borders of fields. In England, at the World's end near Stepney, and on the banks of the Thames between Blackwall and Woolwich. Burwell-pit and other places in Cambridgeshire. Old walls in Bungay, Suffolk. Marston-lane, Oxfordshire. In a stone quarry at Thorp Arch in Yorkshire.

L. Scariola β. Hudf. is a variety of this^m.

Lactuca virosa, or the great Wild Lettuce, abounds with a milky juice, of which the opiate power is of very considerable strength, insomuch that it may occasionally be used in the manner of common Opium. It may be collected by suffering the juice to drain from the wounded parts of the plant: and then by drying, in the manner of Opium, it may be made into pills. Sir John Hill, in his British Herbal recommends this to be practiced in April and May. When dried it dissolves freely in wine, and is said to be an excellent anodyne; the dose of which is a tea-spoonful in a glass of water, answering all the purposes of Laudanum.

Dr. Collin relates twenty-four cases of dropsy, out of which twenty-three were cured by taking the extract in doses from eighteen grains to three drams in twenty-four hours. It commonly proves laxative, promotes urine and gentle sweats, and removes the thirst. It must be prepared when the plant is in flower.

6. Leaves sagittate at the base, the lower pinnatifid; segments few, alternate, ligulate, finely-toothed,

with a sharp point at the end, somewhat hooked, the terminating one long: the upper entire, ligulate; the midrib not always prickly. Floral-leaves sagittate, broad at the base, tapering to a point. Flowers nearly sessile, small, yellowⁿ. Seeds (fourteen) obovate, rhomb-compressed, or in the middle on both sides very bluntly angular, a little wrinkled transversely but not striated, cinnamon or yellow bay-colour. Down very soft, long. Stipe shorter than the seed^o.

Linneus remarks, that the leaves are vertical, nearly as in *L. Scariola*.

Native of France, Saxony, the Palatinate, Silesia, Switzerland, Austria, Carniola, Piedmont, England, on the banks of ditches, and in pastures in a chalky soil.

7. Root tuberous, perennial, oblong, palmated, dusky without, whitish within. Whole plant, and even the calyx abounding in a white milk, which turns to an orange colour when exposed to the air. Leaves, the lower entire, the upper sinuate-pinnatifid. Flowers few, one at the end, and about three axillary branches with very few flowers on them, on short thick peduncles. Corollas pale blue purple. Seed black, shining, flat, shortly acuminate at top; with a stiped down^p.

8. This differs from *L. fativa* in having a higher stem, the leaves four times longer and narrower, the flowers in a long terminating compound raceme, not a corymb. Down sessile, as in *Sonchus*.

Native of Canada^q. It was cultivated by Mr. Miller in 1726, and probably earlier at Badminton^r.

9. This bears a great similitude to the preceding; it agrees with that in its lofty narrow stature, and the short stipes to the seeds; but the leaves are more toothed in the Indian Lettuce; the teeth are unequal; the leaves scarcely petioled, by no means embracing; the panicle more branched and floriferous.

Observed in the island of Java by Osbeck^s. Native of other parts of the East Indies. Introduced in 1784, by Sir Joseph Banks, Bart.^t

10. Root perennial, composed of many long fleshy fibres, which abound with a milky juice and spread pretty far in the ground. Stems several, strong, dividing towards the top into several branches. Root-leaves nine or ten inches long, having six or seven deep jags almost to the midrib, toothed on their upper side, the teeth acuminate. Stem-leaves shorter, with fewer jags; those immediately below the flower-stalks are almost entire. Flowers terminating, on slender branching peduncles, sustaining from two to four flowers. Lower calycine scales short, the others oblong, acute. Corollas deep purple or blue^u.

Native of Germany, Italy, and France. Cultivated in 1633^x.

11. Root annual, fusiform. Stem the height of a man, smooth, upright, very slightly striated, branched about the middle; branches upright, subdivided. Leaves half-embracing, eared, very smooth, lanceolate, the midrib not spiny; teeth sharp, spinulose, with smaller between the larger ones: they are of a dusky green colour; the upper ones gradually smaller, shorter, and more sparingly toothed. Flowers on short peduncles and paniced. Florets commonly twelve. Seed dirty white. The whole plant is very smooth and milky, without any virose smell.

In sandy places by the torrent that descends from the Great St. Bernard, and in the valley of Aost between St. Pierre and Villanova^y.

Monf. Villars has another species, which he names *L. Chaixi*, because it was discovered by M. Chaix. According to him it is different from this. Parkinson's *Cichorium constantinopolitanum*. theat. 778. has some affinity to it. The leaves of Caspar Bauhin's *L. folio oblongo acuto*, seem also to approach it a little: but it is distinct from both. He describes it at length.]

PROPAGATION AND CULTURE.

The common Lettuce is sown for cutting very young, to mix with other small salad herbs, and is only

^f Engl. Bot. ^g Gærtner. ^h Woodw. in With. ⁱ Ibid.
^k Gærtner. ^l Engl. Bot. ^m Stokes in With.

ⁿ Woodw. in With. ^o Gærtner. ^p Jacquin.
^q Hort. kew. ^r Ray suppl. ^s Linn. mant.
^t Hort. kew. ^u Miller's figures. ^x Hort. kew. from Ger.
^y Allion.

different from the Cabbage Lettuce in being a degeneracy therefrom, or rather the second is an improvement by frequent cultivation from the first; for if the seeds are saved from such plants of the latter as did not cabbage closely, the plants produced from that seed will degenerate to the first sort, which is by the gardeners called Lapped Lettuce, to distinguish it from the other, which they call Cabbage Lettuce. The seeds of the first, which are commonly saved from any of the plants, without having regard to their goodness, are generally sold at a very cheap rate, especially in dry seasons, when these plants always produce the greatest quantity of seeds, though sometimes this seed is sold in the seed-shops, and by persons who make a trade of selling seeds, for the Cabbage Lettuce, which is often the occasion of peoples being disappointed in their crop; so that this sort should never be cultivated but to be cut up very young, for which purpose this is the only good sort, and may be sown any time of the year, observing only in hot weather to sow it in shady borders; and in the spring and autumn upon warm borders, but in winter it should be sown under glasses, otherwise it is subject to be destroyed by severe frosts.

The Cabbage Lettuce may also be sown at different times of the year, in order to have a continuation of it through the whole season. The first crop is generally sown in february, upon a warm spot of ground, and when the plants are come up, they should be thinned out to the distance of ten inches each way, which may be done by hoeing them out, as is practised for Turneps, Carrots, Onions, &c. provided you have no occasion for the superfluous plants, otherwise they may be drawn up, and transplanted into another spot of good ground at the same distance, which, if done before the plants are too large, they will succeed very well, though they will not be so large as those which are left upon the spot where they were sown, but they will come somewhat later, which will be of service where people do not continue sowing every fortnight or three weeks in summer.

You must also observe in sowing the succeeding crops, as the season advances, to chuse a shady moist situation, but not under the drip of trees, otherwise, in the heat of summer they will run up to seed before they cabbage. In the beginning of august you should sow the last crop, which is to stand over winter; the seeds should be sown thin upon a good light soil, in a warm situation, and when the plants are come up they must be hoed out, so as they may stand singly, and cut down all the weeds to clear them. In the beginning of october they should be transplanted into warm borders, where, if the winter is not very severe, they will stand very well; but in order to be sure of a crop, it will be adviseable to plant a few upon a bed pretty close together, where they may be arched over with hoops, and in severe frosts they should be covered with mats and straw, or Peas-haulm, to secure them from being destroyed; and in the spring of the year they may be transplanted out into a warm rich soil, at the distance before-mentioned; but still those which grew under the wall, if they escaped the winter, and were suffered to remain, will cabbage sooner than those which are removed again; but you must observe not to place them too close to the wall, which would occasion their growing up tall, and prevent their being large or hard.

In order to save good seeds of this kind, you should look over your Lettuces when they are in perfection, and such of them as are very hard, and grow low, should have sticks thrust into the ground, by the sides of as many of them as you intend for seed, to mark them from the rest; and you should carefully pull up all the rest from amongst them as soon as they begin to run up, if any happen to be left, lest when they are run up to flower, they should, by the intermixing their farina with the good ones, degenerate the seeds. The seeds should always be saved either from those which stood through the winter, or those which were sown early in the spring, for the late ones very seldom perfect their seeds.

The Cilicia, Imperial, Royal, Black, White, and Upright Cos Lettuces may be sown at the following

times; the first season for sowing these seeds is at the latter end of february, or the beginning of march, upon a moderate hot-bed, or on a warm light soil in a sheltered situation; and when the plants are come up and are fit to transplant, those which are sown on the hot-bed should be planted on another warm bed about four inches asunder, row from row, and two inches distance in the rows, observing to shade them from the sun till they have taken new root; after which they should have a larger share of air admitted to them daily, to prevent their drawing up weak; but if the season prove favourable, they should be transplanted the beginning of april to the place where they are to remain, allowing them sixteen inches room every way, for these large sorts must not be planted too near each other; those which were sown in the full ground will be later before they come up, so should be either hoed out, or transplanted into another spot of ground, especially if the soil be good; after they have taken new root, you must carefully keep them clear from weeds, which is the only culture they will require, except the Black Cos Lettuce, which should be tied up when they are full grown, in the manner as was directed for blanching of Endive, to whiten their inner leaves, and render them crisp, otherwise they are seldom good for much, rarely cabbaging without this assistance.

When your Lettuces are in perfection, you should look over them, and mark as many of the best of them as you intend for seed, in the same manner as was before directed for the common Cabbage Lettuce, being very careful not to suffer any ordinary ones to seed amongst them, as was before observed, which would prove more injurious to these sorts than to the common, as being more inclinable to degenerate with us, if they are not carefully saved.

You may also continue these sorts through the whole season of Lettuce, by sowing them in april, may and june, observing, as was before directed, to sow the late crops in a shady situation, otherwise they will run up to seed before they grow to any size; but in the middle of september you may sow of these sorts, to abide the winter; which plants should be transplanted either under glasses, or into a bed, which should be arched over with hoops, in order to be covered in the winter, otherwise in hard winters they are often destroyed; but you must constantly let these plants have as much free air as possible, when the weather is mild, only covering them in hard rains or frosty weather; for if they are kept too closely covered in winter, they will be subject to a mouldiness, which soon rots them.

In the spring these plants should be planted out into a rich light soil, allowing them at least sixteen inches distance each way; for if they are planted too close, they are very subject to grow tall, but seldom cabbage well; and from this crop, if they succeed well, it will be proper to save your seeds; though you should also save from that crop sown on the hot-bed in the spring, because sometimes it happens, that the first may fail by a wet season, when the plants are full in flower, and the second crop may succeed, by having a more favourable season afterwards; and if they should both succeed, there will be no harm in that, since the seeds will grow very well when two years old, and if well saved, at three, but this will not always happen.

The most valuable of all the sorts of Lettuce in England, are the Egyptian Green Cos, and the Versailles, or White Cos, and the Cilicia, though some people are very fond of the Royal and Imperial Lettuces, but they seldom sell so well in the London markets as the other, nor are so generally esteemed. Indeed of late years, since the White Cos has been commonly cultivated, it has obtained the preference of all the other sorts, until the Egyptian Green Cos was introduced, which is so much sweeter and tenderer than the White Cos, that it is by all good judges esteemed the best sort of Lettuce yet known. This sort will endure the cold of our ordinary winters full as well as the White Cos; but at the season of its cabbaging, if there happen to be much wet, this being very tender, is very subject to rot.

The Brown Dutch and Green Capuchin Lettuces are

are very hardy, and may be sown at the same seasons as was directed for the common Cabbage Lettuce, and are very proper to plant under a wall, or hedge, to stand the winter, where many times these will abide when most of the other sorts are destroyed, and therefore they will prove very acceptable at a time when few other sorts are to be had; they will also endure more heat and drought than most other sorts of Lettuce, which renders them very proper for late sowing; for it very often happens, in very hot weather, that the other sorts of Lettuce will run up to seed in a few days after they are cabbaged; whereas these will abide near a fortnight in good order, especially if care be taken to cut the forwardest first, leaving those that are not so hard cabbaged to be last. If some plants of these two last sorts are planted under frames, on a moderate hot-bed in october, they will be fit for use in april, which will prove acceptable to those who are lovers of Lettuce, and being covered by glasses, will render them tender. In saving these seeds, the same care should be taken to preserve only such as are very large and well cabbaged, otherwise the seeds will degenerate, and be good for little.

The Red Capuchin, Roman, and Prince Lettuces are pretty varieties, and cabbage very early, for which reason a few of them may be preserved, as may also some of the Aleppo, for the beauty of its spotted leaves; though very few people care for any of these sorts at table, when the other more valuable ones are to be obtained; but in a scarcity, these may supply the place pretty well, and these sorts are very proper for soups. The seeds of these must also be saved from such as cabbage best, otherwise they will degenerate, and be good for little.

In saving seeds of all these sorts of Lettuce, you should observe never to let two sorts stand near each other, for by their farina mixing, they will both vary from their original, and partake of each other; and there should be a stake fixed down by the side of each, to which the stem should be fastened, to prevent their being broken, or blown out of the ground by wind, to which the Cilicia, Cos, and the other large growing Lettuces, are very subject when they are in flower. You must also observe to cut such branches of the large growing Lettuce as ripen first, and not wait to have the seed of the whole plant ripe together, which never happens, but, on the contrary, some branches will be ripe a fortnight or three weeks before others; and when you cut them, they must be spread upon a coarse cloth in a dry place, that the seeds may dry, after which you should beat them out, and dry them again, and then preserve them for use, being careful to hang them up where mice and other vermin cannot come at them; for if they do, they will soon eat them up.

[The wild sorts are easily raised from seed. Perennial Lettuce spreads at the roots, and may be increased by suckers.

LACTUCA. See *Chondrilla*, *Prénanthes*, *Sonchus*, *Uva*.]

Lactuca Agnina. See *Valeriana Locusta*.

[LADANUM. See *Cistus*, *Galeopsis*, *Lamium*.

LADIES BEDSTRAW. See *Galium*.

—— BOWER. See *Clematis*.

—— FINGER. See *Anthyllis*.

—— HAIR. See *Briza*.

—— MANTLE. See *Alchemilla*.]

—— SLIPPER. See *Cypripedium*.

—— SMOCK. See *Cardamine*.

—— [TRACES. See *Ophrys*.

LAETIA. (So named by Loeffing, from John de Laet of Antwerp, author of *Novus Orbis*, 1630.)

Lin. gen. n. 661. Reich. n. 718. Schreb. n. 895.

Loeffl. it. 190. Jacqu. amer. 167. Juss. 293.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Tiliaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: leaflets oblong, concave, reflex, coloured, withering.

COR. none, or else five petals.

STAM. *Filaments* numerous, capillary, rather shorter than the calyx. *Antbers* roundish.

PIST. *Germ* oblong, ending in a filiform *Style*, longer than the stamens. *Stigma* headed, depressed.

PER. *Berry* globose, three-sided, furrowed with three lines, one-celled, increased internally by a cartilaginous membrane.

SEEDS very many, nestling, cornered, coated with a pulpy aril.

Obs. *L. completa* is *pentapetalous*, with a *three-valved capsule*.

L. apetalá has a *fleshy berry*.

ESSENTIAL CHARACTER.

CAL. five-leaved. COR. five-petalled, or none. Fruit one-celled, three-cornered. Seeds with a pulpy aril.

SPECIES.

1. *Laetia apetalá*.

Lin. spec. 733. syst. 493. Reich. 2. 583. Jacqu. amer. 167. t. 108.

Guidonia Laetia. Loeffl. itin. 190.

Flowers apetalous, calyxes five-leaved reflex, leaves oval serrulate, smooth on both sides.

2. *Laetia completa*.

Lin. spec. 733. syst. 493. Reich. 2. 585. Jacqu. amer. 167. t. 183. f. 60.

Flowers petaloid complete.

3. *Laetia Guidonia*.

Swartz. prodr. 83.

Guidonia. Brown. jam. 249. t. 29. f. 4.

Flowers apetalous, peduncles one-flowered terminating, leaves oblong acuminate serrate pubescent.

4. *Laetia Thamnia*.

Swartz. prodr. 83. Linn. amoen. 5. 413.

Thamnia. Brown. jam. 245.

Flowers apetalous, peduncles many-flowered subdivided axillary, leaves oblong acute subcrenate shining.

DESCRIPTIONS, &c.

1. This is an upright tree, about twenty feet in height, putting out spreading branches from the very ground. From the tubercles and ends of these come out oval or obovate leaves, blunt, sometimes emarginate, the ferratures ferruginous, and scarcely visible; they are shining, petioled, alternate, an inch and half long. Common peduncles three-flowered, axillary, sustaining white flowers, like those of *Cratægus Oxycantha* or Hawthorn in appearance, size and smell.

Native of Carthagera in New Spain, flowering in april and may, and fruiting in august.

2. This is a small branching tree, about nine feet in height. Leaves subovate, somewhat oblong, blunt, tooth-crenate, sometimes emarginate, wrinkled, smooth, petioled, alternate. Common peduncles axillary, tomentose. Fruit reddish yellow, often obscurely triangular. Native of Carthagera, flowering in june, and fruiting in august and september^a.

3. In the fruit of this tree the lines between the valves are of a beautiful red colour, as well as the placenta. The filaments of the flower are very numerous. The tree grows to a considerable size, is esteemed a fine timber wood, and is much used in all sorts of buildings. Native of Jamaica, where it is called Rod-wood.

4. This shrub is found in the red hills, above the Angels, in the island of Jamaica, but it is not common there^b.

LAGERSTROEMIA. (So named by Linneus, from Magnus Lagerstroem of Gottenburgh, Director of the East India Company, who procured many curiosities from China, and gave them to the public.)

Lin. gen. n. 667. Reich. n. 725. Schreb. n. 910. (& p. 833.) Medicus æst. palat. 4. 253. Juss. 331.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Salicariæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, six-cleft, bell-shaped, rather acute, smooth, permanent.

COR. *Petals* six, ovate, obtuse, crisped, undulated, contorted: *claws* filiform, longer than the calyx, inserted into the receptacle.

STAM. *Filaments* very many, filiform, longer than the calyx, inserted into the calyx below the germ: the *fix*

^a Jacquin.

^b Browne.

exterior ones are twice the thickness of the rest, and are longer than the petals. *Antbers* oval, incumbent. *Pist.* Germ subglobose. *Style* filiform, length of the longer stamens. *Stigma* simple. *PER.* Capsule subglobose, crowned with the style on its bluntish top, six-furrowed, six-celled, six-valved, the dissepiments coalescing with the futures. *SEED* several, ovate, awl-shaped at the base, compressed, adhering to a central hexagonal pillar. *Schr.* *OBS.* The number of parts sometimes varies. It must be transferred to Icosandria Monogynia after Robinsonia.

ESSENTIAL CHARACTER.

Cal. six-cleft, bell-shaped. *Pet.* six, curled. *Stam.* very many, the six outer thicker than the rest, and longer than the petals.

SPECIES.

1. *Lagerstroemia indica*.
Lin. spec. 734. *synt.* 495. *Reich.* 2. 588. *mant.* 402.
Retz. obs. 1. 20. n. 61. α & 5. 25. *Lour.*
cochin. 340. *Thunb. jap.* 224. *Kampf. amoen.*
855. (Sibi) *Rumph. amb.* 7. 61. t. 28. (Tsjin-
kin.)
Velaga globosa. *Gærtn. fruct.* 2. 246.
Leaves alternate, ovate, calyxes naked even.
2. *Lagerstroemia speciosa*.
Munchausia speciosa. *Lin. syst.* 697. *Reich.* 3. 586.
Munch. haufv. 5. 357. t. 356. *Murr. prodr.*
prat. fig.
Leaves alternate, ovate, calyxes and leaves tomentose underneath.
3. *Lagerstroemia reginae*.
Roxb. corom. 3. 46. t. 65. *Retz. obs.* 5. 25. n. 63.
& 1. 20. n. 61. β. *Rheed. mal.* 4. 45. t. 20,
21.
Leaves opposite oblong smooth, calyxes grooved.
4. *Lagerstroemia parviflora*.
Roxb. corom. 3. 47. t. 66.
Leaves opposite oblong, smooth above, downy underneath, calyxes grooved.

DESCRIPTIONS, &c.

1. The trunk of this small tree is about a fathom high or somewhat more, smooth all over. Branches alternate, somewhat angular, flexuose, rigid, spreading. Branchlets four-cornered. Leaves alternate, subsessile, on the twigs ovate, on the branches oblong, obtuse, entire, nerved, stiffish, from half an inch to an inch in length. Flowers in a decomposed, trichotomous, naked, spreading panicle at the ends of the twigs. Calyx inflated, hexagonal, green, five-parted, segments ovate, upright. Corolla purple; claws inserted between the segments of the calyx; borders ovate, the whole of them curled. Filaments flesh-coloured, the length of the claws, some of them resembling the pistil, thicker and longer than the others. Anthers round, minute, yellow. Germ superior, ovate, white. Style purple, longer than the stamens. Stigma blunt. Capsule ovate, with very many seeds^a.

Linneus says that this tree is the size of a Pomegranate; that the leaves are opposite, but sometimes alternate, subsessile, oblong, quite entire, smooth; the floral leaves roundish; that the flowers are flesh-coloured, in a loose terminating thyrse, on trifid or three flowered pedicels; the petals on long claws, six in number, curled and waved like the mesentery^b.

Retzius observes, that the leaves are very smooth, veined, ovate, emarginate, some lanceolate, acute, from an inch to an inch and half in length; that the calyxes are smooth and brown; and the claws of the petals capillary, the length of the limb.

Loureiro remarks, that the bark of the trunk is smooth and even; the branches straight, weak and spreading; the leaves small, waved, smooth, sessile; the flowers rose-coloured, very handsome, in large racemed corymbs. Calyx with a hexagon tube, and a six-cleft border, which is much more probable, than that it should be five-parted, as Thunberg makes it, unless by accident.

The *Velaga globosa* of Gærtner is probably the same with this. He describes the capsule as globular,

^a Thunberg.

^b Mant.

smooth, chartaceous, thin, six-celled, six-valved, bay-brown, with a five-cleft calyx at the base; the valves marked on the outside with a depressed longitudinal line; receptacle columnar, half the length of the capsule. Seeds about eight in each cell, winged, incumbent downwards, rufescent except the base, which is dark brown, shining, and furnished with a club-shaped cavity for receiving the nucleus.

Native of the East Indies, China, Cochinchina and Japan. Linneus gave it the generic name, because we first became acquainted with it in Europe by means of Lagerstroem, who was a great patron of Natural History, and had it from China.—It was introduced here in 1759, by Hugh Duke of Northumberland; and it flowers from august to october^c.

2. If this be the same with *Munchausia speciosa*, it is a small tree, with round, smooth and even branches. Leaves petioled, ovate or ovate-oblong, acuminate, quite entire, smooth, paler underneath. Raceme terminating, compound, upright. Native of China^d.

3. Trunk erect. Branches horizontal, spreading. Bark smooth, rust-coloured. Young shoots angular, with the angles winged as in *L. indica*. Leaves opposite or nearly so, short-petioled, oblong, entire, smooth, four or five inches long, and about two broad. Stipules none. Panicles terminating, pyramidal, rigid, about a span long. Peduncle round, smooth. Pedicels short, rigid, three-flowered. Bractes few, small, falling. Flowers much larger, and much more beautiful than those of *L. indica*: colour in the morning that of a pale rose, growing deeper through the day, and acquiring a purple tinge. Calyx inferior, on the outside beautifully grooved into trapezoid figures. Corolla as in *L. indica*. Stamens all of the same size, inserted into the calyx. Native of the East Indies; on many woody mountains of the northern parts of the Circars, where it grows to a tree of a middling size; flowering during the hot season, and ripening the seeds in august.

It is very beautiful when in flower, and well deserves a conspicuous place in our stoves. We know not of any use that this tree is put to by the natives.

4. Trunk erect, with a smooth ash-coloured bark. Branches very numerous, the large and lower spreading, the smaller nearly erect. Leaves opposite, or in numbers from scabrous tubercles, very short-petioled, oblong, above smooth and shining, below covered with a whitish down, entire, from two to four inches long, and one or two inches broad. Stipules none. Peduncles terminating, and from the axils of the exterior leaves, erect, round, smooth, bearing in general from three to six flowers; or the whole extremity of the branchlet may be called a large leafy panicle. Flowers small, white. Capsule smooth, oval, size of a small nutmeg, three or four-celled, three or four-valved. Seeds winged.

This is a small tree, a native of the Circar mountains. It flowers during the hot season, and the seeds are ripe in august and september. The wood is used by the natives for various economical purposes; but neither the beauty of the flowers, nor the appearance of the tree recommend it for ornament on a footing with the others^e.]

LAGOECIA. (From *λαγως*, a hare, and *ομος* the form. So named by Linneus, because it is called in Lemnos *Lagochymeni*, or hare's-form according to Bellonius.)

Lin. gen. n. 285. *Reich.* n. 306. *Schreb.* n. 399.
Gærtn. t. 23. *Juss.* 227.

Cuminoides. *Tournef.* t. 155.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Umbellatae* or *Umbelliferae*.

GENERIC CHARACTER.

CAL. Involucre universal eight-leaved: leaflets feather-toothed, ciliated, reflex; containing the umbellule.

Involucre proper four-leaved: leaflets hair-feathered; involving a single footstalk shorter than the leaflet itself.

Perianth proper five-leaved, hair-many-cleft, superior.

^c Hort. kew.

^d Reichard.

^e Roxburgh.

COR. *Petals* five, two-horned, shorter than the calyx.
STAM. *Filaments* five, capillary, length of the corolla.
Anthers roundish.

PIST. *Germ* roundish, below the receptacle of the perianth. *Style* length of stamens. *Stigmas* two: the one truncated.

PER. none.

SEEDS solitary, ovate-oblong, crowned by the perianth.

OBS. *The alternate seed is abortive.*

ESSENTIAL CHARACTER.

Invol. universal and partial. *Pet.* bifid. *Seeds* solitary, inferior.

SPECIES.

1. *Lagoecia cuminoides*. *Wild or Bastard Cumin*.
Lin. spec. 294. *fyst.* 244. *Reich.* 1. 571. *hort.*
diff. 73. *upf.* 52. *mat. med.* 70. *Murr. prodr.*
146. *Sabb. hort.* 4. t. 55. *Gärtner. fruct.* 1. 103.
Plenck. ic. 153.

Cuminum sylvestre. *Dod. pempt.* 300. *Lob. adv.*
330. *Ger.* 908. *emac.* 1067. 1. *Park. theat.* 372. 3.
Raii hist. 402. *Camer. epit.* 519. *Gesn. epist.* 50.
—capitulis globosis. *Baub. pin.* 146.—primum
valde odoratum globosum. *Baub. hist.* 3. 23.

Umbelliferis affinis. *Mor. hist.* 3. f. 9. t. 13. f. ult.
Umb. t. 1. f. 13.

DESCRIPTION, &c.

This is an annual plant, about a foot high. The leaves resemble those of Honeywort (*Cerinth*). The flowers are collected into spherical heads at the extremity of the stalks, and are of a greenish yellow colour.

[The fruit is small, pedicelled, ovate-acuminate, crowned with aciliate calyx, villose, one seed only ripening, the other abortive and fixed laterally to the apex of the other, like a withered scalelet. The fertile seed is of a dusky black colour, sprinkled all over with hoary villose hairs, convex on one side, with five capillary raised whitish streaks, flattish on the other, with three very slender streaks, marking out the place of the abortive seed; which is constantly and easily found, when the fruit is well softened in water^a.

Native of the Levant. Cultivated in 1708, by the Dutchess of Beaufort. It flowers in June and July^b.]

PROPAGATION AND CULTURE.

Sow the seeds in autumn on a warm border, soon after they are ripe; or if they be permitted to scatter they will come up of themselves. When the seeds are sown in the spring, they commonly remain in the ground a year, and sometimes two or three years before they grow.

LAGOPUS. See *Trifolium*.

[LAGUNÆA. (From *Andreas Laguna*, a Spanish physician and botanist in the sixteenth century. He translated *Dioscorides* into Spanish with a comment, and writ several treatises on plants and medicine.)

Lin. gen. *Scrb.* n. 1128.

Laguna. *Cavan. diff.* 3. 173. t. 71. f. 1. *Juss.* 273.

Solandra. *Murr. in comm. gott.* 1784. p. 21. t. 1. *Cavan. diff.* 2. 55.

Triguera. *Cavan. diff.* 1. 41.

Class. 16. 6. *Monadelphia Polyandria*.

Nat. order of *Columnifera*.—*Malvaceæ*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, bell-shaped, somewhat cornered, half-five-cleft, permanent. (deciduous, *Cav.*)

COR. *Petals* five, ovate-oblong, obtuse, spreading, affixed to the base of the tube of the stamens.

STAM. *Filaments* several, (25—30), conjoined into a tube below, in the top and sides of the tube receding from it and free. *Anthers* roundish.

PIST. *Germ* ovate-oblong. *Style* thread-shaped, longer than the stamens, five-cleft at the tip: *divisions* spreading; (or undivided.) *Stigmas* headed.

PER. *Capfule* ovate-oblong, somewhat five-cornered, five-celled, five-valved: *partitions* contrary.

SEEDS some, roundish-three-sided.

OBS. *Solandra*. *Murr. Cal.* five-cleft. *Stigmas* five.

Laguna. *Cav. Cal.* five-toothed, bursting on one side. *Stigma* one to five-rayed or five-toothed?

^a Gærtner.

^b Hort. kew.

The genus *Hibiscus* shows that both had better be conjoined than separated. S.

ESSENTIAL CHARACTER.

Cal. simple, five-cusped. *Style* simple. *Stigma* peltate. *Capf.* five-celled, five-valved.

SPECIES.

1. *Lagunæa aculeata*. *Prickly Lagunæa*.
Cavan. diff. 3. 173. t. 71. f. 1.
Stem prickly-tomentose, leaves deeply many-parted, flowers axillary, solitary.
2. *Lagunæa Solandra*. *Maple-leaved Lagunæa*.
Solandra lobata. *Murr. in comm. gott.* 1784. 6. 20.
t. 1. *Cavan. diff.* 2. 55. & 5. 279. t. 136. f. 1.
Triguera aterifolia. *Cavan. diff.* 1. 41. t. 136. f. 1.
Hibiscus Solandra. *Ait. hort. kew.* 2. 455. *L'Herit. stirp. nov.* 103. t. 49.
Leaves subcordate three-cusped serrate, flowers corymbed.
3. *Lagunæa ternata*. *Three-leaved Lagunæa*.
Solandra ternata. *Cavan. diff.* 5. 279. t. 136. f. 2.
Stem herbaceous villose, lower leaves ternate, with the middle leaflet very long, upper leaves subbistate, flowers axillary, solitary.

DESCRIPTIONS, &c.

1. Stem round, tomentose, armed with small upright prickles, somewhat branched, a foot and half high. Leaves alternate, shorter than the petioles, very deeply divided into three or more ferrate-toothed segments; the middle one more lengthened than the others, seeming to be curled. Flowers on short peduncles. Calyx tomentose, oblong-ovate, terminating in five very short awl-shaped points, bursting on one side to the middle when the corolla expands, and deciduous. Corolla yellow, twice as long as the calyx, spreading. Filaments short, scattered over the whole surface of the tube. Stigma red, peltate, scarcely standing out. Capfule oblong-acuminate, five-cornered, tomentose. Seeds kidney-form, black. Native of Coromandel near Pondichery, where it is called *Cattacacheree* by the inhabitants^a.

2. This plant is about two feet high, and hirsute. Stem upright, round, stiff, the thickness of a goose quill, hirsute with horizontal hairs, where the branches spring knobbed. Branches many, from top to bottom, alternate, spreading, subflexuose, red towards the base on the inside; the lower about a hand in length, and more remote, the upper about a foot and nearer, the internodes being scarcely an inch long. Stipules in pairs, linear-awl-shaped, spreading very much, permanent, at the base of the petioles and peduncles. Leaves roundish-cordate, unequally ferrate, five-nerved, convex, acuminate, three-lobed except the lowest leaves of the branches, which are undivided; they are hirsute, hanging down obliquely, with the apexes of the lobes recurved and entire, alternate, petioled; the uppermost very much wrinkled, and sinuated between the lobes; those below the axils of the stem very large. Petioles round, flattened a little above, gibbous at the base, hirsute, spreading, as long as the leaves. Flowers corymb-racemed at the ends of the stem and branches. Peduncles at first close, forming a sort of umbel and short, but afterwards separating, and becoming an inch in length, viscid, round, ending in a joint thicker at top. Calyx half the length of the corolla, obscurely ten-angled, pubescent, permanent; segments lanceolate, spreading, bent in at top. Corolla purplish-white, truly one-petalled, with a short cylindrical tube; limb five-parted, spreading, the parts ovate-oblong, blunt, somewhat concave, marked with lines, obliquely contracted at the base. Stamens somewhat shorter than the corolla. Stigma composed of five small divaricating threads, and as many white villose little heads. Capfule oblong, swelling with five flexuose grooves, tubercled, smooth at the base, tomentose above, ending in a point, five-celled, the valves when ripe divaricating to the very base, lanceolate, acuminate, winged on the inside with the partition, the central pillar setaceous, echinate at the base and permanent. Seeds many, in a double row, black and subtriangular^b.

^a Cavanilles.

^b Murray.

L A G

According to Monf. L'Heritier, it has the habit of *Napæa*, and the root is annual. He joins it with *Hibiscus*, because it agrees in all points with that genus, especially in the pericarp, and the simplicity of the calyx is not of itself sufficient to make it of a distinct genus. See his description, &c. under *Hibiscus Solandra*.

Murray on the contrary makes it a *Solandra*, and Cavanilles has described it under the name of *Triguera*, from *Trigueros* a Spanish botanist.

It was found in the Isle of Bourbon by Commerfon; introduced into the Paris garden about the year 1774, and into Kew garden in 1786 by Mr. Zier^c. See *Hibiscus Solandra*, which is the same plant.

3. Root round, not very fibrous. Stems branched at bottom, herbaceous, a foot high, villose, as is the whole plant. Leaves distant, alternate, on filiform petioles shorter than the leaf: lower ternate, with ovate-linear unequal leaflets, the middle one very long: upper cordate, subhastate-lanceolate, longer, quite entire. Stipules short, deciduous. Flowers lateral, solitary, peduncled; peduncles longer than the petiole, upright, jointed near the flower, thickened. Calyx deeply cut into five lanceolate very acute segments, and permanent. Capsule within the calyx, ovate-acuminate, with three seeds in each of the five cells. Seeds black, kidney-form, rugged, with very small tubercles. Native of Senegal, where it was found by Adanson^d.

PROPAGATION AND CULTURE.

The same with those species of *Hibiscus* which come from hot countries. The second sort ripens the seeds in England, and may be increased by them.

LAGURUS. (From *λαγως*, a hare, and *ουρα*, a tail.)

Lin. gen. n. 92. Reich. n. 98. Schreb. n. 123.

Gertn. t. 1. Juss. 30.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume one-flowered, bivalve: valves long, linear, spreading, very thin, each ending in a villose awn.

COR. bivalve, thicker than the calyx: valve exterior longer, terminated by two small upright awns: a third awn from the middle of the back of the same valve, reflex-twisted. Valve interior small, sharp.

Nectary two-leaved: leaflets lanceolate, obtuse, gibbose at the base. S.

STAM. Filaments three, capillary. Anthers oblong.

PIST. Germ top-shaped. Styles two, setaceous, villose. Stigmas simple.

PER. none. Corolla grows to the seed.

SEED solitary, oblong, covered, awned.

ESSENTIAL CHARACTER.

Cal. two-valved, with a villose awn. Cor. having on the outer petal two terminating awns, and a third dorsal one twisted back.

SPECIES.

1. *Lagurus ovatus*.

Lin. spec. 119. Juss. 123. Reich. 1. 226. hort. cliff. 25. upf. 20. Gertn. fruct. 3. t. 1. Schreb. gram. 143. t. 19. f. 3. Barr. ic. 116. f. 1, 2.

Alopecurus. Ger. 81. emac. 87.—genuina. Park. theat. 1166. n. 1.

Gramen alopecuroides, spica rotundiore. Baub. pin. 4. theat. 56. Raii hist. 1265. n. 6.

Gr. spicatum tomentosum longissimis aristis donatum. Scheuch. gram. 58.

DESCRIPTION, &c.

This is an annual grass, growing to the height of a foot or eighteen inches, and even more, very soft and hoary, as are also the leaves and spikes. These are about two inches long and almost round, beset with soft hairs of a pale straw colour.—The corolla when ripe is more rigid than the calyx, and protects the seed; which is ovate, acuminate at both ends, on one side convex and smooth, on the other concave, with a raised streak in the middle, bay-coloured^e.

Native of the South of Europe, France, Italy, Sicily, Portugal. Ray observed it in Narbonne, Italy about Baiæ; and Sicily, in sandy grounds, lower and smaller

^c Hort. kew.

^d Cavanilles.

^e Gartner.

L A M

than is described above.—It was cultivated here in 1640, according to Parkinson^f.

LAGURUS. See *Andropogon*.

Lagurus cylindricus. Imperata Cyrill. Arundo Forsk. See *Saccharum sericeum*.

LAMB'S LETTUCE. See *Valeriana*.

LAMIUM (of Pliny: q. lamia larvata. Lin. The flowers being shaped like a mask.—Quod ad lamas nascatur. Dict. from its growing in sloughs.)

Lin. gen. n. 716. Reich. n. 774. Schreb. n. 971.

Tournef. t. 85. Juss. 113.

Orvala. Lin. gen. n. 715. Papia. Mich. 17.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of Verticillatæ.—Labiata, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, wider above, five-toothed, awned, nearly equal, permanent.

COR. one-petalled, ringent. Tube cylindric, very short. Border gaping. Throat inflated, compressed, gibbous, marked on each edge with a reflex toothlet.

Upper lip arched, roundish, obtuse, entire. Lower lip shorter, obcordate, emarginate, reflex.

STAM. Filaments four, awl-shaped, covered beneath the upper lip, two of them longer. Anthers oblong, hairy.

PIST. Germ four-cleft. Style filiform, length and situation of the stamens. Stigma two-cleft, sharp.

PER. none. Calyx open, and bearing in its bosom the seeds, which are flat at top.

SEEDS four, short, three-sided, convex on one side, truncated on both sides.

ESSENTIAL CHARACTER.

Cor. upper lip entire, vaulted; lower two-lobed: throat with a reflex toothlet on each side.

SPECIES.

1. *Lamium Orvala*. Baum-leaved Archangel.

Lin. spec. 808. Juss. 534. Reich. 3. 48. Allion. pedem. n. 99. Curt. magaz. 172. Krock. files. n. 924. Mill. fig. t. 158.

L. melissæfolium. Mill. dict. n. 5.

L. pannonicum. Scop. carn. n. 699. t. 27. Ger. emac. 703. f. 4.

L. maximum sylvaticum alterum. Baub. pin. 231. Raii hist. 561. Mor. hist. f. 11. t. 11. f. 7.

L. montanum saxatile ferme glabrum, flore amplo purpureo, labio inferiore crenulato. Till. pis. 92. t. 34. f. 1.

Galeopsis maxima pannonica. Clus. hist. 2. 35. t. 36. Park. parad. 387. f. 7.

G. max. flore magno rubro. Baub. hist. 3. 583.

β. Orvala garganica. Lin. spec. 807.

Papia garganica. Mich. gen. 20. t. 17.

Leaves cordate, unequally and sharply serrate, corollas inflated at the throat, calyx coloured.

[2. *Lamium lævigatum*. Smooth Archangel.

Lin. Juss. 534. Reich. 3. 48. Hall. helv. n. 270. Krock. files. n. 926. Pallas itin. 3. 34. Sabb. hort. 3. t. 34. Pluk. phyt. t. 198. f. 1.

L. purpureum non foetens, folio oblongo. Baub. pin. 231.

L. rubrum. Blackw. t. 183.

Galeopsis flore purpurascens majore, folio non maculato. Baub. hist. 3. 321. Raii hist. 559. 2.

Leaves cordate wrinkled, stem even, calyxes smooth, the length of the tube of the corolla.

3. *Lamium rugosum*. Wrinkled Archangel.

Ait. hort. kew. 2. 297.

L. subrotundo rugoso folio, flore rubro. Bocc. mus. 35. t. 23.

Leaves cordate acute wrinkled, hairy with the stem, whorls many-flowered, a single bristle-shaped tooth at the throat.]

4. *Lamium garganicum*. Woolly Archangel.

Lin. spec. 808. Juss. 534. Reich. 3. 49. Till. pis. 93. t. 34. f. 2. Aët. par. 1717. 272. t. 9. Thunb. jap. 246. Lour. cochinch. 365. Krock. files. n. 925.

Leaves cordate pubescent, throat of the corolla inflated, tube straight, a double tooth on each side.

^f Hort. kew.

- [5. *Lamium maculatum*. *Spotted Archangel*.
Lin. spec. 809. *fst.* 534. *Reich.* 3. 49. *mant.* 411.
Leers herborn. n. 448. *Villars dauph.* 2. 382.
Krock. files. n. 927.
L. alba linea notatum. *Baub. pin.* 231. *Raii hist.*
 560.—& *maculatum*. *Baub. pin.* 231.
L. Plinii montanum Campoclarensum. *Col. ecphr.*
 1. 190. t. 192. *Park. theat.* 606. n. 6.
Leaves cordate acuminate, whorls ten-flowered.]
6. *Lamium album*. *White Archangel, or Dead Nettle*.
Lin. spec. 809. *fst.* 534. *Reich.* 3. 50. *hort. cliff.*
 314. *fl. succ. n.* 520. *mat. med.* 149. *Huds. angl.*
 255. *Wither. arr. ed.* 3. 526. *Lightf. scot.*
 308. *Curt. lond.* 2. 45. 115. *Relb. cant. n.* 430.
Hall. belv. n. 271. *Scop. carn. n.* 700. *Pollich.*
pal. n. 555. *Neck. gallob.* 252. *Fl. dan. t.* 594.
Allion. pedem. n. 103. *Villars dauph.* 2. 384.
Krock. files. n. 928. *Blackw. t.* 33. *Zorn. ic.*
 80. *Berg. phyt.* 161. *Fl. rust. t.* 26. *Ger.*
 566. *emac.* 702. 1. *Raii hist.* 559. *syn.* 240.
L. alb. non foetens, fol. oblongo. *Baub. pin.* 231.
L. vulgare alb. f. Archangelicum flore albo. *Park.*
theat. 605 3.
Galeopsis. *Cam. epit.* 865. *Riv. mon. t.* 62. f. 1.—
 f. *Urtica iners*, floribus albis. *Baub. hist.* 3. 322.
Urtica iners, f. *L. primum*. *Dod. pempt.* 153. 1.
Leaves cordate acuminate serrate petioled, whorls twenty-
flowered.
- [7. *Lamium bifidum*.
Cyrill. neap. 1. 22. t. 7.
L. parvum, flore albo, cum labio superiori bifido.
Till. pis.
Leaves cordate acuminate, upper lip of the corolla bifid,
segments divaricated.]
8. *Lamium purpureum*. *Purple Archangel*.
Lin. spec. 809. *fst.* 534. *Reich.* 3. 50. *hort. cliff.*
 314. *fl. succ. n.* 521. *Huds. angl.* 255. *Wither.*
arr. ed. 3. 527. *Light. scot.* 309. *Curt. lond.*
 1. 42. *Relb. cant. n.* 431. *Hall. belv. n.* 272.
Scop. carn. n. 701. *Pollich. pal. n.* 556. *Neck.*
gallob. 252. *Fl. dan. t.* 523. *Allion. pedem.*
n. 104. *Villars dauph.* 2. 385. *Krock. files.* n.
 929. *Berg. phyt. t.* 119. *Fl. rust. t.* 25.
L. purp. foetidum, fol. subrotundo. *Baub. pin.* 230.
Mor. hist. f. 11. t. 11. f. 9.
L. rubrum. *Ger.* 568. 4. *emac.* 703. 3. *Raii hist.*
 559. *syn.* 240.
L. vulgare folio subrotundo flore rubro. *Park. theat.*
 605. 1. & 587. 11.
Galeopsis minor. *Riv. mon. t.* 62. f. 2.
 G. 2. *Tabern.* 545.
Urtica iners altera. *Dod. pempt.* 153. 2.
Leaves cordate blunt petioled.
- [9. *Lamium dissectum*. *Cut-leaved Archangel*.
Wither. arr. ed. 3. 527.
L. purpureum β. *Huds. angl.* 255.
L. hybridum. *Villars dauph.* 1. 251. 2. 385.
L. rubrum minus foliis profunde incis. *Raii syn.*
 240. *hist.* 560. *Petiv. brit. t.* 33. f. 3. *Pluk.*
phyt. t. 41. f. 3.
Leaves deeply and irregularly cut, stem-leaves decur-
rent.
10. *Lamium molle*. *Pellitory-leaved Archangel*.
Ait. hort. kew. 2. 297.
L. parietariae facie. *Mor. blæs.* 278.
Leaves petioled, slightly toothed, lower cordate, upper
ovate.
11. *Lamium amplexicaule*. *Perfoliate Archangel*.
Lin. spec. 809. *fst.* 534. *Reich.* 3. 51. *hort. cliff.*
 314. *fl. succ. n.* 522. *Huds. angl.* 255. *Wither.*
arr. ed. 3. 527. *Lightf. scot.* 309. *Curt. lond.*
 2. 46. 109. *Relb. cant. n.* 432. *Hall. belv.*
n. 273. *Scop. carn. n.* 702. *Gron. virg.* 66. 89.
Neck. gallob. 252. *Fl. dan. t.* 752. *Pollich.*
pal. n. 557. *Allion. pedem. n.* 105. *Villars*
dauph. 2. 384. *Krock. files.* n. 930. *Berg. phyt.*
 163.
L. folio caulem ambiente majus & minus. *Baub. pin.*
 231. *Raii hist.* 560. *syn.* 240. *Mor. hist. f.* 11.
 t. 11. f. 12. *Petiv. brit. t.* 33. f. 4.
Galeopsis fol. caulem ambiente. *Rivin. mon. t.*
 63.

- Morus gallinæ fol. hederulae alterum*. *Lob. ic.*
 1. 463. 2.
Alfine hederula altera. *Ger.* 493. 4. *emac.* 616. 4.
A. hed. folio major. *Park. theat.* 762. 2.
Floral leaves sessile embracing blunt.
12. *Lamium multifidum*.
Lin. spec. 809. *Reich.* 3. 51. *hort. cliff.* 315.
Pallas. itin. 1. 168.
L. orientale, fol. eleganter laciniatis. *Tournef. cor.*
 11. *Comm. rar. t.* 26.
Leaves many-parted.]
13. *Lamium moschatum*. *Musky Archangel*.
Mill. dict. n. 4.
L. orientale, nunc *moschatum*, nunc *foetidum*, magno
 flore. *Tournef. cor.*
Leaves cordate blunt smooth, floral leaves sessile, calyxes
deeply gashed.

DESCRIPTIONS, &c.

1. [Root perennial. Stem from half a yard to almost a yard in height, hispid, branched, hollow, upright, frequently tinged with red towards the bottom. Leaves petioled, acuminate, veined, often red underneath, smooth and shining above. Whorls distant, from six to twelve or fourteen-flowered. Calyx sessile, much wider than the tube of the corolla, smooth except at the edge and along the nerves, where it is villose. Corolla an inch long, of a deep red colour: tube straight, cylindric, pale: upper lip obscurely serrate or entire, ciliate: throat wide, marked with purple lines: lower lip trifid or rather bifid, emarginate, spotted, ferrulate; the lateral segments bent down and dotted. The smell of the plant is very strong and unpleasant^a: but the size and brilliant colour of the flowers have secured it a place in the garden, which no other species of this genus has a claim to.

Native of Italy, Silesia, Hungary.—Cultivated in 1629^b, according to Parkinson, who names it Hungary Dead-Nettle, or Dragon Flower.

β. *Orvala garganica* is a mere variety of this, owing its apparent difference to having grown in a moist shady place^c.

2. Root perennial, somewhat creeping. Stems purple, a foot high and more, almost upright, brittle, little if at all hirsute, branched. Root-leaves on very long petioles, floral leaves on very short ones or none, petioles of the stem-leaves of a middling length, all serrate, scarcely pubescent, acuminate, not spotted. Whorls of flowers separated by leaves, ten in a whorl at most. Calyxes smooth or very slightly pubescent, veined, the teeth ending in an awn or bristle, the upper one more upright, the lower ones bent down, the middle ones straight, all double the length of the belly. Corollas more than half an inch long, three lines wide, upright: upper lip blunt, slightly pubescent, bright purple and convex on the outside; concave, white and smooth on the inside: tube short, curved inwards: throat wide, frequently sprinkled with red dots: lower lip purple, round, spreading, serrate, small, seldom bent back at the sides^d. Linneus observes that the calyx resembles that of the preceding.

Native of Italy, Silesia, Siberia.—Introduced in 1775 by Drs. Pitcairn and Fothergill^e.

3. This plant is about a foot high. The flowers are larger than those of the common sort, and of a deep rose-colour. Sometimes in cold situations it produces curled leaves, round like those of the Lime-tree^f. Native of Italy. Cultivated 1766, in the botanic garden at Oxford^g.]

4. Root perennial, creeping. Stems many, thick, a foot high. Leaves on long petioles. Flowers in whorls from the upper joints, large, of a pale purplish colour, continuing in succession most part of the summer.

[Stems pubescent. Leaves bluntish, sublobed and serrate, pubescent, but not rugged. Whorls many-flowered. Tube of the corolla straight, and not curved at the base as in the others. Upper lip four-toothed, spreading, not compressed^h.

^a Krock.^b Hort. kew.^c Linn.^d Krock.^e Hort. kew.^f Boccone.^g Hort. kew.^h Linn.

Loureiro describes the stem as perennial, upright, and three or four feet high; the leaves as unequally notched; the flowers as white-purple, in whorled spikes, with the upper lip entire, and the lower two-lobed.

Native of Italy, Silesia, China, CochinChina and Japan.—Cultivated in 1729, by Mr. Miller¹.

5. This is very nearly allied to the next sort, or common White Archangel. It differs from it in having a purple corolla, the leaves marked with a longitudinal white area, which however disappears in summer; the petioles not widened; flowers five on each side, not ten; two teeth on each side of the throat, the upper one bristle-shaped^k.

Villars remarks, that the leaves vary much in their size and manner of notching, and that they are not always acuminate, but even blunt: the calyx also varies, being sometimes smooth, sometimes villose. He even doubts whether this, the Orvala and lævigatum be distinct species.

Native of Germany, Silesia, Dauphiné, Italy.

6. Root perennial, white, jointed, creeping. Stems numerous, a foot high, upright, unbranched, slender at bottom, hollow, slightly hairy; sometimes almost smooth; in exposed situations reddish purple; the young shoots weak and ascending. Leaves resembling those of the great stinging Nettle, unequally serrate; the tips of the little teeth red, and turned inwards, somewhat hirsute on both sides: the uppermost frequently coloured; those about the root often small, round and crenated. Petioles broader at the base, longer on the leaves next the root. Flowers in whorls, from ten to twenty together, yellowish white, sometimes tinged with red. Calyxes sessile, ribbed, hirsute, slightly decangular, with setaceous teeth, on the lower side at bottom marked with purple spots, and supported by a short linear bracte. Corolla twice as long as the calyx: tube nearly the length of the upper lip and crooked, anteriorly prominent below, and pressed in above; on each side the throat there are generally two little teeth; upper lip hairy, with a slight notch, and sometimes indented, distinguished by two elevated lines, which unite at the crown; lower lip bifid, turned back, slightly notched, and spotted at bottom. Filaments villose at top, a little thickened, and bent inward. Anthers dark blackish purple, with yellow pollen. Germ surrounded by a gland. Seeds three-cornered, with a little appendage at bottom^l.

It is common in hedges, on banks, and by road sides, and in corn fields; flowering in april and may, when it is much resorted to by bees, for the honey secreted into the bottom of the tube by the gland that surrounds the base of the germ^m. Hence it is called in some counties *Bee-nettle*, which is corrupted into *Bean-nettle*. It has also the name of *Dea-nettle*, which is only a corruption of *Dead-nettle*, and that, as also *Blind-nettle*, means a Nettle without stings. In German it is *Taube Nessel*: in Dutch, *Doove Netel*, *Hondsnetel*: in Danish, *Doednelde*, *Doevnelde*, *Blindnelde*: in Swedish, *Blind nesla*, *Pipnesla*: in French, *Lamier*, *Lamion*, *Ortie blanche* or *morte*, *Archangelique*: in Italian, *Ortica morta* or *bianca*: in Spanish, *Ortiga muerta* or *blanca*, *Lamio blanco*, *Arcajelica*: in Portuguese, *Ortiga morta* or *branca*, *Lamia branca*.

This plant has a disagreeable smell when bruised. *Phalæna Chrysis*, or burnished-brass Moth feeds on it. Linneus says, the leaves are eaten in Sweden as a pot-herb in the spring. No cattle, however, seem to touch it, and having a strong creeping perennial root, it should be extirpated, which is not difficult.

The flowers have been celebrated in uterine fluors, and also in disorders of the lungs. The bruised leaves have been recommended to discuss tumours. But it is discarded from modern practice.

7. Stems a foot or eighteen inches high, procumbent, tinged with red at bottom, and branched there; branches opposite, divaricating; middle stem higher than the rest, about one fourth of its height, has a pair of leaves with two barren calyxes; at the top three or four whorls. Leaves petioled, crenate, the notches

after the fourth or fifth more deeply cut, lengthened out at the end, but blunt, slightly hirsute on the surface. Flowers in the upper whorls two together, almost an inch long, resembling those of the preceding in every thing except in the upper lip, which is divided into two revolute divaricate segments: the colour is white. The root-leaves are cordate, blunt and petioled. It flowers in february and march, is an annual plant, and a native of Italy near Naples, several places on the coast of Tuscany, and in the island of Elba. It may perhaps be a hybridous plant produced from the preceding and succeeding speciesⁿ.

8. Root annual, fibrous. Stems several, at bottom weak and branched, near the top almost naked, and frequently coloured, six inches or more in height, hollow, and somewhat rugged. Leaves veiny, slightly hairy or downy but not rough; the lower roundish-heart-shaped, notched, smaller, on longer petioles; the upper ovate-heart-shaped, bluntly serrate, on short petioles, growing close together, bent back and lying over each other, often of a reddish colour, especially at the ends. Petioles dilated at the base. Flowers growing thickly together on the tops of the stalks in whorls, six together in a double row. Calyx striated, hairy; teeth nearly equal, acuminate or awned. Corolla red, the lower border of the throat whitish with purple streaks; bright red in open situations, pale in the shade, and sometimes white: edge of the throat on each side furnished with two teeth, the uppermost pointed like a thorn, the lowermost blunter with a spot on it; the upper lip ovate, concave, slightly villose, entire; the under two-lobed, spreading a little and spotted. Seeds pale brown, triangular, truncate, margined.

This as well as the White Dead Nettle is common in most parts of Europe, in the same situations, and is a common weed in gardens and other cultivated land; flowering a great part of the year, from april to september, and in mild seasons both earlier and later. Bees resort also to this for the honey-juice in the flowers. According to Linneus, it is boiled in Upland, a province of Sweden, as a pot-herb. The leaves and flowers have formerly been used in medicine, but are not regarded in the present practice^o.

The leaves vary much in form, size and toothing. Hence several varieties, one or two of which are considered by some as distinct species.

9. The leaves of this are deeply cut, so as almost to be lobed, and taper down into the foot-stalks^p. Cultivated in a garden, it preserves its difference: and it is found with the preceding. It is annual, and not unfrequent, according to Ray in kitchen gardens and fallow fields^q. Mr. Curtis observed it on a bank between Pimlico and Chelsea, and Mr. Robson about Darlington. Monf. Villars seems to regard it as intermediate between *purpureum* and *amplexicaule*. Mr. Miller's specimens are in the Banksian herbarium.

10. This is easily distinguished by the leaves being almost entire, neither serrate nor crenate. The flowers are white. Its native place is not known. It is perennial and flowers in april and may. Cultivated in 1683, by Mr. James Sutherland^r.

11. Root annual, fibrous, whitish. Stems several, nine inches or a foot high, nearly upright, smooth, with a few opposite branches. Lower leaves petioled, roundish heart-shaped, deeply crenate, veiny, slightly hairy; the petioles grooved on the upper part, and longer than the leaves; the upper ones semiorbicular, or in opposite pairs, broad heart-shaped, sessile, inclosing but not embracing the stem, with five scolloped lobes, the middle one as broad again, and with three leaflets at the end; the lateral ones small. Flowers in whorls, to fifteen, perfect and imperfect; the latter short, a little longer than the calyx, the tips very red, hairy and closed: the former four times the length of the calyx, bright purple, generally breaking out from the top of the stem. Calyx scarce manifestly striated; the teeth equal, acuminate, hirsute. The imperfect corollas are very hairy, of a bright red co-

¹ Hort. kew.

^k Linn.

^l Curtis.

^m Ibid.

ⁿ Cyrill.

^o Curtis.

^p Woodward.

^q Withering.

^r Hort. kew.

lour, and have the mouth closed. The tube of the perfect ones is very long, cylindrical, and nearly upright: the edge of the throat is turned back, spotted, and has two little teeth; the neck is a little prominent; the upper lip hirsute and nearly entire; the lower turning down, and divided into two lobes, which are spotted with purple. Seeds covered with white spots and having a little appendage. These perfect flowers are like those of *L. purpureum*, but much longer.

The imperfect flowers appear in february and march; the perfect ones not till may or june: if the progress of the flowers be watched, it will be found that the corolla is gradually enlarged in different flowers, till the weather being sufficiently warm, they come forth fully formed. The imperfect flowers are neither rudiments of the long ones, nor are they barren, for they have both stamens and pistil. Linneus informs us, that this plant scarcely ever produces perfect flowers in Sweden. Here then we have a process somewhat similar to what is observed in the Violet, and some other plants, in which perfect seed is produced, although the corolla be not perfectly formed; analogical to what happens in the animal kingdom, when a Caterpillar previous to its changing into the chrysalis state has been deprived of its proper quantity of food, the Fly comes forth perfect in all its parts except the wings, which are crumpled up and never expand.

This plant is common in most parts of Europe, in cultivated ground, on light soils, and on walls. The old name of it is *Great Henbit*.

12. Native of the Levant.]

13. Annual. Leaves marked with white, somewhat like those of the autumnal Cyclamen; they are smooth, and in dry weather have a musky scent, but in wet weather are fetid. Stems eight or nine inches high. Flowers white appearing in april. The seeds ripen in june.

[From Mr. Miller's specimens in the Banksian herbarium it seems to be a variety of *Lamium album*. The leaves are less acuminate, and the indentures are fewer and blunter.

PROPAGATION AND CULTURE.

Several of the species are considered as weeds rather than garden plants. The White Archangel propagates itself copiously by the roots, and the Purple by the seeds. Several which are here given as species, (2, 3, 5, 7, 9, 10, 13) are probably no more than varieties, and will increase of themselves in the same ways.]

1. Baum-leaved Archangel rarely produces good seeds in England, nor do the roots propagate very fast. The best time to part and remove these roots is october, but they must not be transplanted oftener than every third year, if they are required to flower strongly. It is hardy, and thrives best in a soft loamy soil.

[According to Mr. Curtis, it grows readily, but flowering about the end of april, it is then apt to be injured, if cold winds prevail, unless it be placed in a sheltered part of the garden.]

4. This may be propagated by seeds, but as the roots spread greatly, when it is once obtained it will spread fast enough.

[*LAMIUM*. See *Galeopsis*, *Melittis*, *Prasium*, *Scrophularia*, *Scutellaria*, *Stachys*.]

LAMPSANA. See *Crepis*, *Hyoseris*, *Lapsana*.

[*LAMPUJUM*. See *Anomum Zerumbet*.]

LANARIA, (of Pliny, woolly or wool-bearing.)

Lin. gen. Schreb. n. 1745. Ait. hort. kew. 3. 510.

Argolafia. Juss. 60. (αργος λασιος, albus hirsutus.)

Class. 6. 1. Hexandria Monogynia.

Nat. order of Ensatæ. Irides, Juss.

GENERIC CHARACTER.

CAL. none.

COR. one-petalled, subcampanulated, outwardly wool-haired. Tube short. Border six-parted: divisions linear-lanceolate, somewhat spreading.

STAM. Filaments six, filiform, shorter than the corolla, inserted into the base of the divisions. Anthers ovate, somewhat incumbent.

PIST. Germ inferior, top-shaped, outwardly woolly. Style filiform, upright, length of the stamens. Stigmas three-cleft.

PER. Capsule ovate, three-celled.

SEEDS few.

ESSENTIAL CHARACTER.

Cor. superior, woolly, longer than the filaments; border six-parted, somewhat spreading. *Caps.* three-celled.

SPECIES.

1. *Lanaria plumosa. Woolly Lanaria.*

Ait. hort. kew. 1. 462.

Hyacinthus lanatus. Lin. spec. 455. Reich. 2. 81.

DESCRIPTION, &c.

Root fibrous. Herb woolly, upright. Stem-leaves sessile, nerved, smooth. Flowers terminating, in a close panicle. Spathes simple. It has the habit of *Wachendorfia*.

Native of the Cape of Good Hope. Introduced in 1787, by Mr. Francis Masson^b.]

LANIFERA ARBOR. See *Bombax*.

LANTANA, (à lentore, from the pliability of the branches.)

Lin. gen. n. 765. Reich. n. 824. Schreb. n. 1026.

Gertn. t. 56. Juss. 109. Medic. æt. palat. 3.

phys. t. 16. Camara. Plum. 2. Dill. elth. 56, 57.

(The Brazilian name). *Morobatindum. Vaill.*

act. gall. 1722.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of Personatæ. Vitices, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, very short, converging, obscurely four-toothed, tubular.

COR. one-petalled, nearly equal. Tube cylindric, slender, longer than the calyx, rather oblique. Border flat, unequally four-cleft, obtuse.

STAM. Filaments four, very small, placed in the midst of the tube of the corolla, very slender, of which two are a little higher. Anthers roundish.

PIST. Germ roundish. Style filiform, short. Stigma refracted, sharp downwards like a hook, and as it were obliquely growing to the tip of the style.

PER. Drupe roundish, one-celled.

SEED. Nut round-pyramidal, three-celled: the lowest cell sterile. Kernels solitary, oblong.

OBS. The involucre is many-leaved; the common receptacle of the fructifications oblong; collecting the flowers which are often very unequal.

ESSENTIAL CHARACTER.

Cal. obscurely four-toothed. *Stigma* hook-refracted. *Drupe* with a two-celled nucleus.

SPECIES.

[1. *Lantana mista. Various-flowered Lantana.*

Lin. syst. 566. Reich. 3. 164. Medic. æt. palat.

3. 227. Dill. elth. 64. t. 56. f. 64. (Camara).

Comm. hort. 1. 51. t. 78. (Viburnum).

Leaves opposite ovate acute hairy, stem prickly at bottom, flowers in roundish heads, bractes lanceolate.]

2. *Lantana trifolia. Three-leaved Lantana.*

Lin. spec. 873. Reich. 3. 164. Swartz obs. 236.

Brown. jam. 268. 1. Sloan. jam. 2. 82. t. 195.

f. 3. Raii dendr. 30. (Periclymenum). Plum.

gen. 32. ic. 70. (Camara). Vaill. æt. par. 1722.

203. (Morobatindum).

Leaves tern or quatern, elliptic, serrate, wrinkled above, villose beneath, stem unarmed, spikes oblong, imbricated.

[3. *Lantana viburnoides.*

Vahl symb. 1. 45.

Charachera viburnoides. Forsk. descr. 116.

Leaves opposite ovate-lanceolate, stem unarmed, flowers in beaded spikes, involucre lanceolate.]

4. *Lantana annua. Annual Lantana.*

Lin. spec. 874. syst. 566. Reich. 3. 165. hort. upf.

180. mant. 419.

Leaves opposite and tern cordate rugged, stem unarmed, spikes oblong.

5. *Lantana stricta.*

Swartz prodr. 92. Sloan. jam. 2. 84. t. 195. f. 4.

(*Periclymenum*).

L. angustifolia. Mill. dict. n. 10.

Leaves opposite oblong-lanceolate acute, stem unarmed, heads roundish, bractes ovate-lanceolate squarrose.

^a Jussieu.

^b Hort. kew.

- [6. *Lantana Radula*.
Swartz prodr. 92.
Leaves opposite ovate acute ferrate wrinkled rough, hirsute beneath, stem almost unarmed rough, heads oblong, bractes ovate acute.]
7. *Lantana Camara*. Various-coloured *Lantana*.
Lin. spec. 874. syst. 566. Reich. 3. 165. hort. cliff. 349. Swartz obs. 237. Medic. in aet. pal. vol. 3. phys. p. 228. Brown. jam. 268. n. 2. Sloan. jam. 2. 83. n. 15. (Periclymenum). Dill. elth. 65. t. 56. f. 65. Plum. gen. 32. ic. 71. f. 1. (Camara). Pluk. phyt. t. 114. f. 4. (Viburnum).
Leaves opposite, stem unarmed branched, flowers beaded-umbelled leafless.
- [8. *Lantana odorata*. Sweet-scented *Lantana*.
Lin. syst. 566. Reich. 3. 166. Herm. prodr. 384. (Viburnum). Plum. gen. 32, ic. 60. t. 71. f. 2. (Camara).
Leaves opposite and tern elliptic wrinkled, stem unarmed, heads squarrose, bractes lanceolate, peduncles shorter than the leaf.]
9. *Lantana recta*. Upright *Lantana*.
Ait. hort. kew. 2. 351.
Leaves opposite oval wrinkled, stem unarmed, heads squarrose, bractes oblong, peduncles longer than the leaf.]
10. *Lantana involucrata*. Round-leaved *Lantana*.
Lin. spec. 874. syst. 566. Reich. 3. 166. amoen. 4. 319. Swartz obs. 238. Medic. in aet. palat. 3. phys. 223. 273. t. 16. Brown. jam. 268. n. 3. Sloan. jam. 2. 39. Raii dendr. 31. (Periclymenum). Plum. gen. 32. ic. 71. f. 2. (Camara). Pluk. phyt. t. 114. f. 5. Herm. prodr. 384. (Viburnum).
L. lanuginosa. Mill. dict. n. 3.
Leaves opposite and tern rhomb-ovate blunt wrinkled tomentose, stem unarmed, heads squarrose, bractes ovate.
- [11. *Lantana melissæfolia*. Baum-leaved *Lantana*.
Ait. hort. kew. 2. 352. Dill. elth. 66. t. 57. f. 66. (Camara).
L. flava. Medic. aet. pal. 3. phys. 225.
Leaves opposite ovate-oblong villose soft, stem prickly, spikes hemispherical, bractes shorter by half than the tube.]
12. *Lantana scabrida*. Rough *Lantana*.
Ait. hort. kew. 2. 352.
Leaves opposite ovate-elliptic rugged, stem prickly, spikes hemispherical, bractes shorter by half than the tube lanceolate acute.]
13. *Lantana aculeata*. Prickly *Lantana*.
Lin. spec. 874. syst. 566. Reich. 3. 166. hort. cliff. 498. upf. 380. mant. 419. Gært. fruct. 1. 267. Medic. aet. pal. 3. phys. 231. Brown. jam. 269. n. 4. Curt. magaz. 96. Vaill. aet. par. 1722. 203. (Morobatindum). Pluk. phyt. t. 233. f. 5. (Viburnum).
Leaves opposite ovate subcordate softish underneath, stem prickly, bractes of the heads linear-wedge-form.]
- [14. *Lantana aurea*. Golden-flowered *Lantana*.
L. splendens. Medic. in aet. pal. 3. phys. 226.
Camara Scorodoniae folio splendente, flore croceo. Dill. elth. 67. t. 57. f. 67.
Leaves ovate-oblong shining, stem obscurely quadrangular almost unarmed, corollas golden changing to saffron-colour.]
15. *Lantana sanguinea*. Bloody-flowered *Lantana*.
Medic. in aet. pal. 3. phys. 229.
Leaves ovate-acuminate, stem quadrangular prickly, corollas saffron changing to blood-red.]
16. *Lantana inermis*.
Mill. dict. n. 2. Sloan. cat. jam. 164.
Stem unarmed, leaves lanceolate toothed alternate, flowers in corymbs.
17. *Lantana urticæfolia*.
Mill. dict. n. 5. Sloan. cat. jam. 163.
Stem prickly, leaves oblong-cordate serrate opposite, flowers in corymbs.
18. *Lantana bullata*.
Mill. dict. n. 7. Sloan. cat. jam. 163.
Leaves oblong-ovate acuminate serrate wrinkled alternate, flowers in heads.
19. *Lantana alba*.
Mill. dict. n. 8.
Stem unarmed, leaves ovate serrate, flowers in axillary sessile heads.

[These are mostly shrubs, very few being herbaceous. The branches are quadrangular. The leaves opposite by pairs, except in a few cases, where there are three or four together; ovate and wrinkled. Flowers aggregate in axillary and peduncled heads: each flower bracted.]

1. This is about five feet in height. Trunk round or roundish, with an ash-coloured bark. Branches at top, several, short, ash-coloured, and from these several others, a long span or a foot in length, quadrangular, green, hairy. Leaves resembling those of *Lamium album*, above bright green and somewhat shining, beneath paler, deeply notched, much wrinkled, and very rugged. Whilst the flower is yet closed, the lower part of the border appears of a pale red; when it opens, the tube and upper part of the border are saffron-coloured, but become reddish, and finally dark-red: this change of colour begins from the circumference and finishes in the centre. Hence the flowers in an umbel not being all opened at once, the middle appears of a saffron yellow, and the circumference of a red colour. From this change of colour and diversity in the same umbel, this plant has obtained the name of *mista* or *mixed*.

It differs from *L. aurea* in the leaves not being elliptic but acuminate, not slightly but deeply crenate, not even but much wrinkled, not dark green and shining very much, but pale green. The flowers also of that only change from a golden to a saffron colour; whereas these change from a saffron colour to a dark red^a.

Native of America. Cultivated in the Eltham garden before 1732.

2. Stem shrubby, branched, round, rugged: branches upright, round, rugged. Leaves petioled, three together seldom four, ovate-lanceolate, acuminate, nerved, the upper surface almost smooth, beneath somewhat hirsute, hoary. Spikes peduncled, subimbricate with lanceolate, entire, distinct and somewhat hirsute bractes; when young in a head, but afterwards an inch in length. Flowers pale blood-red and not changeable. Peduncles axillary, opposite, solitary, the length of the leaves, striated, angular, hirsute. Calyx very minute, three-toothed, with the hinder tooth a little longer. Corolla salver-shaped, irregular: tube narrow, gibbous in the middle: border almost flat, oblique, four-cleft; upper segment almost upright, roundish; the lateral ones only half the size, spreading; the lower broader, waving; throat yellow. Anthers extremely minute, brownish green. Style the length of the tube. Fruit a berried drupe, red, roundish. Nucleus hard, two-celled^b.

Linneus doubts whether this be specifically distinct from *L. annua*, and Medicus does not settle the difficulty. It is clear however that this is a shrub.

Native of the West Indies. Introduced before 1733, by William Houstoun, M. D. (from the Havannah). His specimen is in the Banksian herbarium. It flowers from June to September^c.

Mr. Miller says, there is a variety with white flowers, and leaves not quite so round, entire on the edge.

[3. This is a shrub, with hairy, rugged branches. Leaves acute, ferrate, wrinkled above, very rugged, softly villose beneath, an inch and half long. Petiole dilated above. Peduncles opposite, the length of the leaves. Leaflets of the involucre lanceolate, a little shorter than the head. Corolla pubescent^d.

Native of Arabia, on mount Barah^e.

4. Stem hispid, quadrangular, striated, somewhat woody. Leaves cordate, rugged, petioled, opposite but sometimes three together. Spikes hemispherical, opposite, with lanceolate shorter bractes, and gradually lengthened out. Corollas flesh-coloured, with a yellow throat, not changeable. Fruits purple.

Reichard is of opinion, that the plant described by Medicus (p. 222.) under the name of *Lantana trifolia*, is this species.]

It is an annual plant, rising with a strong, upright, rough stalk, near three feet high, dividing towards the

^a Medicus and Dillenius.

^d Vahl.

^b Swartz.

^e Forfk.

^c Hort. kew.

top, into two or three erect branches. Leaves ferrate, by fours at each joint, a little woolly on their under side. Peduncles by pairs or three at a joint, from two to three inches long, sustaining a thick spike of large purple flowers; which are succeeded by large, purple, succulent, eatable berries.

Sent by Dr. Houstoun (before 1733) from La Vera Cruz, and received since from the north side of Jamaica. [Mr. Miller's specimen is in the Banksian herbarium.

5. Stem square. Leaves very long and narrow, an inch and half in length, and one-third of an inch wide in the middle, toothed, of a dark colour above, whitish underneath, on their surface like those of Sage, on very short petioles. Peduncles axillary, two inches long.

Native of Jamaica, on mount Diablo^f. Dr. Houstoun sent the seeds to Mr. Miller in 1730. The specimen is in the Banksian herbarium.

6. This is a shrub, native of the West Indies^g. It has its trivial name from the extreme ruggedness of the leaves.

7. Stem shrubby, a fathom in height, angular, somewhat rugged. Branches subdivided, almost upright; rugged, quadrangular. Branchlets quadrangular, grooved, strict, hirsute, dark green. Leaves on long petioles, decussated, spreading, ovate, acuminate, serrate, nerved, hirsute. Flowers terminating. Peduncles shorter than the leaves, solitary, angular, grooved, hirsute. Bractes broad-lanceolate, concave, entire, pubescent. Calyx three-toothed, minute, the hinder tooth larger. Corolla funnel-form^h: the tube and border at first pale sulphur-coloured, changing to saffron, light red and pale crimsonⁱ: tube round at the base, gibbous, widening towards the throat: border four-cleft, nearly equal; hinder segment almost upright, subcordate; lower broader, emarginate in the middle; the lateral ones entire, spreading, waved at the edge: throat contracted. Anthers minute, whitish. Germ oblong. Style shorter than the tube. Drupe the size of red Currants, black-green, with a nauseous smell; nucleus two-celled^k.

Medicus doubted whether this were different from *L. mista* or not, but after three years scrupulous observations he determined in the affirmative, from the difference in the leaves and colour of the flowers. The leaves in *L. mista* are ovate-acuminate, deeply crenate, much wrinkled, rugged and pale green. In *L. Camara* they are more orbiculate, less crenate, softer, and dark green. The flowers of *L. mista* become finally dark purple: those of *L. Camara* are much paler, and change to tawny.

Native of the West Indies. Cultivated in 1691, in the royal garden at Hampton Court. It flowers from april to september^l.

8. Leaves very much wrinkled, subtomentose. Bractes lanceolate^m.

Native of the West Indies. Cultivated in 1758, by Mr. Miller. It flowers from may to novemberⁿ.

9. Native of Jamaica. Cultivated by Mr. Miller in 1758. It flowers from june to august^o.

10. Stem round, woody, branched, scarcely hairy. Branches opposite. Leaves petioled, scarcely crenate, membranaceous, rigid, less wrinkled than in the others above, nerved beneath, tomentose. Leaves seldom if ever in threes. Peduncles short. Spikes rounded. Bractes large, sessile, cordate-ovate, with six or more nerves running in right lines from the centre, all a little excavated their whole length, and tomentose. Calyx very small, whitish. Flowers of the same colour as in *L. trifoliata*, but the yellow colour of the throat soon changes to white; and hence the flower is whitish with a pale flesh-coloured margin.

This species agrees in many respects with *L. trifolia*, as to the flowers: but in that the spikes are very long, the bractes ovate-lanceolate, the flower unchangeable; in this the spikes are ovate, the bractes cordate-ovate, the flowers changeable, with the throat whitish.

In other respects they differ more essentially: for the stem of *L. trifolia* is square; the leaves large, ovate-acuminate or lanceolate and ferrate: whereas in *L. involucrata* the stem is round; and the leaves small, orbiculate, and scarcely crenate^p.

Native of the West Indies. Mr. Miller says, it was sent him from La Vera Cruz by Dr. Houstoun; but his specimen in the Banksian herbarium is marked Havana, 1731. It was cultivated here earlier, viz. in 1690, in the royal garden at Hampton Court. It flowers from may to july^q.

Scopoli thinks it not improbable that his *Zappania odoratissima* (Insubr. 34. t. 15.) may be the same with this. But whether it be or not, he removes it from the genus *Lantana*, because it is not didynamous, and has not either a four-toothed calyx, or a drupe for a fruit.

11. This is lower than most of the others, being seldom more than two feet in height. Stem round, ash-coloured, not hairy. The younger branches have bundles of hairs spreading out at top. Leaves opposite, but sometimes in threes, petioled, cordate-acuminate, more deeply crenate than in the other species; wrinkled, rugged and green on the upper surface; paler and tomentose-hairy underneath. Flowers axillary, with three peduncles, where there are three leaves. Bractes oblong, entire, tomentose-hairy, deciduous, differing in size. Colour of the corolla constant and always yellow^r.

Native of South America. Cultivated in 1732, by James Sherard, M. D. at Eltham^s.

12. Native of the West Indies: where it was found by Mr. Gilbert Alexander. Introduced in 1774. It flowers in september^t.

13. Stem ten feet high, an inch and half thick, square from top to bottom, armed with long, strong, reflex prickles, or rather thorns, for they cannot be torn off without injuring the wood. Leaves ovate-oblong or cordate-oblong, wrinkled, rugged, crenate. Peduncles long, with fewer and shorter prickles. Colour of the tube of the corolla pale red: border lemon-coloured, changing into an orange and sometimes deeper colour^u. Drupe berried, soft, ovate, dark, very smooth, shining: flesh pulpy, thin: stone bony, like a grape-seed, thick and blunt above, with two lateral lobules verging downwards, elongated below into a compressed conical beak; three-celled, the two upper cells fertile, the lower void. Seeds single, obovate, remarkably acuminate downwards, compressed a little, white with a brown area at top^v.

Native of the West Indies. Cultivated in 1692, in the royal garden at Hampton Court. It flowers from april to november^w.]

In our stoves it grows five or six feet high, and sends out many branches. Leaves about an inch and half long, and three-quarters of an inch broad, hairy, on short foot-stalks. Two peduncles arise from the axils, towards the ends of the branches, from each joint, one on each side; they are near two inches long, and are terminated by roundish heads of flowers; those on the outside are first of a bright red or scarlet, and change to a deep purple; those in the centre are of a bright yellow, and change to an orange colour.

[14. Stem seven feet high, at first obscurely quadrangular, but afterwards round, striated, very thinly beset with prickles, and not hairy. Leaves ovate-oblong or almost elliptic, bluntly notched about the edge, very short stiff hairs at the upper surface, the lower rugged with a harsh down, dark green and shining as if they were varnished. Peduncles short. Bractes deciduous, short. Colour of the flower yellow, becoming golden and then saffron-coloured.

It differs from *L. trifolia* and *involucrata* in having oblong deciduous bractes, in the colour of the flowers, the form and splendour of the leaves; from *L. melisifolia* in having the leaves shining and scarcely crenate, the flowers of a deeper dye and more changeable^x.

^f Sloane.

^g Swartz.

^h Ibid.

ⁱ Medicus.

^k Swartz.

^l Hort. kew.

^m Linn.

ⁿ Hort. kew.

^o Ibid.

^p Medicus.

^q Hort. kew.

^r Medicus.

^s Hort. kew.

^t Ibid.

^u Medicus.

^v Gartn.

^w Hort. kew.

^x Medicus.

Native of the Bahama islands. Cultivated in the Eltham garden in 1732^a.

15. Stem six feet high, the first year quadrangular and armed with many strong reflex prickles. After a certain time the stem becomes round and unarmed, but the branches continue quadrangular and prickly. Leaves wrinkled, dark green. Flowers before they expand of a deep blood-red colour, but afterwards the tube only keeps this hue; the border, especially the upper surface, being saffron-coloured, then scarlet, and finally the same colour with the tube. Drupe small, black.

This may be distinguished from all the other species by the very deep colour of the flower, and the property of losing its spines. Something like this happens to *L. mista* and *Camara*, but it is easily distinguished from these by the leaves and colour of the flowers. It is the handsomest of all the sorts, and deserves to be esteemed, for the brightness of its colour, the pleasant though powerful smell, and its flowering through the whole summer^b.

It may perhaps be only a variety of *L. aculeata*. The species have certainly been too much multiplied. I have added the following from Miller.]

16. This rises with a slender, smooth, shrubby stalk, about four feet high, dividing into many quadrangular branches which grow erect. Leaves about two inches long, and an inch broad, hoary on their under side, on short petioles. Peduncles very slender, axillary, alternate, towards the ends of the branches, supporting small heads of pale purple flowers, which are succeeded by small purple berries, each having one seed. The seeds were sent by Dr. Houstoun from La Vera Cruz, and since from Jamaica.

17. This rises with a woody branching stem four or five feet high. Leaves acute. At the ends of the branches the flowers come out in round bunches, on slender upright peduncles, about an inch long. Flowers yellow, in looser bunches or heads than the other sort. Sent from La Vera Cruz by Dr. Houstoun, in 1731. His specimen is in the Banksian herbarium. Perhaps it may not be different from *L. melissæfolia*.

18. This rises with a branching shrubby stalk about four feet high, covered with a dark brown bark. Leaves small, an inch long, and half an inch broad, very much veined on their upper side, pretty close to the branches. Flowers terminating, on short peduncles, in close small heads; these are white and make little appearance.

19. Stalk shrubby, slender, three or four feet high, dividing into many slender smooth square branches. Leaves small, opposite. Flowers axillary, at every joint, small, white, in close heads; they come out by pairs, and sit close to the branches. Sent by Dr. Houstoun from Campeachy.

PROPAGATION AND CULTURE.

These plants are all easily propagated by cuttings, except the fourth, which being an annual plant, can only be propagated by seeds. They may also be propagated by seeds, which several of the sorts produce in England, and the others may be easily procured from the West Indies, where there is a greater variety of these plants growing naturally, than is at present known in Europe; they are all called Wild Sage, by the inhabitants of the British islands, but they do not distinguish the sorts. These seeds should be sown in pots filled with light earth, and plunged into a hot-bed of tan; the reason for my advising them to be sown in pots, is, because the seeds frequently remain long in the ground before they vegetate; therefore if the plants should not come up the same year, the pots should be placed in the stove in winter, and the following spring plunged into a new hot-bed, which will bring up the plants. When these are fit to remove they should be each planted in a small pot, and plunged into another hot-bed, observing to shade them till they have taken new root; then they should have air admitted to them every day, in proportion to the warmth of the season, to prevent their being drawn up with weak stalks; afterwards they must be treated

^a Hort. kew.

^b Medicus.

in the same manner as other plants from the same country, till they have obtained strength; then they may be removed into an airy glass-case, or a dry stove, where they may have a large share of air in warm weather, but protected from the cold. This is necessary for the young plants, which should not the first year be exposed to the open air, but afterwards they may be placed abroad in the warmest part of summer, and in winter placed upon stands in the dry stove, where they will continue long in flower, and many of the sorts will ripen their seeds; but in winter they should be sparingly watered, for much moisture will rot their roots.

If they are propagated by cuttings, the best time for planting them is in July, after the plants have been exposed to the open air for about a month, by which time the shoots will be hardened so as to be out of danger of rotting with a little moisture. These cuttings should be planted in small pots filled with light earth, and plunged into a moderate hot-bed; and if they are screened from the violence of the sun in the middle of the day, they will be rooted in about six weeks, when they must be hardened gradually to bear the open air, and afterwards treated as the old plants.

[*LANTANA*. See *Varronia* and *Viburnum*.

———— *africana*. See *Spielmannia*.

———— *salvifolia*. See *Buddlea*.]

LAPATHUM. See [*Chenopodium*, *Polygonum*, *Potamogeton*, *Rheum*,] *Rumex*, [*Spinacia*.

LAPPA. See *Arctium* and *Xanthium*.

LAPPAGO, (of Pliny. So named from its similitude to *Lappa*, which is from λαβειν to take hold.)

Lin gen. Schreb. n. 131. *Tragus*. Hall. 203.

Cenchrus. *Lin. & Diet.*

Class. 3. 2. *Triandria Digynia*.

Nat. order of *Gramina*.

GENERIC CHARACTER.

CAL. Glume three-valved: valves alternate; ovate-oblong, acuminate, ventricose, cartilaginous, striated, mucronated, one-flowered.

COR. bivalve: the larger valve oblong, ventricose, acute, membranaceous, opposite the calycine glume, and of the same length; the smaller one lanceolate, received by the margins of the larger in the bosom of the calycine glume.

Nectary two-leaved: leaflets lanceolate, acute.

STAM. Filaments three, capillary, length of the floscule. Anthers roundish.

PIST. Germ ovate. Styles two, capillary. Stigmas villose.

PER. none. Corolla includes the seed.

SEED single, ovate, compressed.

OBS. The spikelet is ovate, compressed; three-or-four-flowered: all the flowers received by the calycine valve, and hermaphrodite: sometimes there is a fifth floscule, calyculated in like manner, but imperfect.

It is singular that each floscule has its own calycine glume; and that the exterior valve of the corolla is directed inwards or towards the shaft of the spikelet, but the interior one is turned outwards; whence the corolla becomes inverse or resupine! S.

This Grass, which has been referred to the genera of *Cenchrus*, *Agrostis*, *Phalaris*, *Tragus*, &c. has been already described under *Cenchrus racemosus*.

LAPPAGO. See *Triumfetta* and *Urena*.

LAPPULA. See *Caucalis*, *Daucus*, *Myosotis*, *Triumfetta*.]

LAPSANA, (of Pliny, λαψανη of Dioscorides from λαψω, or λαπαζω, purgo: on account of its supposed efficacy as a purge.)

Lin. gen. n. 919. *Reich.* n. 998. *Schreb.* n. 1247.

Gertn. t. 157.

Lampfana. *Vaill. del. gall.* 1721. 8. 47, 48. *Tournef.* 272. *Juss.* 168.

Rhagadiolus. *Gertn.* t. 157.

Zacintha. *Gertn.* t. 157.

Class. 19. 1. *Syngenesia Polygamia Æqualis*.

Nat. order of *Compositæ Semiflosculosi*.—*Cichoraceæ*, *Juss.*

GENERIC CHARACTER.

CAL. Common calyculated; ovate, cornered: scales of the tube eight, equal, linear, hollow-calyculated, keeled, sharp;

sharp; of the base six, imbricated, small, the alternate one smallest.

COR. Compound imbricated, uniform: corollules hermaphrodite about sixteen, equal.

Proper one-petalled, ligulate, truncated, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ somewhat oblong. Style filiform, length of the stamens. Stigma bifid, reflex.

PER. none. Calyx ovate, converging.

SEEDS solitary, oblong, cylindrical-three-sided, striated. Down none.

REC. naked, flat.

OBS. *L. Zacintha* has a down to the seed: and so have some seeds of *L. Rhagadiolus*.

ESSENTIAL CHARACTER.

Cal. calyced, each of the inner scales channelled. Recept. naked.

SPECIES.

1. *Lapsana communis*. Common Nipplewort.

Lin. spec. 1141. Syst. 721. Reich. 3. 663. hort. cliff. 384. fl. suec. n. 710. hort. upf. 246. Gärtn. fruct. 2. 353. Huds. angl. 347. Wither. arr. ed. 3. 693. Curt. lond. 1. 59. Lightf. scot. 444. Relb. cant. n. 581. Hall. belv. n. 6. Scop. carn. n. 988. Neck. gallob. 334. Pollich pal. n. 757. Fl. dan. t. 500. Villars dauph. 3. 163. Krock. files. n. 1318. Berg. phyt. 229.

Lampsana. Dod. pempt. 675. 2. Ger. 231. 8. (Sonchus). emac. 255. Raii hist. 256. syn. 173. Petiv. brit. t. 14. f. 12. Lob. obs. 104. 1. ic. 1. 207. 1. Mor. hist. f. 7. t. 1. f. 9.—vulgaris. Park. theat. 810. 1. Soncho affinis *Lampsana domestica*. Baub. pin. 124. Calyxes of the fruit angular, peduncles slender very much branched.

2. *Lapsana Zacintha*. Warted Nipplewort.

Lin. spec. 1141. Reich. 3. 663. hort. cliff. 390. Gouan. hort. 417.

Zacintha verrucosa. Gärtn. fruct. 2. 358. *Chondrilla verrucaria*, foliis Cichorei viridibus. Baub. pin. 130.

Cichorium verrucatum, *Zacintha*. Clus. hist. 2. 144. *C. verrucarium*. Ger. emac. 289. 9.—f. *Zacintha*.

Park. theat. 778. 8. Raii hist. 255.

Endivia verrucaria. Mor. hist. 7. 1. 4.

Calyxes of the fruit torulose depressed blunt sessile.

[3. *Lapsana stellata*. Starry Nipplewort.

Lin. spec. 1141. Reich. 3. 663. hort. upf. 245. Sauv. monsp. 82. Gouan. hort. 417. D'Affo arrag. 778. Villars dauph. 3. 164.

Rhagadiolus stellatus. Gärtn. fruct. 2. 354.

Hieracium filiqua falcata. Baub. pin. 128.

H. stellatum. Baub. hist. 2. 1014. Ger. emac. 1625. Raii hist. 256.

H. falcatum f. *stellatum*. Park. theat. 795. 2.

Endivia filiquis falcatis f. *stellata*. Mor. hist. 7. 1. 5.

Calyxes of the fruit spreading all round, rays awl-shaped, stem-leaves lanceolate undivided.

4. *Lapsana Kölpinia*. Small Nipplewort.

Lin. syst. 722. suppl. 348.

Kölpinia linearis. Pallas. it. 3. 755. t. L. 1. f. 2.

Calyxes of the fruit spreading, rays spreading in a bow and muricated, leaves linear.]

5. *Lapsana Rhagadiolus*. Heart-leaved Nipplewort.

Lin. spec. 1141. Syst. 722. Reich. 3. 664. hort. upf. 245. Scop. carn. n. 990. Lour. cochinch. 481.

Rhagadiolus lapsanæ foliis. Tournef. cor. 36.

R. edulis. Gärtn. fruct. 2. 354.—*hieraciis* affinis. Baub. hist. 2. 1014.

Hieracium falcatum alterum. Raii hist. 256.

Calyxes of the fruit spreading all round, rays awl-shaped, leaves lyrate.

DESCRIPTIONS, &c.

[Authors are by no means agreed respecting this genus. Some would unite it with *Hyoseris*, others with *Crepis*. Haller and Gärtner regard *Hyoseris foetida* as a species of *Lapsana*. The latter places the second species, under the name of *Zacintha*; the third and fifth under that of *Rhagadiolus*. Pallas made a new genus of the fourth species under the name of *Kölpinia*.

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But there is no end of these differences in the Class Syngenesia.

1. Root annual. Stem upright, stiff, from two to four feet high, hollow, cylindrical or nearly so, striated, hairy, the hairs terminated by minute globules. Branches smooth. Leaves alternate, toothed, rough with hair; the lower ovate or ovate-lanceolate, on long petioles, the upper lanceolate, sessile, higher up linear, uppermost awl-shaped; petioles bordered, pinnatifid. Flowering-branches long, naked, or with one or two awl-shaped scales, much branched at the top, each branched one-flowered. Calyx rather cylindrical, smooth; scales of the outer lanceolate, closely embracing the base of the inner. Florets yellow, from fifteen to eighteen. Styles purplish, with a dark purplish green stigma^a. Receptacle sprinkled with depressed little teats, in other respects smooth and naked. Seeds acuminate downwards, obscurely angular, bald, yellowish, dropping spontaneously from the receptacle^b.

Common all over Europe in hedges, shady and waste place, and all cultivated ground; flowering during most of the summer months. Nature has amply supplied the want of that down to the seed with which most of this class are furnished, by the great abundance which every plant produces. It derives the English name from its supposed efficacy in curing sore nipples. Dr. Withering gives us the name of *Dock Cresses*, from Ger. emac. At Constantinople it is said to be eaten raw, just before it comes into flower^c.

2. Root-leaves lyrate, acute. Stem-leaves sagittate, embracing, toothed. Stem subdichotomous, striated, stiffish. Flowers sessile, pendulous whilst young. Corollas tawny underneath, yellow above. Outer row of the calyx upright; inner gibbous at the base, rufescent. Peduncles incrassated^d. Receptacle hollow-dotted, smooth. Seeds attenuated downwards, smooth, rufescent; the marginal ones curved a little, half embraced by the calycine leaflets; the central ones free, straight. Down bristle-shaped, very frequently toothletted, somewhat brittle, very white, with unequal rays, shorter by half than the seed. It is allied therefore to *Hedynois* by the calyx and seed, but differs from it in not having the seeds manifestly difform^e.

Native of the South of Europe. Cultivated in 1640, according to Parkinson^f.

3. This is an annual plant; the stems are inclined and branched; the leaves are toothed and sinuated; the flowers small^g. Receptacle very narrow so as to be scarcely any. Seeds awl-shaped, bald, involuted, somewhat difform: those of the ray eight, longer, spreading very much, slightly bowed, toothletted-prickly on the outside below the tip: those of the disk in pairs or threes; sickle-shaped, smaller, roughened over the whole back with stiff little bristles turned back^h.

Native of the South of France, Italy, and Spain. Cultivated here before 1633, according to Johnson in Gerarde's herbal. It flowers in June and Julyⁱ.

4. The whole plant resembles the preceding, but the seeds are curved inwards and echinated their whole length with bristle-shaped prickles; whereas those of *L. stellata* are straight and smooth^k. We have seen however by Gärtner's description given above, that the seeds of *L. stellata* also are prickly.

Native of Siberia and the Levant. Found in the desert of Astrachan by Pallas, and in Syria near Aleppo by Patrick Russell, M.D.—Introduced in 1788 by John Sibthorp, M.D. It flowers in July, and is annual^l.

5. Stem herbaceous, annual, a foot and half high, upright, round, striated. Leaves oblong, lyrate-toothed, with sharp segments. Flowers saffron-coloured, on subdivided, smooth, terminating peduncles. Some of the seeds have a hairy down, others none^m.

Scopoli observes that the fruit is singular, there being three or four roundish hard attenuated rays, bent down, which are the calycine scales involving the seed,

^a Curtis, Wither. Woodw. Mss.

^b Gärtner.

^c Curtis and Withering.

^d Linn.

^e Gärtner.

^f Hort. kew.

^g Villars.

^h Gärtner.

ⁱ Hort. kew.

^k Linn. suppl.

^l Hort. kew.

^m Loureiro.

and these adhere so firmly to the receptacle, as not to fall off even in dried specimens.

Gærtner remarks, that the seeds of the ray are almost straight, wholly smooth, terminated by a spinule which is curved inwards; those of the disk sickle-shaped, either pubescent with few villose hairs or smooth. He adds, that the seeds of *Rhagadiolus* cannot fairly be reckoned difform, because their difformity is merely accidental, and proceeds from the calycine involucre.

Native of Istria, the Levant and Cochinchina. Cultivated in 1739 by Mr. Miller. It flowers in June and July^a. Mr. Miller affirms that he received the seeds from Portugal.

PROPAGATION AND CULTURE.

The first is a common weed. If the seeds of the other sorts be permitted to scatter, the plants will come up better than if sown in the spring. They require no culture.

[LAPSANA. See *Crepis* and *Hyoseris*.

LARCH TREE and LARIX. See *Pinus*.]

LARKSPUR. See *Delphinium*.

LASERPITIUM, (of *Pliny*; q. lac serpitium, or juice expressed from the root of *Silphium*, Dict.)

Lin. gen. n. 344. Reich. n. 374. Schreb. n. 476.

Tournef. 172. Juss. 222. Gærtn. t. 85.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

GENERIC CHARACTER.

CAL. Umbel universal very large, with from twenty to forty rays: partial with a great many rays, flat.

Involucre universal many-leaved, small: partial many-leaved, small.

Perianth proper five-toothed, obscure.

COR. universal uniform: floscules all fertile.

Proper of five petals, which are inflex-emarginated, almost equal, spreading.

STAM. Filaments five, bristly, the length of the corolla. Anthers simple.

PIST. Germ roundish, inferior. Styles two, thickish, acuminate, distant. Stigmas obtuse, spreading.

PER. none. Fruit oblong, angulated with eight longitudinal membranes, bipartite.

SEEDS two, very large, oblong, femicylindric, flat on one side, on the other furnished at the back and margins with membranes, (four in all.)

OBS. The seed of *L. Siler* is furrowed, and without membranes. R.

ESSENTIAL CHARACTER.

Pet. bent in, emarginate, spreading. Fruit oblong, with eight membranaceous angles.

SPECIES.

1. *LasERPITIUM latifolium*. Broad-leaved Laserwort.

Lin. spec. 356. syst. 281. Reich. 1. 683. hort. cliff.

96. 1. fl. suec. n. 242. mat. med. 79. Hall. belv.

n. 792. Scop. carn. n. 320. Pollich pal. n. 283

Jacqu. austr. 2. 28. t. 146. D'Ass. arrag. 252.

Allion. pedem. n. 1312. Villars dauph. 2. 622

Krock. files. n. 419. Gouan illustr. 13. Rivin.

pent. t. 21. Plenck, ic. 179.

Libanotis latifolia altera f. vulgarior. Baub. pin. 157

—& latif. major, ejusd. Mor. hist. f. 9. t. 17. f. ord.

inf. 1.

L. latif. femine crisp. Mor. hist. 3. 320. t. 19. f. 1. 6.

L. Theophrasti major & minor. Ger. 857. f. 1, 2.

emac. 1010. f. 1, 2. Park, theat. 951. 1, 2. t. 952.

Raii hist. 427. n. 5, 7.

Seseli æthiopicum. Ded. pempt. 312. Clus. hist. 194.

—vulgare. Camer. epit. 513.

Thapsia officinarum. Dale pharm. 131.

Leaflets cordate gash-ferrate.

2. *LasERPITIUM trilobum*. Columbine-leaved Laserwort.

Lin. spec. 357. syst. 281. Reich. 1. 684. Jacqu.

vind. 48.

L. aquilegifolium. Jacqu. austr. 2. 29. t. 147.

Siler aquilegifolium. Gærtn. fruct. 1. 92. t. 22. Pluk.

phyt. t. 223. f. 7. Riv. pent. 64. Mor. umb. t. 1.

f. 81, 82.

S. trilobum. Crantz. austr. 186.

^a Hort. kew.

Angelica foliolis tripartitis, lobis superne incisis obtusis. Roy. lugdb. 104. Gron. orient. 85.

Ligusticum Rauwolfii fol. aquilegiæ. Baub. hist. 3. 14.

Libanotis latifolia, aquilegiæ folio. Baub. pin. 157.

prodr. 83. Park. theat. 952. n. 4. Raii hist. 438.

Seseli æthiopici aliud genus. Clus. hist. 195.

Leaflets three-lobed gashed.

3. *LasERPITIUM gallicum*. French Laserwort.

Lin. spec. 357. Reich. 1. 684. hort. cliff. 96. 5.

Gærtn. fruct. 2. 31. Villars dauph. 2. 622.

Ger. prov. 246. Allion. pedem. n. 1313. Baub.

pin. 156. Park. theat. 938. f. 1. Garid. aix.

t. 58.

LasERPITIUM. Ger. 853. emac. 1006.

L. e regione Massiliæ allatum. Baub. hist. 3. 137.

L. lobis latoribus, femine crisp. Mor. umb. t. 1.

f. 10, 10.—lob. angust. saturate virentibus. hist. 3.

321. f. 9. t. 19. f. 8.

β. *L. fol. angustioribus dilute virentibus conjugatim*

dispositis (plurifariam divisis). Moris. umb. 64.

Raii hist. 426.

L. tenuifolium. Riv. pent. 22.

Leaflets wedge-form forked.

[4. *LasERPITIUM filifolium*.

Lin. syst. 281. Jacqu. austr. 5. 52. app. t. 44.

Root many-forked, stem smooth, leaflets pinnatifid with

lanceolate segments.]

5. *LasERPITIUM angustifolium*. Narrow-leaved Laserwort.

Lin. spec. 357. Reich. 1. 684. hort. cliff. 96. 2.

Mor. hist. 3. 321. f. 9. t. 19. f. 9. Pluk. phyt.

t. 198. f. 4.

Leaflets lanceolate quite entire sessile.

6. *LasERPITIUM prutenicum*.

Lin. spec. 357. syst. 281. Reich. 1. 685. hort. cliff.

96. 4. Jacqu. austr. 2. t. 153. Villars dauph.

2. 624. Krock. files. n. 420.

L. gallicum. Jacqu. vind. 48. Scop. carn. n. 321.

L. felinoides. Crantz. austr. 182. Allion. pedem.

n. 1314.

L. daucoides prutenicum, viscoso femine. Breyn.

cent. 167. t. 84. Raii hist. 425. Mor. hist. 3. 321.

n. 15.

L. minus. Riv. pent. t. 23. Rupp. jen. 277. Hall.

goett. 177.

Leaflets lanceolate quite entire, the outmost united.

[7. *LasERPITIUM dauricum*.

Lin. syst. 282. Jacqu. hort. 3. t. 38.

Ligusticum ferulaceum. Allion. pedem. n. 1319. t. 60.

f. 1.

Stem spotted, leaflets pinnatifid acuminate.]

8. *LasERPITIUM peucedanoides*.

Lin. spec. 358. Reich. 1. 685. amoen. 4. 310.

Segu. veron. 3. 227. t. 7. Pluk. phyt. t. 96. f. 1.

Leaflets linear-lanceolate veined-striated distinct.

9. *LasERPITIUM Siler*. Mountain Laserwort.

Lin. spec. 357. syst. 282. Reich. 1. 685. hort. cliff.

96. 3. mat. med. 79. Hall. belv. n. 794. Scop.

carn. 322. Jacqu. austr. 2. 27. t. 145. Villars

dauph. 2. 627. Plenck, ic. 178. Blackw. t. 426.

Siler montanum. Dod. purg. 484. Ger. 892. emac.

1048. Park. theat. 909. f. 1. Mor. hist. 3. 276.

f. 9. t. 3. f. 2. Raii hist. 439. Crantz. austr. 185.

umb. 68. Allion. pedem. n. 1316.

Ligusticum. Dalech. Lugdb. 744.—quod Seseli offi-

cinarum. Baub. pin. 162.

β. *Ligusticum f. Siler mont. angustifolium. Baub. pin.*

162.

Leaflets oval-lanceolate quite entire petioled.

[10. *LasERPITIUM diffusum*.

Hall. belv. n. 795. t. 19. Crantz. umb. 67.

L. Halleri. Allion. pedem. n. 1315. Villars dauph. 2.

625.

L. Panax. Gouan. illustr. 13.

Panax asclepium femine foliofo. Baub. pin. 158.

Panaces asclepium alterum Dalechampii. Lugd. 740.

Leaves superdecompound, leaflets linear-awl-shaped some-

what hairy, universal involucre lanceolate membra-

naceous.

11. *LasERPITIUM lucidum*. Shining Laserwort.

Ait. hort. kew. 1. 345. Hall. belv. n. 796.

Leaves superdecompound linear-awl-shaped smooth, uni-

versal involucre pinnate.]

12. *LasERPitium Chironium*.
Lin. spec. 358. *Reich.* 1. 686. *Blackw. t.* 434.
Panax Pastinacæ folio. *Bauh. pin.* 156. *Mor. hist.*
f. 9. t. 17. f. 1.
Leaflets obliquely cordate, petioles hirsute.
13. *LasERPitium ferulaceum.* *Fennel-leaved Laserwort.*
Lin. spec. 358. *Reich.* 1. 686.
Cachrys orientalis. *Tournef. cor.* 23. *itin.* 2. 286. *fig.*
Leaflets linear.
- [14. *LasERPitium simplex.*
Lin. syst. 282. *Reich.* 1. 686. *mant.* 56.
Ligusticum simplex. *Allion. pedem. n.* 1324. *Villars*
dauph. 2. 618.
Scape naked leafless simple, leaves pinnate multifid acute
linear, umbel semiglobular.
15. *LasERPitium Aciphylla.*
Lin. syst. 282. *suppl.* 181. *Forst. flor. austral. n.* 139.
Gärtn. fruct. 1. 31.
Aciphylla squarrosa. *Forst. gen.* 68.
Stem sheathed, petioles dilated, leaves digitate linear
elongated mucronate.

DESCRIPTIONS, &c.

1. Root the thickness of the finger or more, striking two feet into the ground, pale brown on the outside, white within, somewhat fleshy, scarcely fibrous, perennial, having a very bitter subacid unpleasant taste, and crowned with bristles. Stem round, striated, green with a glaucous bloom on it, smooth, filled with white pith. Sheaths of the leaves striated, swelling. Ribs compressed with the forward edge sharp. Leaves twice-pinnate: leaflets entire or with few lobes, tooth-ferrate, obtuse or acute, the lower petioled, the upper often sessile, very smooth on both sides or rough on the back only, firm, deep green on the upper surface, more glaucous and veined on the lower. Umbel upright, flat or somewhat convex, in the largest half a foot in diameter, composed of very many round striated rays; leaflets of the involucre acuminate, spreading very much or reflex, pale green with sometimes a purple edge, from five to ten in number. Partial umbel convex and closer, with a similar involucre or none. Flowers white; petals inflex, obcordate, almost equal. Seeds smooth, flat on one side, having four, membranaceous, thin, subpellucid wings on the other, the outmost on each side broader; they have but little smell, and an unpleasant subacid taste. It flowers in July, and the seeds are ripe in September.

It varies so much from situation that it might be mistaken for different species, and several varieties are mentioned by authors. In the Alps it is only a foot or two in height, and sometimes even shorter, with a stem entirely simple terminated by a single umbel; it is also extremely smooth; more or less asperity may however be observed on the leaflets and especially on the ribs of some individuals; which is so remarkable in the large, lofty, branched plants of the lower regions. These however become smooth when transplanted into a garden; and some leaves of the smooth alpine plants become hairy^a.

Native of many parts of Europe. Cultivated here in 1640, according to Parkinson^b.

This acrid aromatic plant with something of bitterness, seems to merit a place among the aromatic stimulants, emmenagogues, and aperient sudorifics. It is used by the peasants for themselves, and by farriers for horses in some countries; but not by regular practitioners. The root is the hottest part of the plant^c.

Mr. Miller has made several species out of this, but he has not described any.

2. The *L. trilobum* is distinguished from *L. aquilegifolium* by Murray and Jacquin. The leaflets of the former are cordate at the base, acute, and acutely ferrate; whereas in the latter they are blunt. Haller's synonyms of n. 793. belong to this species; but he has described a variety of *L. latifolium*.

Jacquin thus describes his plant. The whole of it is very smooth. Root perennial, round, a foot or more in length, with abundance of fibres at top, blackish on the outside, white within with a yellowish pith in the middle, smelling when bruised, and having a bitter un-

pleasant taste. Stem round, from four to six feet in height, marked with lines but not grooved, firm, upright, shining, glaucous-green, becoming dark purple with age, having brachiate branches, and an aromatic sweetish taste. Sheath of the leaves long, concave, converging, striated and embracing. Root and lower stem-leaves very large and triternate, on long, sub-striated, solid, round or slightly compressed petioles. Upper stem-leaves sessile and subternate; with the leaflets usually three-lobed and gashed, sharp with reddish teeth: sometimes a single three-lobed leaf is placed on the sheath. These leaflets however are all wide, and none of them linear. The middle stem-leaves are sub-biternate, without any common petiole; and each either has its proper petiole, or the side ones also are sessile. The pinnae both of these and the root-leaves are wide; blunt, lobed, gashed, glaucous and netted-veined on the back, smelling when rubbed. Universal involucre either wholly wanting, or consisting of one or two lanceolate, acuminate, concave, membranaceous leaflets, green edged with red. Partial also either none, or composed of few small leaflets. Umbel wide, thin, flat, composed of stiff, striated, round rays from two to three inches in length, and from ten to twenty in number. Partial more convex and dense. Some of the central florets, having no pistils, are abortive. Petals small, white, attenuated at the base, inflex-cordate, equal and spreading very much. Anthers pale. Germ compressed, striated. Styles awl-shaped, green. Fruit ovate-oblong, compressed, blunt. Seeds plano-convex with five short pale membranaceous wings, and four others still narrower between them.

Gärtner, who gives all the synonyms of Linneus, Jacquin, Haller, Morison and Rivinus, and unites the second and third species of Murray, as we have done, separates this plant from *LasERPitium*, on account of the number of grooves, in the seeds, and there being no wings. He describes the fruit as elliptic, turgidly lens-shaped, many-streaked, consisting of two oblong-elliptic seeds, of a middling size; on the back are nine streaks, alternately standing more out, all rounded, without any vestige of a wing; the belly flat or slightly concave.

Native of the Levant and Austria. Cultivated in 1640, according to Parkinson. It flowers from May to July^d.

3. Root perennial. Stem not much branched, and having only one or two, seldom three leaves at the lower part: at the top are commonly two very large umbels. The wings of the seeds are very large, and frequently curled or waved. It varies with entire, rounded leaflets, agreeing in every other respect: and there are few plants that vary more^e.

Fruit ovate, somewhat gibbous, white or pale straw-colour. Seeds plano-convex, with two dorsal and two marginal wings on the convex side, all membranaceous, fringed, and sometimes entire, sometimes gnawn at the edge: the flat side having a raised line along the middle^f.

Native of the South of Europe. Cultivated in 1683, by Mr. James Sutherland. It flowers in June and July^g.

4. Root perennial, white within and without but growing brown with age, seldom fusiform and striking downwards, but commonly transverse and branched, unequal, a finger thick, fibrous, of a subacid taste and aromatic smell. Stem on open rocky hills perennial, one or two lines thick, and sometimes not more than a span high; in a lower situation among bushes and on the borders of woods it grows to the height of four feet, with a stem the thickness of a pen. From one to three stems and more come out from the same root; they are upright, striated, smooth, flexuose, branched. Membranaceous, striated, channelled petioles invest the stem. Leaves manifold-pinnate, smooth: leaflets deeply gashed, flat; segments oblong, shortly mucronate. Peduncles opposite to a leaf, upright, striated. Umbels close, flatish, composed of numerous rays. Umbellets similar. Leaflets of the

^a Jacquin. ^b Hort. kew. ^c Allion. and Krockner.

^d Hort. kew. ^e Villars. ^f Gærtner. ^g Hort. kew. universal

universal involucre few, (sometimes only one) linear, seldom pinnatifid, half the length of the umbel: of the partial several, linear, the length of the umbellet. All the flowers fertile. Petals white or yellowish, almost equal, inflex-cordate, almost upright. Germ striated, oblong, smooth. Filaments many times longer than the petals. Anthers pale. Styles white, upright. Seeds elliptic, smooth, plano-convex, with five membranaceous wings.

Native of Carniola and Italy ^h.

5. This is a lower plant than the first, not more than a foot and half or two feet in height; the leaves are much narrower; and the petioles are hairy. Flowers white. Seeds winged, curled ⁱ.

Native of the southern parts of Europe. Cultivated in 1759, by Mr. Miller. It flowers in June and July ^k.

6. Root perennial. Stem hirsute with white hairs, especially towards the base. Leaves having the appearance of *Cicuta virosa*, hirsute on the petioles and ribs: leaflets wedge-form-lanceolate, pinnatifid, not rigid. Umbels of the ray, involucres and flowers white. Seeds pubescent, acrid and aromatic ^l.

Native of Prussia, Leipzig, Austria, Carniola, Dauphiné, Italy. Cultivated by Mr. Miller in 1759.

7. This is a biennial plant. The whole plant is smooth, has some smell when bruised, and a slightly aromatic acrid taste. Root subfusiform, the thickness of a finger, dirty white, with thickish fibres all round. Stem upright, firm, round, marked with lines, fistular, shining, branched from the axils of most of the upper leaves, green with dark purple spots. Branches under the umbel and the rays rough to the touch, when viewed with the microscope appearing muricated with white on the back of the streaks. Root and stem-leaves tripinnate; the upper ones pinnate. Rib grooved in front, angular in the other parts, not fistular, springing from a striated sheath. Leaflets pinnatifid, dark green on the upper surface: all the segments lanceolate, acute, most of them quite entire, unequal. Umbels erect, somewhat convex. Leaflets of the involucre about six, spreading a little, awl-shaped, acute, in a short time becoming brownish. Umbellets small, convex, distant, from twelve to twenty, with a similar involucre. All the florets fertile. Petals all equal, oval, with a narrow inflex tip, but not remarkably cordate, spreading very much and finally turned back, white but sometimes one or two half purple. Filaments purple at bottom, spreading very much, longer than the corolla. Style as the germ advances reflected. Germ yellowish at top, grooved along the border at each filament. Seeds subovate, smooth, brown, having an aromatic flavour without acrimony, but not pleasant, flat on one side, convex on the other, three-winged, and running out besides into a membranaceous wing at the edges ^m.

8. From a thick oblong root, blackish on the outside, two or three leaves come out on long petioles, with a three-fold division, each again divided into three or five very narrow leaflets, almost two inches in length, and resembling grass leaves. Stem about a foot high, dividing into two or three branches, with a leaf at the base of each. Umbel of five, and sometimes of twelve rays, with an involucre both to that and the umbellet. Flowers white. Seeds striated and four-winged on one side, flat on the other.

Native of Monte Baldo ⁿ.

9. Root perennial, with a thick head which is crowned with abundant bristly remains of former leaves, a foot and half in length, the thickness of the human thumb, round, with an irregular brown bark, fleshy and white within, with a yellowish pith. The whole plant smooth. Stem brachiate, round, marked with lines but not grooved, pale green or purplish, in sub-alpine meadows from one to two feet high, but in the lower mountains six feet in height. Leaves manifold-pinnate, smelling when bruised, aromatic, scarcely acrid, not pleasant. Ribs compressed, especially the lower ones, very finely marked with lines, shining. Sheaths wide, swelling, membranaceous, firm, marked

with lines, pale green, embracing. Pinnules narrow-lanceolate, more or less acute, flat, glaucous green, subpetioled, most of them ternate, thickish. Universal involucre of ten or more, short, lanceolate or ovate, acute, concave, spreading or reflex leaflets. Partial similar but less. Universal umbel convex, from four to eight inches in diameter; rays roundish, smooth on the back, striated and roughish above, twenty or more. Petals white, almost equal, inflex-cordate, spreading very much, wide. Filaments white, spreading, longer than the petals. Anthers whitish. In the umbels on the branches most of the florets, and sometimes all are abortive: in the principal umbel a few only in each umbellet: none of these have any germ. Fruit oblong, subcylindric, shining, brownish. Seeds flat and striated on one side, convex on the other with four narrow membranaceous wings, with raised lines between, having a strong smell of Cumin, and an aromatic, subacid, bitter taste ^o.

Native of Austria, Switzerland and France. It flowers in July and August, and the seeds ripen in September. It was cultivated here in 1640, according to Parkinson ^p. Our old authors name it *Sermountain* from the French.

It differs from the varieties of *L. gallicum* in being loftier, in having leaves all along the stem, and the seed longer, with very small membranes, often concealed within the streaks.

The root is extremely bitter, and might be useful in fevers, cachexies, loss of appetite, &c. An infusion of it in wine has been given with success in disorders of the stomach ^q. It yields an aromatic resinous juice on being wounded, and being made into a syrup, is recommended in disorders of the breast ^r.

10. Root perennial, striking very deep and but little branched. Stem a foot and half high, terminated by one or two umbels, solid, smooth, slightly striated. Leaves two or three at the base of the stem; and when the stem divides, there is one smaller under the lateral branch, otherwise it is naked: they are four times pinnate, triangular. Leaflets short, lanceolate, a little hard, and loaded with small hairs. Umbels very numerous, convex. Involucres many-leaved, permanent, membranaceous, seldom trifid. Petals white. Fruit oblong, with four wings, which are very narrow ^s.

It differs from the seventh species in having the leaves four times divided, with the segments of the pinnules shorter and closer, converging upwards, roughish, and finely hairy on the rib and back of the leaves; the stems commonly simple; the umbel very close; the leaflets of each involucre simple and wider; the petioles round and marked with green and white streaks ^t.—Native of Switzerland, France, and Italy.

11. Root woody, large, with several forks, crowned with bristles and scales of fallen leaves. Leaves firm, smooth, shining, three times pinnate: leaflets sharply lanceolate, about half a line wide, simple bifid or trifid. Stem-leaves similar, few, more simple. Stem straight, grooved, half a foot high. Umbel very close, globular, convex. Leaflets of the universal involucre seven to ten, mostly petioled, semitrid, a little shorter than the umbel: those of the partial umbel lanceolate and entire, or trifid. Flower often purple; the petals a little unequal, inflex-cordate. Seed large, ovate, four-winged, often purple or almost black ^u.

Native of Switzerland. Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in July ^v.

12. Leaves entire, cordate, with the upper lobe shorter, crenate, blunt. Petioles very hirsute. Both involucres small. Hence it is different from *Pastinaca Opopanax*, with which Gouan joins it ^w.

Native of Montpellier, where however Gouan could not find any such plant, distinct from *P. Opopanax* ^x.

13. Leaves five times pinnate, extremely superdecapound, very narrow, smooth, lax. Seeds winged ^y.

Native of the Levant. Cultivated in 1768, by Mr. Miller. It flowers in June ^z.

^o Jacquin.

^p Hort. kew.

^q Villars.

^r Allion.

^s Villars.

^t Allion.

^u Haller.

^x Hort. kew.

^y Linn. spec.

^z Gouan illustr. 19. n. 2.

^a Linn. spec.

^b Hort. kew.

^h Jacquin.

ⁱ Morison.

^k Hort. kew.

^l Linn. syst.

^m Jacquin.

ⁿ Seguiet.

14. Root perennial, knobbed, and often multiplied at top, so as to produce several stems. Leaves deep green, bipinnate like those of Carui, but less fine. Stem only two or three inches high, slender, upright, striated; terminated by a solid, rounded, reddish umbel. Leaflets of the involucre trifid; but sometimes in the partial involucre simple. Petals white with a tinge of red. Germ red. The seeds have five deep streaks, with as many ribs, without any membranous wing^c.

Native of the mountains of Switzerland, Austria, and Dauphiné.

15. Umbels axillary, several, scarcely larger than the petioles^d. Fruit elliptic-oblong, independent of the wings almost cylindric. Seeds having four membranaceous wings, and a raised line along the middle of the back, frequently becoming a fifth wing. The wings are of a yellow-bay colour, but the interstices are ferruginous-brown^e.

Forster made it a new genus, which he named *Aciphylla* from the sharpness of the leaves like needles.

Native of New Zealand. Found in Queen Charlotte's Sound november 6th, 1774^f.]

PROPAGATION AND CULTURE.

These plants having no great beauty, and taking up much room, are seldom cultivated except in botanic gardens. The roots extend widely, and the leaves of some sorts spread three feet, when the plants are strong; the flower-stalks rise four or five feet high, and the umbels of flowers are very large.

Most of them are very hardy, and will thrive in any soil and situation. Sow the seeds in autumn, and the plants will come up in the spring: but when they are sown in spring, the seeds commonly remain in the ground a whole year. Transplant them the following autumn where they are designed to remain, for they send out long deep roots, which are frequently broken by transplanting when large. Place them three feet asunder. The plants decay to the ground every autumn, but the roots continue many years, and require no other culture but to clear them from weeds, and to dig between the roots every spring.

The thirteenth sort requires a warmer situation, otherwise it will be killed in sharp winters.

[LASERPITIUM. See *Ferula* and *Selinum*.

LASERWORT. See *Laserpitium*.

LASIANTHUS. See *Gordonia*.

LASIOSTOMA. (From *λασιος*, hairy, shaggy, and *στομα*, a mouth.)

Lin. gen. Schreb. n. 180.

Rouhamon. Aubl. guian. 93. t. 36.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Apocineæ*, Juss. 149.

GENERIC CHARACTER.

CAL. Perianth one-leaved, very short, five-parted, divisions acute; at its base two opposite scales.

COR. one-petalled, funnel-form; tube cylindric; border four-cleft; divisions acute, villose.

STAM. Filaments four, capillary, villose at the base, inserted into the tube of the corolla. Anthers oblong.

PIST. Germ ovate, superior. Style longer than the corolla. Stigma obtuse.

PER. Capsule orbiculate, one-celled, with a brittle bark.

SEEDS two, hemispherical.

ESSENTIAL CHARACTER.

Cal. very short, five-petalled, with two acute scales.

Cor. funnel-form, four-cleft. Caps. orbiculate, one-celled, two-seeded.

SPECIES.

1. Lasiosstoma Rouhamon.

Lin. syst. ed. Gmel. 248.

Rouhamon guianensis. Aubl. guian. 1. 93. t. 36.

DESCRIPTION, &c.

This is a shrub with a trunk seven or eight feet in height, and six or seven inches in diameter, with a grayish, irregular, rugged bark, and a whitish wood. Branches and branchlets opposite, covered with a russet down, and spreading over the neighbouring trees. The branchlets are knobbed, and at each joint have a

pair of leaves, which are entire, smooth, oval, ending in a point, and three-nerved underneath; they are of a very pale green, and on very short petioles: the largest are two inches long, and an inch four lines in breadth. Flowers in small axillary corymbs, on a small peduncle, which has two scales at the base: they are opposite in pairs, and almost sessile. Corolla white. Capsule yellow.

From the axil of the leaves there spring at intervals simple tendrils, two inches and a half long, curved back in form of a cross at top, where they become thicker. By means of these tendrils the branches support themselves on the neighbouring trees.

This shrub is called *Rouhamon* by the Caribs. It is in flower and fruit during the months of october and november; and is found on the banks of the river Sinemari in Guiana, forty leagues from its mouth.

A variety occurs with smooth branches, larger leaves, smaller flowers and fruits. It has no tendrils, but the branches are straight^g.

LATHRÆA. (From *λαθραιος*, clandestinus, which is from *λαθρα*, clam.)

Lin. gen. n. 743. Reich. n. 801. Schreb. n. 1000.

Gært. t. 52. Juss. 102.

Clandestina. Tournef. 424.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*. *Pediculares*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, campanulate, straight; mouth deeply four-cleft.

COR. one-petalled, ringent. Tube longer than the calyx. Border ringent, ventricose. Upper lip concave, galeated, broad, with a narrow hooked tip. Lower lip less reflex, obtuse, trifid.

Nectary: an emarginate glandule, depressed on each side, very short, inserted into the receptacle of the flower at the other corner of the germ.

STAM. Filaments four, awl-shaped, length of the corolla, hid under the upper lip. Anthers obtuse, depressed, converging.

PIST. Germ globose-compressed. Style filiform, length and situation of the stamens. Stigma truncated, nodding.

PER. Capsule roundish, obtuse with a point, one-celled, two-valved, elastic, coated with a very large spreading calyx.

SEEDS few, subglobose, affixed to the middle of the valves.

OBS. It approaches nearly, on account of its glandule, to *Orobanche*.

ESSENTIAL CHARACTER.

Cal. four-cleft. Gland depressed, at the base of the future of the germ. Caps. one-celled.

SPECIES.

1. Lathræa clandestina.

Lin. spec. 843. Reich. 3. 112. Guett. stamp. 2. 454.

Clandestina flore subcæruleo. Tournef. inst. 952.

Dentaria aphyllus. Raii hist. 1230.

Orobanche montana. Rudb. elyf. 2. 233. f. 14.

O. flore majore ex cæruleo purpurascens. Baub. pin.

87. prodr. 31. Rudb. elyf. 2. 229. f. 2. Raii hist.

1227. Mor. hist. 3. 502.

O. f. Dentaria aphyllus purpurea, cespitosa densa. Mor.

hist. 3. 503. f. 12. t. 16. f. 15.

Planta clandestina f. Madrona. Dalech. hist. ed. gall.

960.

Stem branched almost underground, flowers upright solitary.

2. Lathræa Phelypæa.

Lin. spec. 844. Reich. 3. 113.

Orobanche elegantissima verna, flore luteo. Griseb. lusit.

Mor. hist. 3. 502.

Corollas spreading-bell-shaped.

3. Lathræa Anblatum.

Lin. spec. 844. syst. 550. Reich. 3. 113.

Anblatum orientale, flore purpurascens. Tournef. cor.

48.

Lips of the corollas undivided.

^c Villars.

^d Linn. suppl.

^e Gærtner.

^f Forst. drawings.

^g Aublet.

4. *Lathræa Squamaria*. *Great Toothwort*.
Lin. spec. 844. *Reich.* 3. 113. *fl. succ. n.* 550.
Gært. fruct. 1. 242. *Huds. angl.* 266. *Wither.*
arr. ed. 3. 547. *Engl. bot.* 50. *Light. scot.* 326.
Leers herb. n. 474. *Fl. dan. t.* 136. *Crantz.*
aust. 293. *Villars dauph.* 2. 408. *Allion. pedem.*
n. 196. *Krock. filef. n.* 977. *Blackw. t.* 430.
Zorn. ic. 110.

Squamaria Orobanche. *Scop. carn. n.* 760.
S. Riv. mon. t. 89. 2. *Hall. belv. n.* 297.
Orobanche radice dentata major. *Baub. pin.* 88. *Raii*
hist. 1229. *Mor. hist.* 12. 16. 11, 14.—*f. Dentaria*
major. *Park. theat.* 1363. 4.
Dentaria major. *Matth.* 964. *Ger.* 1387. 1. *emac.*
1585. 1.—*f. Aphyllus*. *Clus. hist.* 2. 120. 1.
Anblatum. *Dod. pempt.* 553. 1.—*Cordi hist.* 891.—
f. Aphyllon. *Baub. hist.* 3. 783. 2.
Stem quite simple, corollas pendulous, lower lip trifid.

DESCRIPTIONS, &c.

1. Root thick, long, fibrous. Stem half a palm
in height, surrounded by few, very short, thick, sharp
leaves, and terminated by five, six or more naked pe-
duncles, three inches long, each bearing one flower
of a blue colour, near two inches in length^a.

The stem bears the corymb under ground, so that
solitary fructifications only appear above ground on
each branch^b.

Ray and others have this plant twice over.

Native of France, the Pyrenees and Italy. Ray
observed it in moist shady places between Massa and
Lucca.

2. This is a tender juicy plant, a palm and half high.
Stem surrounded by abundance of soft succulent leaves,
broad at the base, and ending in a sharp point. From
the top come out three or four tubular, funnel-shaped
flowers, an inch or an inch and half in length, of a
yellow colour, divided at top into five segments^c.

The structure of the flower in this plant is very dif-
ferent from that of *Lathræa*. The *Phelypæa* β. of
Linneus was rightly suspected by Jussieu to be of a
different genus, and it belongs to the genus *Æginetia*.
Thunberg has constituted a new genus under the name
of *Phelypæa*, which Mr. Correa suspects to be a spe-
cies of *Cytinus*.

3. Found by Tournefort in the Levant.

4. Root beaded, branched and surrounded with
white succulent scales: it is parasitical, and generally
attached to the roots of Elms, Hasels, or some other
trees, in a shady situation. Stem naked, except some-
times one or two oval scales. Flowers in a spike,
from one side of the stem, in a double row. Bractes
roundish-oval, large, reddish, one at the base of each
peduncle, forming a double line opposite to the flow-
ers. Calyx hairy, whitish, bellying; segments equal,
bluntish. Corolla pale purple or flesh-coloured, ex-
cept the lower lip, which is white: the upper lip is
rather short and truncate^d.

By this plant and *Ophrys Nidus avis* we may trace
an affinity between *Didynamia Angiospermia* of Lin-
neus, and the natural order of *Orchideæ*^e.

Native of most parts of Europe: with us it is rather
rare. Maidstone in Kent. Harefield in Middlesex.
Exton near Stamford. Woods of Derbyshire. Con-
zick-scar near Kendal, Westmoreland. Near Gainf-
ford, Durham. In Scotland, at Mevis-bank towards
Lafwade, four or five miles from Edinburgh; and in
Morvern, near the fount of Mull.—The flowers ap-
pear in april, emerging from the decayed leaves of
trees, among which the plant is mostly found half
buried.

The English name *Tooth-wort* is derived from the
resemblance of the scaly roots, to the human fore-
teeth; and hence it was fancied formerly to be good
for the tooth-ach^f.

This genus of Linneus is very miscellaneous, the
structure of the fructification differing widely in the
different species. When these shall be more accu-
rately examined, perhaps the last only may remain in
the genus.

^a Baub. prodr. ^b Linn. ^c Morison.
^d Woodw. Mfs. Lightf. Wither. ^e Engl. bot. ^f Ibid.

- LATHYRIS. See *Euphorbia*.
LATHYROIDES. See *Orobis* and *Spartium*.]
LATHYRUS. (*Λαθυρος* of *Theophrastus*.)
Lin. gen. n. 872. *Reich. n.* 946. *Schreb. n.* 1186.
Tournef. t. 216. 217. *Juss.* 359. *Gært. t.* 152.
Clymenum. *Tournef.* 218. *Aphaca*. *Tournef.* 223.
Class. 17. 4. *Diadelphia Decandria*.
Nat. order of Papilionacei or Leguminosæ.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, half five-cleft, bell-shaped:
divisions lanceolate, sharp: the two upper ones shorter;
the lowest longer.

COR. Papilionaceous.
Standard obcordate, very large, reflex on the sides and
tip.

Wings oblong, lunulate, short, obtuse.
Keel half-orbicular; size of the wings, and wider than
the wings, gaping inwards in the middle.

STAM. *Filaments* diadelphous, (single and nine-cleft)
rising upwards. *Anthers* roundish.

PIST. *Germ* compressed, oblong, linear. *Style* erected
upwards, flat, wider above, with sharp tip. *Stigma*,
from the middle of the style to the tip villose in
front.

PER. *Legume* very long, cylindric or compressed, acu-
minate, one-celled, bivalve.

SEEDS several, cylindric, globose, or but little cornered.

OBS. *Lathyrus T.* has conjugated tendrilled leaves.

Clymenum T. has pinnated tendrilled leaves.

Nissolia T. has simple leaves without tendrils.

Aphaca T. produces stipules without leaves.

Pisum differs manifestly from *Lathyrus* in the
style, but is extremely allied to it.

ESSENTIAL CHARACTER.

Cal. two upper segments shorter. *Style* flat, villose
above, broader at the end.

SPECIES.

With one-flowered peduncles.

1. *Lathyrus Aphaca*. *Yellow Lathyrus* or *Vetchling*.
Lin. spec. 1029. *Reich.* 3. 461. *hort. cliff.* 367. 2.
upf. 218. *Huds. angl.* 315. *Wither. arr. ed.* 3.
632. *Curt. lond.* 5. 68. *Relb. cant. n.* 518.
Hall. belv. n. 442. *Scop. carn. n.* 887. *Pollich*
pal. n. 675. *Neck. gallob.* 305. *Villars dauph.*
3. 440. *Krock. filef. n.* 1161.
Aphaca. *Lob. obs.* 518. 1. *ic.* 2. 70. 1. *Ger. emac.*
1250. *Park. theat.* 1067. *Raii hist.* 899. *syn.* 320.
Mill. fig. t. 43.
Vicia lutea foliis Convolvuli minoris. *Baub. pin.* 345.
Mor. hist. f. 2. t. 4. f. 7.
Elatine 3. *Tabern. ic.* 716.
Vicia quæ Pitine Anguillaræ, lata filiqua, flore luteo.
Baub. hist. 2. 316. f. 317. 1.
Orobanche Legumen. *Dalech. hist.* 484.
Peduncles one-flowered, tendrils leafless, stipules sagittate-
cordate.
2. *Lathyrus Nissolia*. *Crimson Lathyrus* or *Grass-Vetch*.
Lin. spec. 1029. *syn.* 662. *Reich.* 3. 462. *vir.*
cliff. 74. *hort. cliff.* 366. *Huds. angl.* 315. *Wither.*
arr. ed. 3. 632. *Engl. bot.* 112. *Relb. cant.*
n. 519. *Hall. belv. n.* 441. *Scop. carn. n.* 888.
Neck. gallob. 306. *Pollich pal. n.* 676. *Villars*
dauph. 3. 441. *Krock. filef. n.* 1161.
L. sylvestris minor. *Baub. pin.* 344.
L. angustifolius erectus, fol. singulari, sine capreolis.
Magn. hort. t. 112.
Nissolia parva flore purpureo. *Buxb. cent.* 3. 84. *t.* 45.
f. 1.
N. vulgaris. *Lindern. hort.* 73. *fig.*
Catanance. *Mor. hist. f. 2. t. 3. f. 7.—leguminosa.*
Baub. hist. 2. 309. 1. Raii hist. 921. syn. 323.
Ervum silvestre. *Dod. pempt.* 529. 1. *Lob. obs.* 518. 2.
ic. 2. 71. 1. *Ger. emac.* 1249. 2. *Park. theat.*
1079. 4.
Peduncles one-flowered, leaves simple, stipules awl-shaped.
- [3. *Lathyrus sphaericus*.
Retz. obs. 3. 39.
Peduncles one-flowered awned, tendrils two-leaved quite
simple, leaflets ensiform.]

4. *Lathyrus amphicarpos*. *Subterranean Lathyrus*, or *Earth-pea*.
Lin. spec. 1029. *syst.* 662. *Reich.* 3. 462. *hort. cliff.* 367. 3. *upf.* 216. *Mor. hist.* 2. 51. f. 2. t. 23. f. 1.
Viciae similis supra & infra terram filiquas gerens.
Baub. pin. 345.
Arachidna f. *Aracoides Honorii Belli*. *Baub. hist.* 2. 323. *Raii hist.* 918.
A. cretica. *Park. theat.* 1069. 1. f. 1070. 1.
Peduncles one-flowered longer than the calyx, tendrils two-leaved quite simple.
5. *Lathyrus Cicera*. *Flat-podded Lathyrus* or *Dwarf Chickling-Vetch*.
Lin. spec. 1030. *Reich.* 3. 463. *Hall. belv. n.* 339. *Scop. carn. n.* 891. *Sauv. monsp.* 193.
L. fativus flore purpureo. *Baub. pin.* 344. *Tourn. inst.* 395? *Raii hist.* 896. 14? *Ger. emac.* 1230. f. 3?
L. flore rubro. *Baub. hist.* 2. 307?
L. fl. coccineo. *Raii hist.* 896.—et, *sylvestris flore vario ex albo & coccineo.* *Raii exter.* 60.
Peduncles one-flowered, tendrils two-leaved, legumes ovate compressed channelled on the back.
6. *Lathyrus fativus*. *Common Lathyrus* or *blue Chickling-Vetch*.
Lin. spec. 1030. *Reich.* 3. 463. *hort. cliff.* 367. 4. *upf.* 216. *Gärtn. fruct.* 2. 331. *Hall. belv. n.* 438. *Scop. carn. n.* 889. *Neck. gallob.* 306. *Krock. filef. n.* 1163. *Curt. magaz.* 115.
L. filiqua latiori. *Riv. tetr. t.* 47.
L. anguloso semine. *Baub. hist.* 2. 306. *cum ic. Fuchf. Mor. hist.* 2. 2. 8.
L. annuus, flore cæruleo, ochri filiqua. *Herm. lugdb.* 357.
L. angustiore gramineo folio. *Lob. adv.* 498. *obs.* 517. *cum ic. Dod. ic.* 2. 69.
L. f. Cicercula. *Dod. frum.* 113. 114. *pempt.* 523. *frug.* 56. *ic.* 55. *fig. Fuchf.*
L. ægyptiacus. *Hassellqu. it.* 521? *Mor. hist.* 2. 3. 3.
Cicercula ægyptiaca. *Clus. hist.* 236?
Ervum. *Fuchf. hist.* 571.
β. L. fativus, flore fructuque albo. *Baub. pin.* 343. *Raii hist.* 896. *Ger. emac.* 1229. 2.
Peduncles one-flowered, tendrils two or four-leaved, legumes ovate compressed two-edged at the back.
- [7. *Lathyrus inconspicuus*. *Small-flowered Lathyrus*.
Lin. spec. 1030. *syst.* 662. *Reich.* 3. 463. *Jacqu. hort.* 1. 37. t. 86. *Villars dauph.* 3. 443.
L. orientalis, flore vix conspicuo. *Boerb. lugdb.* 2. 42.
Peduncles one-flowered shorter than the calyx, tendrils two-leaved simple, leaflets lanceolate.]
8. *Lathyrus setifolius*. *Narrow-leaved Lathyrus*.
Lin. spec. 1031. *syst.* 662. *Reich.* 3. 464. *Ger. prov.* 494. 5. *Sauv. monsp.* 193. *Segu. ver.* 2. 82. n. 4.
L. montis baldi. *Riv. tetr.* 46.
L. folio tenuiore, floribus rubris. *Baub. hist.* 2. 308.
L. sylvestris major, angustissimo folio. *Baub. pin.* 344.
L. angustissimo f. capillaceo folio. *Baub. prodr.* 148.
Peduncles one-flowered, tendrils two-leaved, leaflets setaceous-linear.
9. *Lathyrus angulatus*.
Lin. syst. 662. *Reich.* 3. 464. *Hall. belv. n.* 440. *Ger. prov.* 495. *Scop. carn. n.* 890. *D'Affo. arrag.* 183. *Sauv. monsp.* 193.
L. gramineus floribus coccineis. *Raii exter.* 160. R.
L. angustissimo folio, semine anguloso. *Tourn. inst.* 395.—*angustifolius humilior.* *Magn. monsp.* 150.
L. folio tenuiore, flor. rubris. *Buxb. cent.* 3. 23. t. 42. f. 2.
Peduncles one-flowered awned, tendrils two-leaved quite simple, leaflets linear.
10. *Lathyrus articulatus*. *Jointed-podded Lathyrus*.
Lin. spec. 1031. *Reich.* 3. 465. *hort. cliff.* 368. 11. *upf.* 217. *Gärtn. fruct.* 2. 331. *Curt. magaz.* 253.
L. hispanicus. *Mill. dict. n.* 5.
L. angustissimo folio, americanus variegatus. *Baub. pin.* 344.
L. fol. pinnatis. *Riv. tetr. t.* 48. *sec. Gärtn.*

- Clymenum hispanicum, flore vario, filiqua articulata.*
Tourn. inst. 396. *Mill. fig. t.* 96.
β. L. angustifolius humilior. *Baub. pin.* 344.
Peduncles one or two-flowered, tendrils many-leaved, leaflets alternate.
With two-flowered peduncles.
11. *Lathyrus odoratus*. *Sweet Lathyrus* or *Pea*.
Lin. spec. 1032. *Reich.* 3. 465. *hort. cliff.* 368. 9. *upf.* 216. *Curt. magaz.* 60.
α. Floribus albis. *White-flowered Sweet Pea.*
β. Alis carinaque albis, vexillo carneo. *Old Painted Lady Pea.*
γ. Alis carinaque carneis, vexillo roseo. *New Painted Lady Pea.*
δ. Alis carinaque pallide cæruleis, vexillo atropurpureo.
ε. Carina pallide violacea, alis saturate violaceis, vexillo atropurpureo.
Peduncles two-flowered, tendrils two-leaved, leaflets ovate-oblong, legumes hirsute.
12. *Lathyrus annuus*. *Two-flowered yellow annual Lathyrus*.
Lin. spec. 1032. *syst.* 663. *Reich.* 3. 465. *amoen.* 3. 417. *Villars dauph.* 3. 441.
L. hispanicus. *Riv. tetr. t.* 44.—*fl. luteo.* *Tourn. inst.* 595.
L. bæticus flore luteo. *Park. theat.* 1064. 8. *Raii hist.* 895.
L. æstivus flore luteo. *Ger. emac. app.* 1628.
Peduncles two-flowered, tendrils two-leaved, leaflets ensiform, legumes smooth, stipules two-parted.
- [13. *Lathyrus fruticosus*. *Shrubby Lathyrus*.
Cavan. ic. 58. n. 92. t. 84.
Stem shrubby, peduncles two-flowered, leaves pinnate tomentose.]
14. *Lathyrus tingitanus*. *Tangier Lathyrus* or *Pea*.
Lin. spec. 1032. *syst.* 663. *Reich.* 3. 466. *Jacqu. hort.* 1. 18. t. 46. *Curt. magaz.* 100.
L. ting. filiquis orobi, flore amplo ruberrimo. *Mor. hist.* 2. 57. n. 1.
L. ting. fl. amplo ruberrimo. *Raii hist.* 897.
Peduncles two-flowered, tendrils two-leaved, leaflets alternate lanceolate smooth, stipules crescent-shaped.
- [15. *Lathyrus Clymenum*. *Various-flowered Lathyrus*.
Lin. spec. 1032. *Reich.* 3. 466. *hort. cliff.* 368. 10. *upf.* 217.
L. vicioides, vexillo rubro, labialibus petalis rostrum ambientibus cæruleis, filiqua plana. *Mor. hist.* 2. 56.
Clymenum hispanicum, flore vario, fil. plana. *Tourn. inst.* 396.
Peduncles two-flowered, tendrils many-leaved, stipules toothed.]
Peduncles many-flowered.
16. *Lathyrus hirsutus*. *Hairy Lathyrus*.
Lin. spec. 1032. *syst.* 663. *Reich.* 3. 466. *Huds. angl.* 315. *Wither. arr. ed.* 3. 633. *Hall. belv. n.* 437. *Pollich pal. n.* 677. *D'Affo arrag. n.* 684. *Sauv. monsp.* 139. *Villars dauph.* 3. 441.
L. angustifolius filiqua hirsuta. *Baub. pin.* 344.
L. fil. hirsuta. *Baub. hist.* 2. 305. *Riv. tetr. t.* 41. *Raii hist.* 896. *syn.* 320.
L. arvensis filiquis hirsutis. *Mor. hist. f.* 2. t. 2. f. 8.
Peduncles commonly three-flowered, tendrils two-leaved, leaflets lanceolate, legumes hirsute, seeds rugged.
17. *Lathyrus tuberosus*. *Tuberous Lathyrus*.
Lin. spec. 1033. *Reich.* 3. 466. *hort. cliff.* 367. 5. *upf.* 216. *Hall. belv. n.* 435. *Pollich pal. n.* 678. *Sauv. monsp.* 194. *Ger. prov.* 495. 8. *Villars dauph.* 3. 443. *Krock. filef. n.* 1164. *Gmel. fib.* 4. 6. *Pall. it.* 1. 319. *Crantz. austr.* 381. *Curt. magaz.* 111.
L. arvensis. *Riv. tetr. t.* 42.—*repens tuberosus.* *Baub. pin.* 344. *Mor. hist. f.* 2. t. 2. f. 1.
Chamaëbalanus leguminosa. *Baub. hist.* 2. 324. *Raii hist.* 895.
Terræ glandes. *Dod. cer.* 168. *pempt.* 550. *Lob. ic.* 2. 70. f. 2. *Ger.* 1057. *emac.* 1237.
L. arv. f. terræ glandes. *Park. theat.* 1061. f. 4.
Apios. *Fuchf. hist.* 131.
Peduncles many-flowered, tendrils two-leaved, leaflets oval, internodes naked.
18. *Lathyrus*

18. *Lathyrus pratensis*. *Meadow Lathyrus*.
Lin. spec. 1033. *syst.* 663. *Reich.* 3. 467. *hort. cliff.* 367. 6. *fl. succ.* n. 647. *Huds. angl.* 317. *Wither. arr. ed.* 3. 633. *Curt. lond.* 3. 41. 170. *Lightf. scot.* 391. *Fl. rust. t.* 52. *Hall. belv.* n. 436. *Scop. carn.* n. 893. *Neck. gallob.* 305. *Pollich pal.* n. 679. *Fl. dan. t.* 527. *Villars dauph.* 3. 443. *Krock. files.* n. 1165. *Gmel. fib.* 4. 5. *Riv. tetr. t.* 43.
L. sylvestris luteus, foliis viciæ. *Baub. pin.* 344. *Mor. hist. f.* 2. *t.* 2. *f.* 2.
L. lut. sylv. dumetorum. *Baub. hist.* 2. 304. 2. *Raii hist.* 894. *syn.* 320.
L. sylv. flore luteo. *Ger. emac.* 1231. 6. *Park. theat.* 1061. 1.
Peduncles many-flowered, tendrils two-leaved quite simple, leaflets lanceolate.
[19. *Lathyrus sylvestris*. *Wild Lathyrus* or *narrow-leaved Everlasting Pea*.
Lin. spec. 1033. *syst.* 663. *Reich.* 3. 467. *hort. cliff.* 367. 8. *fl. succ.* n. 644. *Huds. angl.* 316. *Wither. arr. ed.* 3. 634. *Curt. lond.* n. 64. *Lightf. scot.* 392. *Relb. cant.* n. 521. *Hall. belv.* n. 434. *Neck. gallob.* 305. *Pollich pal.* n. 680. *Villars dauph.* 3. 444. *Krock. files.* n. 1166. *Crantz. austr.* 378. *Clus. hist.* 2. 229. 2. *Dod. pempt.* 523. 2. *Park. theat.* 1063. 3.
L. sylv. major. *Baub. pin.* 344.
L. sylvaticus. *Riv. tetr. t.* 39.
L. angustifolius alter. *J. B. Mor. hist. f.* 2. *t.* 2. *f.* 4.
Lathyrus majoris species flore rubente & albido minore dumetorum, f. Germanicum. *Baub. hist.* 2. 302. 2. *Raii hist.* 894. *syn.* 319.
Ervum sylvestre. *Fuchs. hist.* 572.
Peduncles many-flowered, tendrils two-leaved, leaflets ensiform, internodes membranaceous.
20. *Lathyrus latifolius*. *Broad-leaved Lathyrus* or *Everlasting Pea*.
Lin. spec. 1033. *syst.* 663. *Reich.* 3. 468. *hort. cliff.* 367. 7. *ups.* 217. *fl. succ.* n. 645. *Huds. angl.* 316. *Wither. arr. ed.* 3. 634. *Relb. cant.* n. 520. *Fl. rust. t.* 8. *Hall. belv.* n. 433. *D'Affo arrag.* n. 687. *Villars. dauph.* 3. 445. *Krock. files.* n. 1167. *Mill. illustr. Garid. prov.* 271. *t.* 108. *Baub. pin.* 344.
L. major latifolius. *Ger. emac.* 1229. *Raii hist.* 894. *syn.* 319. *Mor. hist. f.* 2. *t.* 2. *f.* 3.—*flore purpureo, speciosior.* *Baub. hist.* 2. 303.—*maj. perennis.* *Park. theat.* 1061.
L. narbonensis. *Riv. tetr. t.* 40.
Peduncles many-flowered, tendrils two-leaved, leaflets ovate or lanceolate, internodes membranaceous.
21. *Lathyrus heterophyllus*.
Lin. spec. 1034. *Reich.* 3. 468. *fl. succ.* n. 646. *Hall. belv.* n. 432. *Sauv. monsp.* 193. *Villars dauph.* 3. 445. *Krock. files.* n. 1168.
L. major narbonensis angustifolius. *Baub. hist.* 2. 304. *Raii hist.* 894.
Peduncles many-flowered, tendrils two and four-leaved, leaflets lanceolate, internodes membranaceous.
[22. *Lathyrus palustris*. *Marsh Lathyrus*.
Lin. spec. 1034. *Reich.* 3. 468. *hort. cliff.* 368. 12. *fl. lapp.* n. 271. *fl. succ.* n. 648. *Huds. angl.* 317. *Wither. arr. ed.* 3. 635. *Lightf. scot.* 392. *Relb. cant.* n. 522. *Engl. bot.* 169. *Retz. obs.* 1. 24. *Hall. belv.* n. 431. *Pollich pal.* n. 681. *Weber. spicil.* 20. *Fl. dan. t.* 399. *Krock. files.* n. 1169.
L. peregrinus, foliis viciæ, flore subcæruleo pallideve purpurascens. *Baub. pin.* 344.
L. viciæformis f. Vicia lathyroides. *Raii hist.* 899. *syn.* 320.
Vicia lathyroides. f. Lathyrus viciæformis. *Pluk. phyt. t.* 71. *f.* 2.
Peduncles many-flowered, tendrils many-leaved, stipules lanceolate.
23. *Lathyrus pisiformis*. *Siberian Lathyrus*.
Lin. spec. 1034. *syst.* 663. *Reich.* 3. 469. *dec.* 39. *t.* 20. *Leers herborn.* n. 564. *Gmel. fib.* 4. 7. *n.* 4. *t.* 1.
Peduncles many-flowered, tendrils many-leaved, stipules ovate broader than the leaflet.

DESCRIPTIONS, &c.

1. [Root annual, fibrous. Stem from a foot to eighteen inches or more in height, trailing or climbing, four-cornered, smooth. Leaves none, except on the young plants, which soon after they come up are usually furnished with one or more pair of leaves similar to those of the other species, but totally disappearing as the plants advance. Stipules in pairs, large, blunt, on each side near the base furnished with a tooth, glaucous, ribbed on the under side, quite entire, smooth, larger towards the top of the stem. Tendrils solitary, simple, alternate, horizontal, opposite to the peduncles. Flowers small, solitary, axillary. Peduncles longer than the stipules, four-cornered, with a minute awl-shaped bracte, at the base of each flower. Calyx divided almost to the base: segments equal, smooth, almost as long as the corolla, ribbed. Corolla; standard yellow striped on the inside with blue lines; wings yellow, nearly round, the length of the keel, with two unequal paler claws; keel pale sulphur-coloured, cloven behind. Germ smooth. Legume an inch in length, broadish, flattened; containing seven or eight, roundish, shining seeds^a.

Native of most parts of Europe, in corn fields, chiefly in light land: flowering in June, July, and August. About Tottenham and Enfield, but not common near London. Between Norwich and Bungay. In Cambridgeshire not uncommon.

2. *Crimson Grass-Vetch* is also an annual plant. Stem upright, simple, angular, twisted, slightly hairy. Leaves alternate, entire, smooth, ensiform, resembling those of grasses. Stipules very small, spreading, in pairs, at the base of the leaves. Tendrils none. Peduncles axillary, slightly hairy. Bracte one, small, awl-shaped, at the base of each flower. Corolla beautiful crimson. Legume linear, nearly cylindrical, bending downwards, smooth or slightly downy, terminated by a straight style^b.

The young plant, before it flowers, is so like a grass, that even an experienced botanist might mistake it for such, especially among mowing grass, where it usually occurs; it is also found on the borders of corn fields, among bushes and in woods, but not very common, at least with us, though doubtless it is frequently overlooked. Ripton in Huntingdonshire. Hadnam in Cambridgeshire. Near Ampthill-park in Bedfordshire. Cotton-field, Stafford. Belmont. Staffordshire. Hadforwood near Droitwich. About Teignmouth. Near Wick Cliffs. Near London, I have observed it about Dulwich, Peckham, Streatham, &c.

Its simple grassy leaves distinguish this from the other species. The elegant flowers of a rich crimson render it deserving of a place in gardens^c.] Mr. Miller informs us, that sometimes two flowers are found on one peduncle.

3. This also is an annual plant, smooth all over. Stem angular, three-sided at top. Leaves petioled, acute, nerved. The upper petioles have a very simple tendril. Stipules linear, sharp at both ends. Peduncles short. Flowers small, like those of the preceding. Legume subcylindric, longitudinally wrinkled, having a long point, torulose, with a slightly keeled dusky-violet back; containing ten or twelve spherical, smooth, dusky seeds, sprinkled with darker dots^d.

4. Root annual, filiform, with here and there ovate, sessile tubercles. Stems several, weak, ancipital or two-edged. Petioles linear, terminated by a slender tendril, with two lanceolate leaflets, and two ovate acute stipules having a toothlet at the base. Flowers pale purple. Peduncles solitary, four-cornered, longer than the leaves. There are other stems, destitute of leaves, roundish, creeping under ground, whitish, and bearing flowers and fruit absolutely perfect, and resembling those on the stems above ground, except that the flowers are smaller, and do not expand^e.

Native of the Levant. Cultivated in 1680, in the botanic garden at Oxford^f. The seeds were sent from Aleppo by Robert Huntingdon, fellow of Merton College^g.

^a Curtis and Woodward.

^b Woodward.

^c Engl. bot.

^d Retz.

^e Linn. cliff.

^f Hort. kew.

^g Mor. hist.

5. In size this takes the middle place between the preceding and following species. Petioles not membranaceous on the side. Corollas red. Legumes channelled on the back, but not with sharp edges, as in the last and next following sorts. Legumes broad, oval-oblong^h.

Haller thus distinguishes this from *fativus*. The whole plant is lower, but the leaves are larger, broader and elliptic. Peduncles stouter, only half the length, being scarcely four lines long. Flowers only half the size, with a much smaller standard, of a dusky blood-red colour. Legume longer, narrower, rounder, with a short vestige of wings on the back, and a groove between. Seeds four.

Root annual, simple. Stems several, from a foot to two feet in height, simple, angular, winged, procumbent unless supported by other plants. Petioles from half an inch to an inch and more in length, coming out at intervals from an inch to two inches, at an acute angle with the stem, consisting of a nerve with two membranes on each side: each of these produces two grass-like lanceolate-linear leaves, from one inch to four inches in length, and from two to six lines in breadth, three-nerved and smooth: nerve of the petiole produced about an inch beyond the leaf, ends in a tendril usually trifid. At the base of the petiole two stipules, large in proportion to the plant, smooth, frequently as wide as the leaf, seldom wider, broad-lanceolate, from a broad base putting out downwards an ear or hook with one or two teeth. From the axils of these stipules, almost the whole length of the stem arise stout peduncles, not winged, the shortest half an inch long, longer towards the upper part till they attain the length of an inch and more: about the middle or rather nearer to the flower they have two very slender bristles, and they are bowed by the weight of the growing legume. Flower of a middling size. Calyx smooth; segments a little unequal, the two upper approximating, lowest narrower and longer. Corolla white or pale yellow, or red and white, very seldom blue, sometimes quite red or deep purple. Legume from one to two inches long, broad, compressed, difform, ovate-oblong, smooth, netted-veined, terminated by the permanent style, having two wings running along the back. Seeds three, four or five, smaller than peas, tawny with dots of a deeper colour, angular, difformⁱ.

Native of France and Spain. Cultivated here in 1633. It flowers in June and July.

6. The habit of this is the same. The root also is not different. Leaves longer, narrower. Stipules of the same shape, but commonly only half the width. Peduncles from one to two inches long, weaker, but having two bristles as that has. Flower double the size, most commonly white, sometimes tinged with purple, or having a rose-coloured standard, or blue, or blue and white variegated. Legumes broader, shorter, with the wings on the back more apparent, inasmuch that the groove between them is of considerable depth. Notwithstanding these differences, this and the preceding are perhaps no more than varieties^k.

In our gardens it is distinguishable by the blue colour of the corolla, but we have sometime the milk-white variety. The seed-pods afford a more certain mark of distinction, being unusually short, broad, and winged on the back^l.

Native of France and Spain; commonly sown in Switzerland for soiling horses, but not indigenous of that country. The French name is *Gesse*. It flowers in June and July; and was cultivated in 1739, in the botanic garden at Chelsea^m.

In several parts of the Continent a white, light pleasant bread is made from the flour of this pulse, but it produced such dreadful effects in the last century, that the use of it was forbid by an edict of George Duke of Wirtemberg in 1671; and this not being observed was enforced by two other edicts under his successor Leopold, in 1705 and 1714.

^h Linn. spec.

ⁱ G. D. Duvernoy Thesis, 1770.

^k Duvernoy thes.

^l Curtis.

^m Hort. kew.

Mixed with Wheat flour in half the quantity, it makes a very good bread, that appears to be harmless. But bread made with this flour only has brought on a most surprising rigidity of the limbs in those who have used it for a continuance; inasmuch that the exterior muscles could not by any means be reduced, or have their natural action restored. These symptoms usually appeared on a sudden, without any previous pain; but sometimes they were preceded by a weakness and disagreeable sensation about the knees.

Baths both hot and cold, fomentations and ointments of various kinds have been tried without effect; inasmuch that it is regarded as incurable, and being neither very painful nor fatal, those who are seized with it usually submit to it with patience.

Swine fattened with this meal lost the use of their limbs, but grew very fat lying on the ground. A horse fed some months on the dried herb was said to have his legs perfectly rigid. Kine are reported to grow lean on it, but sheep not to be affected. Pigeons, especially young ones, lose the power of walking by feeding on the seed. Poultry will not readily touch it, but geese eat it without any apparent damage. In some parts of Switzerland cattle feed on the herb without any harm. It would be worth enquiring therefore whether the soil may not contribute something to the ill qualities of the plant: and it is remarked that the seed from a strong, fat, moist soil, is much more deleterious than from a light dry oneⁿ.

Fabbroni from Florence in 1786 says that the government there has cautioned the peasants against the use of *Lathyrus sativus*; swine having lost the use of their limbs, and become pitiable monsters by being fed on this pulse exclusively. The peasants however eat it boiled, or mixed with wheat flour, in the quantity of one-fourth, without any harm.

The poisonous *Lathyrus* from Barbary is *L. semine punctato* of Casp. Bauhin, and seems to be only a variety; for in the crops of *L. sativus* in Italy they find black seeds striped with white, as in the African seed. Fabbroni suspects it to be a mule between *L. sativus* and *Cicera*, for the flower and seed partake of the characters of both; having a black seed marked with white; and a white banner with a red keel to the corolla^o.

7. This is a small plant, a span or at most a foot in height. Stems obscurely triangular. Stipules subulate-lanceolate, with the hinder tooth acute. Petioles very short; the lower terminated by a very short awl-shaped bristle; the upper elongated into a filiform tendril. Leaflets striated underneath, and acuminate. Calyx very small and shorter than the stipules from the axils of the petioles on a scarcely apparent peduncle. Corolla scarcely longer than the calyx, pale. Legume almost the length of the leaves, but broader, smooth, stiff and straight^p.

Root annual. Stems several, weak, a foot or eighteen inches in height. The whole plant smooth. Leaflets either ensiform, or narrow lanceolate, with three or five nerves underneath. Stipules almost as long as the petioles, with the lower hook much shortest, and a minute toothlet in the middle. Peduncles axillary, solitary, in some individuals shorter than the calyx, in others twice or thrice as long, terminated by a bristle, which also varies in length. Standard and wings of the corolla deep red; keel pale. Legume linear, veined, acuminate, scarcely compressed, containing eight seeds at most, which are dusky and rounded-angular^q.

Native of the Levant. Cultivated by Mr. Miller in 1739^r.

Monf. Villars says that it is found wild in Dauphiné; where they have also another *Lathyrus* with one-flowered peduncles, which he names *biauritus*, on account of the two-eared stipules, broader than the leaves. The stems are straight and quadrangular: the leaves linear-lanceolate and conjugate: the legume oblong, containing six seeds.

8. Gerard thus distinguishes this from the next.

ⁿ Duvernoy.

^p Linn. spec.

^o Fabbroni's letters in M.S.S. Banks.

^q Jacquin.

^r Hort. kew.

The stem is simple or at most double, subsolitary as Linneus calls it, longer, procumbent, almost naked. Leaflets setaceous, narrower, with the nerves not so conspicuous. Stipules linear, with a longer appendicle. Petiole thrice the length of the stipule. Legume subovate, turgid. Seeds two or three, spherical, very smooth.

About Montpellier, on monte Baldo, Italy. Cultivated in 1739 by Mr. Miller^a:] who describes it as an annual plant, seldom more than six or eight inches high, with bright scarlet flowers.

[9. This is an annual plant as well as the last; but it produces many stems, which are diffused, a span long, with the internodes approximating. Leaflets linear, gradually longer and narrower, nerved. Stipules lanceolate. Petiole about the same length with the stipule. Legume oblong, broadish, compressed, a little curved in at the tip. Seeds five or six, angular^c.

Allione has given a new species under the name of *L. coccineus*, which he distinguishes from this, by its scarlet flowers, lanceolate leaves with five nerves, and a nerved torose legume, not compressed and broad, as in that, and containing a greater number of seeds, which are nicely round, not angular^d.

He gives the same synonym of Ray, which Duvernoy assigns to *L. Cicera*, n. 5. and that of Seguiet, which Linneus and others give to *setifolius*. Gerard says, that all the synonyms of *angulatus* are uncertain, except those of Tournefort, Magnol and Buxbaum.

10. The leaves have usually four leaflets; the lower petioles are lanceolate and leafless. Stipules mucronate at both ends. The flower has the keel of the Pea, waved on the sides, and not oblique as in *Lathyrus*. Standard bright red, with white wings and keel^e. Legume oblong, narrow, attenuated to both ends, compressed, swelling over the seeds. Peduncles of the seeds forked. Seeds four, elliptic lens-shaped, smooth, clouded with ash-colour and brown^f.]

Miller says, it is an annual plant with a climbing stalk which rises near three feet high; that the leaves have several leaflets, terminated by very long clasps; that the peduncles are five or six inches long, with two flowers, one above another; that it flowers in June and July, and the seeds ripen in autumn.

[Native of the South of Europe. Cultivated in the botanic garden at Chelsea, in 1739^g.]

11. The *Sweet Pea* as it is commonly called, is an annual plant, which rises from three to four feet high, by means of its long clasps or tendrils. The flower-stalks come out at the joints, are about six inches long, and sustain two large flowers, which have a strong odour; and are succeeded by oblong hairy pods, having four or five roundish seeds in each.

In the common sort the corolla has dark-purple standards, with the keel and wings of a light blue. (variety *δ*.) Other varieties are the white; the pink with a white keel, and the wings pale blush-colour; [the pink or blush-coloured standard with both keel and wings white; the rose-coloured standard with the wings and keel pale blue: these that have a mixture of red with white or pale blue are called Painted Ladies. There is also a variety of the common dark sort, with the keel pale violet, and the wings dark violet, &c.

According to Linneus the common dark sort is a native of Sicily, and the painted Lady of Ceylon. This flower now become so common was not known to our gardens in the time of Parkinson or Evelyn. It was cultivated by Dr. Uvedale at Enfield in the year 1700^h. Mr. Petiver observed it there with Dr. Plukenet, and afterwards at Chelsea and elsewhere. He inserts it in his list of rare plants observed in 1713ⁱ.]

12. This rises with a climbing stalk five or six feet high, having two membranes or wings running from joint to joint. Leaflets long and narrow. Peduncles long, each sustaining two pale-yellow flowers, which are succeeded by long taper pods, containing several roundish seeds.

[It has the appearance of the larger perennial *Lathyrus* with yellow flowers, but differs in being annual, whence Linneus gave it the trivial name of *annuus*, which is otherwise improper, all the species of the two first divisions, except the thirteenth, being likewise annual. The stem is angular and lofty, the leaflets smooth, and three times as long as the common petiole, which has two linear semisagittate stipules at its base, about half its length, and finishes in three twisted tendrils. The peduncles commonly bear only one small yellow flower, and end in a sort of awn. Legume long, containing nine seeds^c.

Linneus describes the stipules as two-parted, very narrow, with the upper segment awl-shaped, the lower linear and even almost capillaceous.

Native of France and Spain.] Mr. Miller, says he has also received the seeds from Siberia. Cultivated in 1640, by Mr. John Coys, according to Parkinson^d.

13. Stem woody, two feet high, much branched. Branches round, tomentose, hanging down. Leaves alternate. Leaflets about twenty pairs or more, ovate, white underneath, reflex at the edge, subsessile. Stipules awl-shaped, short, deciduous, tomentose, inserted into the petiole. Flowers axillary, on short, white-tomentose peduncles, with one bracte to each flower. Calyx globular. Corolla yellow. Legume oblong, straight, hanging down, narrower at the base, submentose; containing from eight to ten obovate seeds.

Native of Peru, on the hills near Huanuco. Cultivated in the royal garden at Madrid before 1791, and flowering there from July to November.

It has the habit of *Orebus* with the style of *Lathyrus*^e.]

14. Stem four or five feet high. Leaflets veined. Peduncles short, sustaining two large flowers with purple standards, the wings and keel bright red. Legumes long, jointed; containing several seeds.

[The whole plant is very smooth. Stem branched, running out on each side into a slender sharp wing. Petioles angular, ending in bifid, trifid or simple tendrils. Stipules lanceolate, acuminate, produced downwards into an earlet, similar but much smaller. Peduncles sometimes one-flowered. Calyx under the banner purple. Keel much shorter and narrower than the wings. Legume brownish, swelling over the seeds, which are six or seven in number, scarcely angular, and variegated with black and brown^f.

Native of Barbary. Cultivated in 1680, by Robert Morison, M.D.^g who had the seeds from Tangier by Alexander Balam, Consul there; and afterwards by Robert Spotswood, Surgeon at the same place. It flowers in June and July; and although it has not the agreeable scent, or variety of colours, or continuance in blow of the Sweet Pea, yet it is usually sown in our gardens with other annuals^h.

15. Native of the Levant.]

16. Root perennial (all other authors say annual). Stalks three or four, weak, near two feet long. Peduncles about four inches in length, sustaining two purple flowers, (frequently three). Pods rough, little more than an inch long, containing three or four roundish seeds.

[Stems angular, twisted, slightly hairy. Leaflets slightly hairy, with three strong ribs, terminated by an awn. Petioles triangular, furrowed above. Tendrils mostly dividing into three. Stipules semisagittate, pointed, with long appendages, two at the base of each petiole. Flowers an inch or an inch and half from each other. Bractes awl-shaped, small, about a quarter of an inch beneath the terminating flower, and at the base of the short pedicel of the lower. Calyx one-third of the corolla in length; segments equal, extending half way down. Corolla purple, with yellow lines within. Legumes short, covered with hairs, each hair proceeding from a glandⁱ.

Native of many parts of Europe. With us not common.] Mr. Miller found it in places spread over with brambles near Hockerel in Essex. [It has been observed in several parts of that county, as about

^a Hort. kew.

^b Linn. spec.

^c Ibid.

^d Ger. prov.

^e Gertner.

^f Philos. trans. vol. 28. 210.

^g Fl. ped. n. 1222.

^h Hort. kew.

ⁱ Villars.

^j Hort. kew.

^k Curtis.

^l Cavanilles.

^m Jacquin.

ⁿ Woodward.

Hockley and Raleigh, and elsewhere in Rochford hundred; near Munden-church and Laydon-hall in Dengy hundred. On hills north of Pensford, on the Bristol road, and between Pensford and Keynsham in Somersetshire. It flowers in July.]

17. Root creeping, putting out irregular tubers about as big as those of the Pig-nut, covered with a brown skin. These shoot up several weak, trailing stalks. Peduncles weak, about three inches long, each sustaining two flowers. Corollas deep red.

[Stems about a foot high, obscurely quadrangular, branched, smooth. Leaves alternate, petioled; leaflets subsessile, acuminate, ending in an awn, bright green, very smooth, involute. Stipules sagittate, quite entire. Peduncles axillary five or six-flowered. Legume long, containing ten or twelve seeds^k.] These are seldom produced in England. This plant is cultivated in Holland for the roots, is sold in the markets and commonly eaten there. [With us only for ornament, being a beautiful hardy perennial, resembling the Everlasting Pea, but of an humbler growth. It should however be introduced with caution, on account of its creeping roots, and is perhaps better suited to the unclipped hedge of the pleasure-ground, than the border of the flower-garden^l.

Native of France, Germany, Flanders, Holland, Switzerland, Austria, Siberia. It flowers in July and August; and was cultivated in 1640 by Parkinson^m; who calls it *Pease Earth-Nut*, as does also Gerarde.

18. Root perennial, creeping. Stems a foot or eighteen inches, and sometimes three feet or even more in length, when without support procumbent, but climbing by means of tendrils, and having the appearance of being upright in meadows, and especially among bushes; they are obtusely quadrangular, and much branched. Leaflets quite entire, smooth or slightly villous underneath only, marked with three nerves, on triangular, furrowed petioles. Stipules in pairs, large, shaped like the head of a halbert, or half the head of an arrow, frequently having sharp processes at the base. Flowers in a raceme, directed one way, from four or five to eight or ten, on axillary peduncles, four or five inches long, four-cornered: each on a hairy pedicel, with a very minute awl-shaped bracte at the base. Calyx one-third of the length of the corolla, divided half way into five awl-shaped segments, which are rather unequal, and somewhat hairy. Corolla yellow. Legumes an inch and half long, compressed, smooth, black, containing from seven or eight to twelve globular shining seeds, of a yellowish or brown colour, with small purple dots.

Native of most parts of Europe, in meadows and pastures, woods, thickets and hedges, flowering from June to August.

According to Linneus, horses, kine, sheep and goats eat it. Swine refuse it: and the Badger is said to feed upon it.

In old authors this plant is much reprobated as a vile weed, that spreads much by means of its creeping roots, and accordingly Mr. Miller will not have it admitted into gardens. Many modern writers however recommend it as an excellent food for cattle, and not without reason, since its quality is good, and it bears a large burden of succulent leafy stalks. Among its patrons we may reckon Linneus, Haller, Schreber, Anderson, Curtis and Young.

Mr. Swayne asserts, that it does not seem to be at all agreeable to cattle, and that where they have a choice of feed they seldom touch it. But with respect to this and many other leguminous plants, we are not to conclude that they are disagreeable to cattle, because they are not eaten in their fruiting state. They may still be excellent in hay, and the cattle may be fond of the young succulent herbage. This, and other leguminous plants are best mixed with good grasses in permanent meadows. Mr. Curtis informs us that he observed a piece of stiff soil, belonging to Lord Loughborough, near Mitcham, which produced an excellent crop, consisting chiefly of this plant, and *Festuca pra-*

tensis. There could not well be a better mixture than this made by art, for strong land.

A difficulty which Mr. Swayne mentions is not so easily got over. This is, that it produces very few seeds, and that those few are for the most part devoured by a species of *Curculio*. Probably with care in a garden, a sufficient quantity of seed might be produced; or if not, we must have recourse to the ordinary methods of increasing perennial plants, by the roots, layers or cuttings.

It is called in English, Common yellow or meadow Vetchling, and Tare Everlasting.

19. Root perennial. Stems six feet or more in height, climbing or trailing, spreading widely, branched, winged and smooth. Leaves petioled: leaflets ending in a short point, beneath three-ribbed, glandular at the base. Petioles three-sided, winged, rough at the edge. Tendrils for the most part trifid. Stipules linear-lanceolate, half-arrow-shaped or awl-shaped, very narrow, hooked, or bearded at bottom. Peduncles a span long, somewhat angular, naked; with one awl-shaped bracte at the base of each pedicel, which is short, bending and coloured. Flowers not more than six in a raceme. Corolla red and white: standard large, rose-coloured, faintly netted-veined; wings violet; keel whitish green. Legumes two inches long, and nearly half an inch wide, compressed, smooth, brown. Seeds ten to twelve, nearly round, blackishⁿ.

This is distinguished from *latifolius* by the leaves not being broader than the stem and three-ribbed, and the flowers of a much smaller size^o.

Native of most parts of Europe. In England, between Castle Camps and Bartlow in Cambridgeshire. Between Bath and Bristol. Conway in Wales. Between Pershore and Eckington in Worcestershire. Shelton bank near Salop. Near Pensford, &c. Near London it is rare, in the Oak of Honour wood near Peckham. In many parts of Kent and Bedfordshire it grows abundantly.

Though greatly inferior to *L. latifolius*, it is however frequently seen in gardens.

20. Root perennial. Stalks several, thick, climbing by means of tendrils to the height of six or eight feet, or even higher in woods: these die to the ground in autumn, and new ones rise in the spring from the same root. Leaves stiff, marked with three or five strong ribs, rolled in at the edge, blunt at the end, but terminating in a little point or bristle; they are always in pairs, and on a winged petiole; at the base of this are large stipules, shaped somewhat like the head of a halbert. Tendrils multifid or branched. Peduncles eight or nine inches long. Each flower has an awl-shaped bracte at the base of the pedicel. Corolla pale purplish rose-colour. Legumes an inch and half long, and half an inch in breadth.

This species is distinguished from the narrow-leaved sort (*L. sylvestris*) by the greater breadth of the leaves, and by the abundance and superior size of the flowers.

Native of many parts of Europe, in hedges and woods. Mr. Ray observed it about the middle of the last century in the Cambridgeshire woods, and it still keeps its post, though almost a century and half has elapsed. Johnson in Gerarde says, that great store of it grows in Swainscombe wood near Greenhithe in Kent. Rocks near Red Neese by Whitehaven. Severn Stoke Copse, Worcestershire, &c. It flowers at the end of June and beginning of July.

It is a showy plant for shrubberies, wilderness quarters, arbours, and trellis-work; but too large and rampant for the borders of the common flower-garden. Bees resort much to it, and the flowers furnish them with abundance of honey. It yields a great quantity both of green fodder and seeds; but in what degree the former might be agreeable to cattle, and the latter to pigeons or poultry, must be seen by experience.

21. Root perennial. Stems quadrangular, winged, two wings broader, three or four feet high. Leaflets nerved, shorter than those of *L. sylvestris*, and longer than those of *L. latifolius*. Petioles triangular, longer

^k Pollich.

^l Curtis.

^m Hort. kew.

ⁿ Curtis.

^o Withering.

than the leaves. Tendrils branched. Stipules lanceolate, scarcely wider than the stem. Flowers in racemes of about six together. Standard and wings flesh-coloured; keel whitish.

By the leaves, the wings of the stem, and the size of the flowers, this is a species intermediate between *sylvestris* and *latifolius*².

Native of Sweden, Switzerland. France, Silesia.

22. Root perennial, creeping. Whole plant smooth. Stems from three to four feet high when supported, but little branched, winged. Leaflets two or three pairs, opposite or rarely alternate, lanceolate, acute, glaucous beneath. Tendrils two-cleft or three-cleft. Stipules half-arrow-shaped. Flowers three, sometimes to six or more, pointing one way, in erect racemes. Corolla vivid purplish blue, of great beauty. Legumes longish and smooth³.

The wings of the stem are narrower than in *sylvestris*. The figure in Flora Danica represents thirteen flowers, rather red than blue.

Native of many parts of Europe, in moist woods and pastures, but in England not common. Peckham-field on the back of Southwark; found by Thomas Willisel. Wood near Abingdon. Near Ranaugh and Burgh in Norfolk. Little Eversden and Bardwell fens in Cambridgeshire. East Fen, Lincolnshire. Bardon hill, Chorley forest in Leicestershire. Lancashire. Yorkshire. Scotland.

23. Root perennial. Plant growing like the Pea. Stems acute-angled. Petioles often six-leaved (sometimes eight). Leaflets ovate-oblong, acute. Stipules acuminate at the base, scarcely angular. Peduncles the length of the leaves. Corolla with the standard and wings whitish with purple veins (Miller says blue). Standard small, with the keel of Pea, and not oblique. Style longitudinally bearded above.

The leaflets are convolute as in *Pisum maritimum* and *Ocbrus*; not involute, as in most of the *Lathyri*⁴.

Native of Germany and Siberia. Cultivated by Mr. Miller in 1759. It flowers in June⁵.

Lathyrus parisiensis of Miller, n. 4. is different from all the above. It belongs to the first division, having one-flowered peduncles.] He describes it as an annual plant, with a slender stalk, about a foot high. Leaves composed of several narrow leaflets, placed alternately. Stipules lanceolate. The flowers come out singly upon pretty long peduncles: they are blue, and about the size of those of Common Tare.

[From his specimens in the Banksian herbarium, which came from the Paris garden, it appears that the leaflets are often in two pairs, but that the number varies exceedingly from one to six or seven. Some of the tendrils are simple, others branched. The stem is winged, and the rachis of the leaves remarkably so. It has a glaucous hue. Miller seems to have confounded it with our *L. palustris*, from which it is very different.

L. magno flore, n. 14. figured in t. 160. of the figures, is nothing more than a variety of *L. latifolius*.] He says it differs from that in having much shorter stronger stalks; broader leaves of a deeper green; much larger flowers of a brighter red colour.

[Of Mr. Miller's last *Lathyrus* I know nothing. He calls it *L. americanus*; it is one of Houstoun's plants found at La Vera Cruz, and belongs to the second division, having two-flowered peduncles.] It is an annual plant, with a trailing stalk a foot long; a single kidney-shaped leaf, veined beneath, at each joint; peduncles very short; flowers small, of a deep yellow colour; succeeded by short taper pods, including three or four small roundish seeds. Houstoun names it *Nissolia americana procumbens, folio rotundo, flore luteo*.

PROPAGATION AND CULTURE.

These may all be propagated by sowing their seeds, either in spring or autumn; but those which are sowed in autumn should have a light soil and a warm situation, where the plants will abide the winter, and come to flower early the following spring, and their seeds

² Villars, Krockner, Haller.
³ Linn.

⁴ Engl. bot. Woodw. Retz.
⁵ Hort. kew.

will ripen in July; but those which are sown in the spring should have an open exposure, and may be planted upon almost any soil, if not too wet, for they are not tender plants, nor do they require much culture: these sorts should all of them be sown where they are designed to remain, for they seldom succeed when they are transplanted, unless it is done while the plants are young; so that where they are sown for ornament, there should be four or five seeds sown in a small patch, in different parts of the borders of the flower-garden; and when the plants come up, they should be carefully kept clear from weeds; but when they are grown two or three inches high, there should be some sticks put down by them to support them, otherwise they will trail on the ground, or on whatever plants stand near them, and become unsightly.

The eleventh sort, with the varieties of it, are deserving of room in every good garden for the beauty and odour of their flowers; and the fourteenth sort is by some cultivated for the colour of the flowers; but there are few of the other sorts worthy of room in gardens, except the twentieth sort, which, if it be planted in a proper situation, and rightly trained, will make a fine appearance.

[6. The seeds of *L. sativus* are sown, in the countries where it is cultivated for fodder or the seed, at the end of August, the beginning of September, or in the spring; in strong ground: for in a light dry soil the roots are very weak, and it is apt to be destroyed by spring frosts. Its produce is very abundant, and the culture not being expensive is very general in some parts of Europe.

11. The gardeners, who raise Sweet Peas for the London markets, sow them in the autumn in pots, and secure them from severe weather by placing them in hot-bed frames; by which means they can bring them early to market. They may be continued in flower the whole summer by repeated sowings in the spring. When sown in pots they must be watered frequently.

17. Tuberous *Lathyrus* is as noxious a weed to the husbandman as small Bindweed (*Convolvulus arvensis*), and equally difficult to extirpate. The tubers of the root are in high esteem in some countries as an article of food, and the plant is easily propagated either by these or the seed. With us the former method only can be practised. It thrives best on light ground.

LATHYRUS. See *Orobis* and *Vicia*.]

LAVANDULA (à lavando; from its use in fomentations and baths.)

Lin. gen. n. 711. Reich. n. 769. Schreb. n. 965.

Tournef. 93. Gært. t. 66. Juss. 113.

Stoechas. Tournef. 95.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillata*. Raii, Moris. Linn.

Labiata. Juss. Tournef. &c.

GENERIC CHARACTER.

CAL. Perianth one-leaved, ovate: mouth obscurely toothed, short, permanent, supported by a bracte.

COR. one-petalled, ringent, resupine. Tube cylindric, longer than the calyx. Border spreading: one lip looking upwards, larger, bifid, spreading: the other lip looking downwards, trifid: divisions all roundish, nearly equal.

STAM. Filaments four, short, within the tube of the corolla, deflected, of which two are shorter. Anthers small.

PIST. Germ four-parted. Style filiform, length of the tube. Stigma two-lobed; obtuse, converging.

PER. none. Calyx converging with the mouth and guarding the seed.

SEEDS four, obovate.

OBS. *Lavandula T.* has the flowers disposed in a simple spike.

Stoechas T. has flowers in a spike in several rows and ornamented with a tuft.

ESSENTIAL CHARACTER.

Cal. ovate, obscurely toothed, supported by a bracte.

Cor. resupine. Stam. within the tube.

SPECIES.

1. *Lavandula Spica*. Common Lavender.

Lin. spec. 800. Syst. 530. Reich. 3. 35. Lin. jun. diff. de Lavand, n. 1. hort. cliff. 303. 1. upf. 162. mat.

mat. med. 146. *Woodv. med. bot.* 150. t. 55. *Hall. helv. n.* 232. *Sauv. monsp.* 143. *Ger. prov.* 273. n. 2. *Sabb. hort.* 3. t. 72. *Berg. phyt.* 2. 233. *Zorn. ic.* 53.

α. *L. angustifolia.* *Narrow-leaved Lavender.*

Mill. dict. n. 2. *Baub. pin.* 216. *Garid. air.* t. 60.

L. officinalis. *Villars dauph.* 2. 363.

L. minor f. Spica. *Ger. emac.* 584. *Park. theat.* 73. n. 2. *Raii hist.* 513.

L. alba. *Dod. pempt.* 273. *Blackw. t.* 294.

Pseudo-Nardus, quæ Lavendula vulgo. *Baub. hist.* 3. 281.

β. *L. latifolia.* *Broad-leaved Lavender.*

Baub. pin. 216. *Villars dauph.* 2. 363. *Blackw. t.* 295.

L. Spica. *Mill. dict. n.* 1.

L. flore caruleo & albo. *Ger. emac.* 583. f. 1, 2.

L. major f. vulgaris. *Park. theat.* 73. f. 1. *Raii hist.* 512.

Pseudo-Nardus, quæ vulgo Spica. *Baub. hist.* 3. 280.

Leaves sessile lanceolate-linear rolled back at the edge, spike interrupted naked.

2. *Lavandula Stoechas.* *French Lavender.*

Lin. spec. 800. *syft.* 530. *Reich.* 3. 36. *hort. cliff.* 303. 4. *upf.* 162. *mat. med.* 146. *diff. n.* 2. *Sauv. monsp.* 143. *Ger. prov.* 273. n. 1. *Blackw. t.* 241.

Stoechas officinarum. *Mill. dict. n.* 1.

S. purpurea. *Baub. pin.* 216.

S. f. Spica hortulana. *Ger. emac.* 585.

S. vulgaris. *Park. theat.* 67.

S. arabica vulgo dicta. *Baub. hist.* 3. 277. *Raii hist.* 514.

S. brevioribus ligulis. *Clus. hist.* 1. 344.

β. *Stoechas pedunculata.* *Mill. dict. n.* 2.

S. cauliculis non foliatis. *Baub. pin.* 216.

S. fummis caul. nudis. *Ger. emac.* 586. f. 4.

S. longioribus ligulis. *Clus. hist.* 1. 344. *Park. theat.* 68. 3. *Raii hist.* 514.

S. africana purpurea, folio multifido. *Seba thes.* 2. t. 35. f. 5.

Leaves sessile linear tomentose rolled back at the edge, spike contracted comose, bractes subtrilobate.

[3. *Lavandula viridis.* *Madeira Lavender.*

L'Herit. fert. angl. 19. t. 21. *Ait. hort. kew.* 2. 288.

Leaves sessile linear wrinkled villose rolled back at the edge, spike comose, bractes undivided.]

4. *Lavandula dentata.* *Tooth-leaved Lavender.*

Lin. spec. 800. *syft.* 530. *Reich.* 3. 36. *hort. cliff.* 303. 3. *diff. n.* 3.

Stoechas dentatus. *Mill. dict. n.* 3.

S. folio ferrato. *Baub. pin.* 216. *Ger.* 470. *emac.* 586. *Park. theat.* 68. 4. *Raii hist.* 514. *Barr. ic.* 797.

S. crispo folio. *Clus. hist.* 1. 345.

S. ferr. & crispo fol. *Baub. hist.* 3. 279. f. 2.

Leaves sessile linear pectinate-pinnate, spike contracted comose.

[5. *Lavandula pinnata.* *Pinnated Lavender.*

Lin. syft. 530. *diff. n.* 4. t. 1. *Jacqu. ic.* 1. t. 106. *misc.* 2. 318. *Pluk. phyt.* t. 303. f. 5.

Leaves petioled pinnate, leaflets wedge-form, spike imbricate.]

6. *Lavandula multifida.* *Canary Lavender.*

Lin. spec. 800. *syft.* 531. *Reich.* 3. 35. *vir. cliff.* 56. *hort. cliff.* 303. 2. *upf.* 162. *diff. n.* 5. *Gertn. fruct.* 1. 320. *Burm. ind.* t. 38. f. 1.

L. folio dissecto. *Baub. pin.* 216. *Barr. ic.* 798.

L. fol. multifido. *Clus. hist.* 1. 345. *Baub. hist.* 3. 281. f. 2. *Park. theat.* 73. 4. *Raii hist.* 513.

Stoechas multifida. *Ger.* 469. 2. *emac.* 585. 2.

β. *L. canariensis.* *Mill. dict. n.* 4.

L. fol. longiore tenuius & elegantius dissecto. *Comm. rar.* t. 27.

Leaves petioled pinnate, leaflets decursively pinnatifid, spike quadrangular, angles spiral.

[7. *Lavandula carnosifolia.* *Thick-leaved Lavender.*

Lin. syft. 531. *suppl.* 273. *diff. n.* 6. t. 2. *Ait. hort. kew.* 2. 289.

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Nepeta indica rotundior folio. *Mor. hist.* 3. 415. f. 11. t. 6. f. 7.

Katu-kurka. *Rheed. mal.* 10. 179. t. 90.

Leaves petioled ovate-cordate serrate fleshy, spike four-cornered, calyxes recurved.

DESCRIPTIONS, &c.

1. Root perennial, thick, woody. Stem shrubby, much branched, frequently five or six feet high, four-cornered, acute-angled, tomentose. Leaves numerous, blunt, hoary, the upper ones sessile, the lower petioled. The flowers are produced in terminating spikes from the young shoots, on long peduncles; the spikes are composed of interrupted whorls in which the flowers are from six to ten, the lower whorls more remote. Each flower upright, on a short pedicel. Bractes broad-ovate, awned, acuminate, veined. The common colour of the corolla is blue, but it varies with white flowers. The whole plant is covered with a down composed of forked hairs^a.]

β. Broad-leaved Lavender has much shorter and broader leaves, and the branches are shorter, more compact, and fuller of leaves. It will continue several years without producing flowers; and when it does, the leaves on the flowering stalks approach nearer to those of the common Lavender, but are still broader. The stalks grow taller, the spikes are looser and larger, the flowers smaller, and appear a little later in the season.

[Gerard observes, that this variety has not only broader leaves, but two opposite branches at the bottom of the stem, and paler-coloured flowers. This also varies with the corolla entirely white.

Native of the South of Europe, on mountains, by way sides, and in barren places: Asia and Africa. It flowers here from July to September, and was cultivated in 1568, as appears from Turner^b.

Lavender is a plant which has long been celebrated for its virtues in nervous disorders. According to Dr Cullen it is, "whether externally or internally, a powerful stimulant to the nervous system; and amongst others of this order, named Cephalics, the Lavender has a very good, and perhaps, the best title to it." And he farther says, "it appears to me probable that it will seldom go farther than exciting the energy of the brain to a fuller impulse of the nervous power into the nerves of the animal functions, and seldom into those of the vital. It may however be with great propriety, that Professor Murray has dissuaded its use where there is any danger from a stimulus applied to the sanguiferous system. It is however still probable that Lavender commonly stimulates the nervous system only, and therefore may be more safe in palsy than the warmer aromatics, especially if the Lavender be not given in a spirituous menstruum, or along with heating aromatics, which however is commonly done in the case of the spiritus Lavandulæ compositus.

The officinal preparations of Lavender are the essential oil, a simple spirit, and a compound tincture. The essential oil has been used for stimulating paralytic limbs, and for several external purposes.]

2. French Lavender or purple *Stoechas* has a low, thick, shrubby stalk, about two feet high, sending out woody branches the whole length. Leaves about an inch long, hoary and pointed, of a strong aromatic scent, opposite at each joint, with smaller leaves of the same shape coming out at the same places. The branches are terminated with scaly spikes of purple flowers, four-cornered, and an inch in length; and at the top a coma or small tuft of purple leaves. The whole plant has a very strong, aromatic, agreeable odour.

[Stem obscurely, branches acutely quadrangular. Leaves quite entire, with a longitudinal groove at top, beneath transversely veined, wrinkled. Spike on a short peduncle. When it begins to flower, there are only four flowers in a whorl, but these are afterwards increased by the lateral gems, till it becomes gradually round. The bractes are broad-ovate and subtrilobate, with the middle lobe more produced; they are subtomentose, purple, and veined: at the top they widen into larger, oblong, violet-coloured leaves, and form a coma^c.]

^a Linn. diff.

^b Hort. kew.

^c Linn. diff.

β. The peduncles in this variety are three times the length of those in the common *Stoechas*, and naked. The spikes are longer and not so thick, and the leaves of the coma are more numerous, longer, and of a brighter purple colour. Both these vary to purple, and white in the corolla, but the most common colour is blue.

[Native of the South of Europe. Cultivated in 1568, according to Turner. It flowers from may to july.

3. This differs from the preceding by its wrinkled villose leaves, which are green, and not hoary, as in that; the bractes also and coma are green and entire, not purple and subtrilobate, as in *L. Stoechas*.

Found in the island of Madeira by Masson^d. Introduced in 1777. It flowers from may to july^e.]

4. This has a woody stalk two or three feet high, with four-cornered branches on every side the whole length. Leaves opposite, about an inch long, and an eighth of an inch broad, indented regularly on both sides almost to the midrib, of a grayish colour, a pleasant aromatic odour, and a biting warm taste. The flowers are produced in scaly spikes at the ends of the branches upon long naked peduncles. The spikes are four-cornered, hairy, and about an inch long, terminated by a few purplish leaves.

[Stem hispid, with the angles prominent, rounded, having a groove on each side. Leaves hispid with hairs inserted into raised points: leaflets linear, short, truncate. Peduncle quadrangular, tomentose. Bractes broad-ovate, rounded at top, hispid, coloured, veined; the terminating ones larger and of a darker colour^f.

Native of Spain and the Levant. Cultivated in 1597, as appears from Gerarde. It flowers from june to september^g.

5. This is a low, very branching shrub, with a brownish bark. Younger branches quadrangular, but becoming round as they grow woody. Leaves very blunt, thickish, soft to the touch, opposite, hoary: leaflets oblong, sometimes quite entire, sometimes bifid or trifid at top. Petioles channelled, the lower ones very long. Peduncles leafless, about a foot in length, upright, soft, hoary, quadrangular at top. Spikes commonly three together, upright, obtusely quadrangular, lanceolate, acute. Bractes ovate or lanceolate, concave, quite entire, upright, silky, a little longer than the calyx; in the fruiting plant squarrose. Calyx pale green or hoary. Corolla purple or pale violet, with a hairy throat, an upright tube twice the length of the calyx, and the upper lip double the length of the lower. Anthers round, villose. Stigma purplish. Seeds small, oblong, black with a white scar. The flowers have a sweet smell; but the leaves have very little smell or taste^h.

Native of Madeira, where it was found by Mr. Francis Masson. Introduced in 1777. It flowers from april to octoberⁱ.]

6. This is an annual (or rather a biennial) plant, with an upright branching woolly stalk two feet high. Leaves hoary, opposite, cut into many divisions to the midrib: these segments are again divided on their borders towards the top into three blunt ones, so that they end in many points. The peduncle is continued from the end of the branch, is naked, and about six inches long, quadrangular, and terminated by a close spike of flowers about one inch long: the rows of flowers are twisted spirally. There are commonly two small spikes below this, and about an inch from it. The corolla varies from blue to white.

[Stem quadrangular, with the angles acute and extremely villose. The leaflets have four or five segments (three on the upper and one or two on the lower) lanceolate, blunt. The lower leaves are petioled, the upper sessile; all flat and hairy; the uppermost have a few simple hairs, and more that are compound, always moist and somewhat clammy with the oil that exudes from them. Peduncle tomentose. Spike lanceolate, quadrangular, gradually lengthened whilst the flowers open, becoming cylindric, but with four spiral angles. Bractes lanceolate, hoary, shorter.

Flowers four in a whorl. Corolla violet-coloured^k. Seeds roundish, small, bay-coloured, convex on one side, obscurely angular on the other, obliquely truncate at the base, and marked with a very wide white umbilical area^l.

Native of Spain. Cultivated in 1597, as appears from Gerarde^m.]

β. This rises with an upright branching, square stalk, four feet high. Leaves longer, and cut into narrower segments than the Spanish plant: they are of a lighter green, and almost smooth: the naked flower-stalk is also much longer, and terminated with a cluster of spikes of blue flowers; at two or three inches below these are two small spikes, one on each side. The flowers are smaller than those of common Lavender.

Native of the Canary islands, whence the seeds were sent to Compton Bishop of London, in whose garden at Fulham the plants were first raised.

[7. Stem quadrangular, with the angles rounded, scarcely pubescent. Leaves veined, very finely pubescent, deciduous in the time of flowering; on petioles the length of the leaves, horizontal, semicylindric, channelled. Spike at first pyramidal and four-cornered, dilated and becoming round during the time of flowering, but when the germs are fecundated elongated into a cylinder. Bractes fleshy, hairy, ciliate, acute, erect. Flowers four in a whorl, recurved. Corolla blue. The fruiting spike resembles a cylindric strobile, with recurved scales.

This species does not coalesce kindly with the rest; but the bilabiate calyx and the resupine corolla evidently place it hereⁿ.

Native of the East Indies, (where it was observed by Koenig near Sadras on very arid rocks and walls, and by Rheede in the sands of Malabar). It was introduced in 1778 by the Right Hon. Sir Joseph Banks, Bart. K. B. and flowers in june. This, as well as the last, is a biennial plant^o.]

PROPAGATION AND CULTURE.

1. Common Lavender is propagated by cuttings or slips, planted in march in a shady situation, or in a border where they may be shaded by mats until they have taken root, after which they may be exposed to the sun, and when they have obtained strength, remove them to the places where they are to remain. These plants will abide much longer in a dry, gravelly or strong soil, in which they will endure our severest winters; but they will grow much faster in summer, on a rich, light, moist soil, but then they are generally destroyed in winter, nor are the plants so strong scented, or fit for medicinal uses, as those which grow on a barren rocky soil.

It was formerly in use to make edgings to borders, but it grows too large for the purpose; if often cut in dry weather it is subject to decay, and in hard winters some of the plants will be killed; it should be planted therefore in beds in the kitchen garden where the soil is driest.

[On account of its odour however, plants of it should be interspersed among low shrubs and large herbaceous plants in the borders of large gardens and plantations.

All the other species require the protection of the greenhouse, except n. 2. which is tolerably hardy; and the last, which must be preserved in the dry stove. They may all be increased by slips or cuttings; and also by seeds, but they do not all produce seeds in our climate.]

2. Purple *Stoechas*, which our old authors call *Sticadoue*, *Sticados*, and *Sticadore*, from the Italian *Stocade*, on account of its being found on the islands called *Stoechades*, may be cultivated by sowing the seeds upon a bed of light dry soil in march; when they come up clear them from weeds until they are two inches high, and then remove them. For this prepare a spot of light dry ground, lay it level, and tread it out into beds, into which set the plants at five or six inches distance every way; watering and shading

^d L'Heritier.

^e Hort. kew.

^f Hort. kew.

^g Jacq. & Linn. diff.

^h Linn. diff.

ⁱ Hort. kew.

^k Linn. diff.

^l Linn. diff.

^m Gartner.

ⁿ Hort. kew.

^o Hort. kew.

them until they have taken root. If the winter should prove severe, cover them with mats, peas-haulm or other light covering, to guard them against the frost. In march or the beginning of april, the following spring, remove them into the places where they are to remain; taking a warm moist season, if possible, for this purpose, and not letting them remain long above ground. The soil should be a dry warm sand or gravel, and the poorer the soil is, the better will this plant endure the cold of winter. In a rich moist ground it will not produce so many flowers, nor will they have so strong an aromatic scent.

It may also be increased by slips or cuttings; but the seeds ripen well in this country, and plants raised from these are much better.

4. Tooth-leaved Lavender, and some of the others, seldom producing seeds in England, are propagated by slips or cuttings, planted in april, and treated as directed for the preceding sorts. These will take root very freely, but must be transplanted into pots, that they may be sheltered from severe frost in winter, especially whilst young. When they have obtained strength, some may be planted in a warm situation, on a dry soil, where being prevented from growing too vigorously, they will endure the cold much better than in richer ground.

6. Jagged Lavender, or jagged Sticados, as Gerarde calls it, may be sown in a border of light earth in the spring, and transplanted into the borders of the flower garden or into pots. They may be preserved through the winter in a greenhouse, but never continuing longer than two years, they are generally raised from seed every season.

The variety from the Canary islands is more tender. Sow the seeds on a moderate hot-bed in the spring. When the plants come up, put each into a separate small pot filled with light earth. Plunge the pots into another hot-bed; and in the beginning of june inure them to the open air, and towards the end of the month place them in a sheltered situation. In july the plants will flower, and if the autumn prove warm, the seeds will ripen in september: but when they do not perfect seeds, the plants may be preserved through the winter in a good greenhouse, where they will produce flowers and seeds most part of that season.

[LAVANDULA. See *Verbena*.]

LAVATERA. (So named by Tournefort, from Lavater, a physician at Zurich. We have none of his writings.)

Lin. gen. n. 842. Reich. n. 907. Schreb. n. 1133. Tournef. *act. gall.* 1706. t. 3. Dill. gen. 10. Cavan. *diff.* 2. 86. Juss. 272. Gært. t. 136.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*.—*Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. Perianth double:

Exterior one-leafed, trifid, obtuse, short, permanent.

Interior one-leafed, half five-cleft, more acute, more erect, permanent.

COR. Petals five, obcordate, flat, spreading, affixed below to the tube of the stamens.

STAM. Filaments numerous, coalescing below into a tube; loose above, (gaping at the tip and surface of the tube.) Anthers reniform.

PIST. Germ orbicular. Style cylindric, short. Stigmas several: (seven to fourteen) bristly, length of the style.

PER. Capsule orbicular, composed of as many cells as there are stigmas, bivalve, and articulated in a whorl round the columnar receptacle, at length falling off.

SEEDS solitary, reniform.

Obs. *Althæa* Sp. T. Fruit comes forth without an umbraculum.

Lavatera T. has the fruit covered with an obtuse umbraculum.

ESSENTIAL CHARACTER.

Cal. double, outer trifid. Arils very many, one-seeded.

SPECIES.

1. *Lavatera arborea*. Tree *Lavatera* or *Mallow*.

Lin. spec. 972. Reich. 3. 350. hort. upf. 202. cliff. 348. 2. Gært. fruct. 2. 257. Hudf. angl.

356. *Wither. arr. ed.* 3. 614. *Lightf. scot.* 374. Cavan. *diff.* 86. & 282. t. 139. f. 2.

L. veneta. Mill. *dict. n.* 6.

Malva arborea veneta dicta, parvo flore. *Baub. pin.* 315.

M. arborefcens. *Dod. pempt.* 653. *Camer. hort.* 95. *Bell. syst. æst.* 6. t. 6. f. 1.

M. arborea. *Park. theat.* 299. 6. *Baub. hist.* 2. 952. t. 953. f. 1. *Raii hist.* 601.—minima nostras. *Merr. pin.* *Raii syn.* 252.

M. maritima arborea Veneta dicta, parvo flore. *Mor. hist.* 2. 523. f. 5. t. 17. f. 15.

Stem arboreous, leaves seven-angled hairy plaited, peduncles clustered one-flowered axillary, outer calyxes larger.

[2. *Lavatera micans*.

Lin. spec. 972. Reich. 3. 351.

Malva foliis mollibus undulatis, in margine superius micis sulphureis. *Mor. hist.* 2. 523. f. 5. t. 17. f. 9.

Stem arboreous, leaves seven-angled acute crenate plaited tomentose, racemes terminating.]

3. *Lavatera olbia*. Downy-leaved *Lavatera*.

Lin. spec. 972. syst. 626. Reich. 3. 351. hort. upf. 202. cliff. 348. 3. Jacqu. hort. 1. 30. t. 73.

Ger. prov. 475. Cavan. diff. 86. t. 32. f. 2.

Althæa frutescens, folio acuto, parvo flore. *Baub. pin.* 316. *Mor. hist.* f. 5. t. 19. f. 17.—fol. acuto virente molli, flore specioso. *Pluk. phyt. t.* 8. f. 1.

A. arborea olbia in galloprovincia. *Lob. ic.* 653. adv. 294.

Malva frutescens fol. acuto auriculato Hederæ instar. *Mor. hist.* 2. 523.

Stem shrubby, leaves five-lobed-hastate, flowers solitary.

4. *Lavatera triloba*. Three-lobed *Lavatera*.

Lin. spec. 972. syst. 627. Reich. 3. 351. Jacqu. hort. 1. 30. t. 74. D'Affo arrag. n. 630. Cavan.

diff. 87. t. 31. f. 1. *Pluk. phyt. t.* 8. f. 3.

Althæa frutescens folio rotundiore incano. *Baub. pin.* 316. Lin.

Stem shrubby, leaves subcordate subtrilobate rounded crenate, stipules cordate, peduncles one-flowered aggregate.

[5. *Lavatera lusitanica*. Portuguese *Lavatera*.

Lin. spec. 973. Reich. 3. 352.

Althæa frutescens lusitanica, fol. ampliore minus incano. *Tournef. inst.* 97.

Stem shrubby, leaves seven-angled tomentose plaited, racemes terminating.

6. *Lavatera maritima*.

Allion. pedem. n. 1425. Gouan illustr. 46. t. 21. f. 2. Cavan. diff. 88. t. 32. f. 3.

Althæa frutescens folio rotundiore incano. *Baub. pin.* 316. A. C.

A. arborefcens. *Baub. hist.* 2. 956. A.

Stem shrubby, leaves cordate roundish-lobed crenate tomentose, flowers solitary.]

7. *Lavatera thuringiaca*. Great-flowered *Lavatera*.

Lin. spec. 973. syst. 627. Reich. 3. 352. hort. upf. 203. Gært. fruct. 2. 256. Cavan. diff. 89.

t. 31. f. 3. Jacqu. austr. 4. 6. t. 311.

Althæa thuringiaca. *Cam. hort. t.* 6.—grandiflora. *Dill. elth.* 9. t. 8. f. 8.

A. flore majore. *Baub. pin.* 316. *Raii hist.* 602.

A. pannonica 2. *Clus. pann.* 502.—2 & 3. *Clus. hist.* 24.

Stem herbaceous, fruits naked, calyxes gashed.

8. *Lavatera cretica*. Cretan *Lavatera*.

Lin. spec. 974. syst. 627. Reich. 3. 353. hort. upf. 202. Jacqu. hort. 1. 15. t. 41. Cavan. diff. 89.

t. 32. f. 1.

Malva cretica. Mill. *dict. n.* 7.—annua altissima, flore parvo ad alas umbellato. *Tournef. cor.* 2.

M. annua hirsuta, fol. hederæ instar angulosus. *Mor. hist.* 2. 521. f. 5. t. 17. f. 5.

Stem upright, lower branches diffused, peduncles clustered one-flowered, leaves lobed, upper ones acute.

9. *Lavatera trimestris*. Common annual *Lavatera*.

Lin. spec. 974. syst. 627. Reich. 3. 353. hort. upf. 203. cliff. 348. 1. Cavan. diff. 90. t. 31. f. 2.

Gært. fruct. 2. 257. Jacqu. hort. 1. 29. t. 72.

Curt. magaz. 109. Sauv. monsp. 101.

Malva folio vario. *Baub. pin.* 315. *prodr.* 137. ic.

M. trimestris f. æstiva. *Park. theat.* 300. f. 5.

Malva

Malva trimestr. *Clus. Rati hist.* 598.

M. æstiva hispanica. *Ger. emac.* 931.

Stem herbaceous rugged, leaves smooth, peduncles one-flowered, fruits covered with a ring.

DESCRIPTIONS, &c.

1. Tree Mallow or Mallow tree rises with a strong thick stalk the height of eight or ten feet (in gardens), dividing into many branches at the top. [In its wild state, when largest, from four to six feet high, and as much as four inches in diameter. Leaves alternate, numerous, cordate, roundish-seven-angled (some five and others three-angled), the angles blunt, soft as velvet, shorter than the petioles. Stipules short, smooth, acuminate at the tip, broad at the base. Flowers mostly in pairs, sometimes three together, on upright peduncles an inch and half in length. Outer calyx ovate at the base, divided half way into three broad blunt segments: inner only half the size, divided half way into five sharp segments. Corolla purplish red, with dark blotches at the base, spreading-bell-shaped, (like that of the common Mallow) an inch or more in diameter: petals broader at top, narrow at the base, so that the calyx appears between the claws. Cylinder of filaments purple, woolly at the base. Germ very smooth. Style usually eight-cleft at top. Stigmas revolute, reddish^a. The ring or whorl of fruits is seven or eight-capsuled: common receptacle awl-shaped, with a conoid globule at top, and small crescent-shaped lamellæ at the base and the interstices of the capsules. Capsules reniform-rounded, sharply three-cornered, membranaceous, wrinkled, closed on all sides, pale-bay-coloured, not opening. Seeds kidney-shaped, ash-coloured^b.

Native of Italy, the Levant and Britain. With us it is smaller than it appears in the gardens. Hurst castle. Portland island. Denny island, near Bristol. Cornwall and Devonshire. Teignmouth. Rocks of Caldey island. Anglesey, &c. in Wales. Bassé islands, near Edinburgh. Inch-Garvey and Mykrie-Inch, in the Firth of Forth. It flowers from June or July to September or October.

Ray, Morison and others distinguish ours from the Italian plant; the leaves of ours being smaller, more hoary on the upper surface, and the upper ones more angular; the flowers not so large, and of a paler red colour. Morison found it growing plentifully on the island of Pierre Percé on the coast of Bretagne.

2. Leaves soft, waving on the edge, with brimstone-coloured micæ shining in the sun on the upper surface. Stems from two to three feet in height.

Native of Spain^c and Portugal.

3. Stem round, branched, five feet high, villose at top, reddish. Leaves soft, whitish, tomentose, unequally ferrate; the lower subcordate-hastate, five-angled; the upper ovate, three-cusped, the middle lobe narrowed, acute, oblong. Stipules ovate-lanceolate, villose. Flowers on short peduncles, axillary, solitary, very seldom two together; terminating ones in a spike. Outer calyx ovate, with roundish-acute segments: inner larger, with lanceolate, acute segments. Corolla large, spreading very much, reddish-purple: petals with narrowed claws, covered with white hairs, inserted into a flesh-coloured tube. Stamens purple. Germ roundish-compressed, with twenty grooves. Style divided into about twenty parts. Stigmas long, recurved. Capsules about twenty, black, smooth, fixed in a ring about a thick striated cone. When the seeds are ripe, that part which is next to the axis appears naked, on account of the pellicle which forms the internal part of the capsule adhering to the axis^d.

Linneus observes, that the leaves of the first year are very large, and those of the following years much smaller, which is a circumstance common to this with other plants of the same natural order. It bears a great resemblance to the next species, but in this the flowers are solitary, on a very short peduncle; and the outer calyx is acuminate, almost three-parted, the length of the inner.

Native of the South of France. It flowers from

^a Cavanilles, Withering.

^b Gærtner.

^c Morison.

^d Cavanilles.

June to October. Cultivated by Mr. Hugh Morgan in 1570, according to Lobel^e.

4. Stem round, branched, from three to four feet in height. Leaves alternate, petioled, shorter than the petioles, roundish but with the border so rolled back as to appear triangular. Stipules cordate, broad, acuminate, ferrate. Flowers axillary: three peduncles mostly one-flowered in each axil, upright, shorter than the petiole. Segments of the outer calyx broad-cordate, acuminate. Inner calyx twice as large, five-cornered acuminate, with the corners prominent. Corolla large, spreading, pale purple, with the claws white, hairy. Capsules about fifteen, in a ring about a column ending in a point^f.

Linneus observes, that the whole plant is tomentose, being covered with very small glutinous hairs, with other larger ones stellate at top mixed among them.

Native of France and Spain. It flowers from June to September. Cultivated by Mr. Miller, in 1759^g.

5. Native of Portugal. Cultivated by Mr. Miller in 1748. It flowers in August and September^h.

6. Stem reddish, covered with bundles of hairs so small as to seem dots of meal, branched, two feet high and more. Leaves on the older plants small, somewhat plaited, five-nerved; on the younger plants and branches double the size (near two inches in diameter). Stipules awl-shaped, small, tomentose. Flowers axillary, seldom two together, on declining peduncles, shorter than the petiole. Segments of the outer calyx ovate-acute; of the inner twice as large, lanceolate. Corolla large, twice the size of the common Mallow, and more, spreading very much, whitish, with very narrow purple claws. Tube of the filaments dark purple. Germ orbicular-compressed: style multifid: stigmas oblong revolute. Fruit within the calyx, consisting of twelve kidney-shaped capsules, placed in a ring round a column, terminated by a short acuminate cone.

Native of Spain and the South of France. It flowers from July to Septemberⁱ.

Cavanilles has another species (diff. 282. t. 139. f. 1.) which he names *L. africana*, being a native of the northern part of Africa, as well as Spain. He says it is allied to *L. maritima*. The stem is shrubby, as in that, branched, covered with a short down, composed of a web of hairs in bundles, and four feet in height. Leaves alternate, almost equal to the petioles, five-lobed, crenate, soft, hoary. Stipules narrow, upright. Flowers axillary, (not solitary) but in pairs, drooping on peduncles an inch in length. Outer calyx deeper cut than in the other species into three ovate blunt segments: inner cut half way into five sharp segments: both tomentose. Corolla almost white, the petals being of an extremely pale purple, rounded-emarginate, large, spreading. Cylinder of filaments deep purple, naked at the base. Germ orbicular-compressed, twelve-grooved, very smooth: style white: stigmas twelve, long, reflex, purple. Fruit within the calyx, composed of twelve kidney-form capsules, roughened at the back. Miller has a species under the name of *L. africana*, which is an annual, and very different from this.]

7. Stem five or six feet high, woolly, [branched. Lower leaves heart-shaped, crenate, roundish-lobed: upper hastate, on short petioles. Stipules lanceolate. Flowers axillary, solitary, peduncled; peduncles longer than the leaf. Calyxes subtomentose: segments of the outer heart-shaped, with a very sharp point; of the inner oblong, acute. Corolla large, spreading, pale violet or purplish] shaped like those of the Marsh-mallow, but larger: [petals emarginate^k. Capsules about twenty (fourteen Cavanilles) in a wing, of a papery substance, somewhat rugged, about a columnar receptacle, which has many wings from the permanent sides of the capsules, like the cogs of a mill-wheel, ending in a conical-awl-shaped point. Seeds flattened a little, smooth, subcinereous or brown^l.

Native of Sweden, Germany, Hungary, Tartary,

^e Hort. kew.

^f Cavanilles.

^g Hort. kew.

^h Ibid.

ⁱ Cavanilles.

^k Ibid.

^l Gærtner.

in hedges. Cultivated in 1732, by James Sherard, M.D. It flowers from July to September^m.

8. Root annual, fibrous, of thick fibres a foot in length, with innumerable other capillary fibres. Stem round, rugged, five feet high, branched. Leaves on long petioles, very soft, tomentose, toothed, seven-angled, the angles of the upper ones sharper. Stipules lanceolate, ciliate, bowing at bottom and then erect. Flowers axillary, about four together, on upright peduncles. Outer calyx cup-shaped, with ovate segments: inner a little longer, five-cornered above, with lanceolate segments. Corolla twice the length of the calyx, pale blue, with oblong, emarginate petals. Germ orbicular-flattened, ten-grooved. Stigmas ten. Fruit smooth, within the calyx. Capsules ten, round a column terminated by a hemisphere with a very small point at top, disappearing when the fruit is ripe, and leaving a hole in the middle of the capsules, which then turn blackⁿ.

Native of the island of Candia or Crete. Cultivated in 1768, by Mr. Miller. It flowers in July^o.

9. Root annual, white, with spreading beards. Stem round, two feet high, branched, the lower branches almost horizontal. Leaves crenate-toothed, smooth, on long petioles, gradually narrowed towards the tip. Stipules ovate-lanceolate, ciliate, bowed at bottom and then straight. Flowers solitary, axillary, on peduncles shorter than the petiole. Outer calyx semitrifid, with keeled segments: inner larger, with lanceolate segments, curled at the edge. Corolla large, spreading bell-shaped, pale flesh-colour with whitish lines; petals broader above, crenate, frequently rolled up, the edges of the claws deep purple. Germ very smooth. Style multifid. Stigmas pale-flesh-coloured, longer than the tube, thirteen to eighteen. Fruit hemispherical, convex beneath, covered at top with a circular, concave, smooth, lid^p, or peltate umbrella. There are about twenty capsules in a whorl; they are brown, closed all round and not opening, with a longitudinal raised line along the back, elegantly marked on the sides with flexuose streaks drawn from the circumference to the centre. Seeds ferruginous^q.

Native of the South of Europe and the Levant. Cultivated in 1640, according to Parkinson. It flowers from July to September^r.

This species varies much, and the varieties are constant^s. Hence Mr. Miller makes three species out of it,] 1. *L. althææfolia*, a native of Syria, with an upright branching stalk, two feet high; the under leaves cordate-orbulate, smooth, on long foot-stalks; the upper divided into three acute lobes: the flowers on long peduncles from the axils, very large, and spreading open, like those of the Marsh-mallow, of a pale red or rose-colour. There is a variety of it with white flowers.—2. *L. africana*, t. 161. f. 2. of his figures: native of the Cape of Good Hope, whence the seeds were brought to Holland. This differs from the preceding in the shape of the leaves; the lower having angles, and the upper being arrow-pointed; the stalks are hairy, the flowers larger, and of a brighter red colour.—3. *L. trimestris* is a native of Spain and Sicily. It rises with slender stalks about two feet high, covered with a brown bark. The lower leaves are roundish, and the upper are angular, some of them arrow-pointed. The flowers are not half so large as either of the former, and are of a pale red colour; they stand on short peduncles.

They are all annual herbaceous plants, flowering in July; and the seeds ripen in autumn.

PROPAGATION AND CULTURE.

All the shrubby sorts are easily propagated by seeds, which should be sown in the spring upon a bed of light earth; and when the plants are about three or four inches high, they should be transplanted to the places where they are designed to remain; for as they shoot out long fleshy roots which have but few fibres, they do not succeed well if they are transplanted after they are grown large. If the seeds of these plants are per-

mitted to scatter on the ground, the plants will come up the following spring; and when they happen to fall into dry rubbish, and are permitted to grow therein, they will be short, strong, woody, and produce a greater number of those flowers than plants which are more luxuriant. As these plants continue a long time in flower, a few plants of each sort may be allowed a place in all gardens where there is room.

Several of these shrubby sorts will last only two years with us, unless on dry ground, where they will endure three or four years, but seldom longer.

Most of them require the protection of the greenhouse, or at least to have the ground about them covered with old tanner's bark to keep out the frost in severe winters.

The annual sorts are propagated by seeds: the season for sowing them is the end of March or the beginning of April, upon a bed of fresh light earth; and when the plants are come up, carefully clear them from weeds; and in very dry weather, now and then refresh them with water. When they are about two inches high, transplant them into the places where they are designed to remain, which should be in the middle of the borders in the flower-garden; for if the soil is good, they will grow two or three feet high; in transplanting them, take them up very carefully, preserving a ball of earth to their roots, otherwise they are apt to miscarry; and also water and shade them until they have taken root, after which they will require no other care but to clear them from weeds, and to fasten them to stakes, to prevent their being injured by strong winds. You may also sow their seeds in autumn, and when the plants are come up, transplant them into small pots, which, towards the end of October, should be placed in a common hot-bed frame, where the plants being defended from severe frosts, will abide the winter very well; and in the spring, shake them out of the pots, and plant them into larger, or else into the full ground, where they may remain to flower. The plants thus managed will be larger, and flower stronger and earlier than those sown in the spring, and from these you will constantly have good seeds, whereas those sown in the spring sometimes miscarry.

[LAVATERA AMERICANA. See *Sida abutiloides*.

LAVENDER and LAVENDULA. See *Lavandula*.

LAVENDER COTTON. See *Santolina*.

———, SEA. See *Statice Limonium*.

LAVENIA. (This name was taken up by Linneus as a trivial from Sherard in Ray's supplement, and as a genus by Solander. It is perhaps vernacular.)

Lin. gen. Schreb. n. 1268. Swartz prodr. 112.

Adenostemma. Forst. gen. 45.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Discoideæ*.

GENERIC CHARACTER.

CAL. Common ovate, subimbricate; scales ten to fourteen, lanceolate, equal, permanent.

COR. Compound uniform: corollets hermaphrodite equal, (fifteen to twenty).

Proper funnel-form, dilated at the base; border five-cleft, patulous.

STAM. Filaments five, filiform, shorter than the tube.

Anthers oblong, flattish twin, slightly connate.

PIST. Germ oblong. Style filiform, longer than the corollet, two-parted. Stigmas flattish, clubbed.

PER. none. Calyx permanent, spreading.

SEEDS subclavate, a little wrinkled, viscid with glandules; down with three awl-shaped awns, glandulose at the base.

REC. naked.

ESSENTIAL CHARACTER.

Cal. nearly regular. Style bifid. Down three-awned, glandular at the tip. Recept. naked.

SPECIES.

1. *Lavenia decumbens*.

Swartz prodr. 112.

Cotula Verbefina. Lin. spec. 1258. Syst. 775. Reich.

3. 856. mant. 473. amoen. 5. 407. Brown. jam.

316. (Tanacetum). Sloan. jam. 1. 262. t. 155.

f. 2. (Chrysanthemum).

Stem simple decumbent, leaves subcordate bluntly serrate.

M

2. *Lavenia*

^m Hort. kew.

ⁿ Cavanilles.

^o Hort. kew.

^p Cavanilles.

^q Gærtner.

^r Hort. kew.

^s Cavan. 91.

2. *Lavenia erecta*.Swartz *prodr.* 112.Verbesina *Lavenia*. *Lin. spec.* 1271. *yst.* 779. *Reich.* 3. 877.*Adenostemma viscosa*. *Forst. flor. austral. n.* 284.Pu-Tumba. *Rheed. mal.* 10. 125. *t.* 63.*Eupatoriophalacron*. *Vaill. act.* 1720. *p.* 325. *Burm. zeyl. t.* 42.*Chrysanthemum aquaticum*, *schrophulariæ folio*, *Lavenia dictum*. *Raii suppl.* 217.

Stem branched erect, leaves elliptic sharply serrate.

DESCRIPTIONS, &c.

1. Stem herbaceous. Leaves opposite, petioled, cordate sometimes but seldom ovate, blunt, bluntly serrate, petioled. Peduncles terminating, long, usually bifid and two-flowered. Calyx many-leaved, simple, ovate. Pistil longer than the corollet. Seeds terminated by two coloured bristles. It has the appearance of a *Verbesina*^a.

Annual and native of Jamaica.

2. Root annual, fibrous, whitish. Stems pale green or whitish, slender, hairy. Leaves set with whitish hairs. Heads of flowers flat, consisting of numerous pale-blue florets. Style also pale blue, with a dark blue stigma white at top. Calyx hairy^b.

Native of the East Indies and the Society isles. Forster named it *Adenostemma*, from *adnu* a gland, and *στεμμα* a crown or garland, the seed, instead of a down, being crowned with three glands.

The figure in hort. malab. does not very well agree with Forster's drawing, but the specimens in the Banksian herbarium vary as much to the full.

LAUGERIA. (Named *Laugeria* by Jacquin from Robert Laugier, Professor of Chemistry and Botany at Vienna. Petrus Laugerius was a physician at Sedan: and described and figured above 1400 rare plants of that neighbourhood, never published. P. M. Slegelii Progamma, Jenæ 1639, qu.)

Lin. gen. n. 259. *Reich. n.* 280. *Schreb. n.* 354.*Jacqu. amer.* 64. *Juss.* 206.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, superior, with unequal mouth, small, deciduous.

COR. one-petalled, salver-form. Tube very long. Border five-cleft; divisions obovate.

STAM. Filaments five, very short. Anthers linear, long, beneath the throat.

PIST. Germ subovate, inferior. Style filiform, rather longer than the tube. Stigma headed.

PER. Drupe roundish, umbilicated with a point.

SEED. Nut two or five-celled, Sw. furrowed, *Jacqu.*

ESSENTIAL CHARACTER.

Cor. five-cleft. Drupe with a five-celled nut.

SPECIES.

1. *Laugeria odorata*.*Lin. spec.* 276. *yst.* 231. *Reich. 1.* 535. *Swartz prodr.* 49. *Jacqu. amer.* 64. *t.* 177. *f.* 21. *piet.*36. *t.* 259. *f.* 16.*Edechia*. *Loefl. it.* 306, 271, 259.

Leaves subovate acute smooth, stem somewhat spiny, racemes panicled, drupes with five-celled nuts.

2. *Laugeria lucida*.*Swartz prodr.* 48. *Vahl symb.* 3. 40. *t.* 57. *Loefl. it.* 270. *n.* 154.

Leaves oblong blunt entire membranaceous shining, racemes dichotomous, drupes with two-celled nuts.

3. *Laugeria tomentosa*.*Swartz prodr.* 48.

Leaves ovate acute entire tomentose underneath, racemes dichotomous, drupes with a two-celled nut.

DESCRIPTIONS, &c.

1. This is an upright branching shrub ten feet high. Leaves quite entire, petioled, opposite, two inches long. Racemes loose, axillary, the length of the leaves. Flowers of a dirty red, very sweet during the night, peduncled, with one sessile in each division of the raceme. Fruits black, larger than peas, soft, very numerous, falling when ripe with every slight motion of

^a Linn. mant. & amoen.^b Rheed. malab.

the bush. It comes up both unarmed and with long, opposite, straight spines from the seed of the same shrub.

Native of America, Carthagenæ, Havanna, &c.^c

2. Branches round, smooth, covered with an ash-coloured bark, scarred at top with the fallen leaves. Leaves in clusters at the ends of the branchlets, petioled, opposite, two or three inches long, very smooth and even, nerved, quite entire. Racemes from the axils of the terminating leaves, solitary, opposite, the length of the leaves, bifid, reflex at the tip, almost as in *Tournefortia*. Flowers on short pedicels, distant, all directed the same way, on the inner side of the peduncles. Calyxes small, smooth, five-cleft. Corolla smooth^d.

Native of the West Indies, Jamaica, and Santa Cruz.

3. Native of Jamaica^e.**LAUGERIA.** See *Laugeria*.**LAUREL.** See *Laurus* and *Prunus*.——— Spurge. See *Daphne*.**LAURENTIA.** See *Lobelia*.**LAUREOLA.** See *Cestrum* and *Daphne*.**LAURESTINE.** See *Viburnum Tinus*.**LAURIFOLIA.** See *Garcinia* and *Sideroxylon*.——— Arbor. See *Hippomane*.**LAURO AFFINIS.** See *Camocladia* and *Fagara*.**LAUROCERASUS.** See *Prunus*.]

LAURUS, (of Pliny and other Latin writers. From *lavo*. Dict. Others derive it from *laus*, praise.)

Lin. gen. n. 503. *Reich.* 545. *Schreb. n.* 688.*Tournef.* 367. *Jacqu. amer.* 117. *Juss.* 80.*Gartn. t.* 92.*Cinnamomum*. *Herm. lugdb.* 656. *Burm. zeyl.* 28. 1.*Camphora*. *Gronov. diff.**Persea*. *Plum.* 20.*Borbonia*. *Plum.* 2.*Benzoe*. *Boerb.**Sassafras*. *Offic.*

Class. 9. 1. Enneandria Monogynia.

Nat. order of *Holoraceæ*. *Lauri*, Juss.

GENERIC CHARACTER.

CAL. none (unless you call the corolla so.)

COR. Petals six, ovate, acuminate, concave, erect; the alternate ones exterior.

Nectary consisting of three acuminate coloured tubercles, ending in two bristles, standing round the germ.

STAM. Filaments nine, shorter than the corolla, compressed, obtuse, three in each rank. Anthers growing on each side to the margin of the filament on the upper part.

Glandules two, globose, with a very short footstalk, affixed to each filament of the inner rank near the base.

PIST. Germ subovate. Style simple, equal, length of the stamens. Stigma obtuse, oblique.

PER. Drupe (or berry) oval, acuminate, one-celled, comprehended by the corolla.

SEED. Nut ovate-acuminate. Kernel of the same form.

OBS. The greater part of the species, including the Cinnamon, and Camphor, are hermaphrodite: but in some there are male flowers apart in dioecia, as in *L. nobilis*, where there are also frequently from eight to fourteen stamens, with naked four-parted corollas.

The corpuscles annexed to some of the stamens afford the essential character.

The stamens vary as to number. R.

ESSENTIAL CHARACTER.

Cal. none. **Cor.** calycine, six-parted. Nect. of three two-bristled glands, surrounding the germ. **Filam.** inner glanduliferous. **Drupe** one-seeded.

SPECIES.

1. *Laurus Cinnamomum*. Cinnamon-tree.*Lin. spec.* 528. *yst.* 383. *Reich. 2.* 225. *fl. zeyl.**n.* 145. *mat. med.* 106. *Woodv. med. bot.* 80.*t.* 27. *hort. cliff.* 154. 6. *Gartn. fruct.* 2. 69.*Jacqu. amer.* 117. *piet.* 59. *t.* 117. *Lour.*^c Jacquin.^d Vahl.^e Swartz.

- chinch. 249. *Plenck, ic.* 312. *Aët. nat. cur.* 1. app. *Philos. trans.* 36. p. 97.
- Cinnamomum. *Blackw. herb. t.* 354. f. 1. *Burm. zeyl.* 62. t. 27.—f. *Canella zeylanica.* *Baub. pin.* 408. *Raii hist.* 1561.
- Cassia cinnamomea. *Herm. lugdb.* 129. t. 655, 656. *Burm. ind.* 91.
- Leaves three-nerved ovate-oblong, nerves disappearing towards the end.
2. Laurus Cassia. *Cassia* or *Wild Cinnamon.*
Lin. spec. 528. *syft.* 383. *Reich.* 2. 225. *fl. zeyl.* n. 146. *mat. med.* 107. *Gærtn. fruct.* 2. 69. *Trew in nov. aët. nat. cur.* 2. app. 385. *Thunb. in aët. stockb.* 1780. p. 56. *Plenck, ic.* 313.
- Laurus Canella. *Mill. dict. n.* 12.
- Cinnamomum perpetuo florens, folio tenuiore acuto. *Burm. zeyl.* 63. t. 28.
- C. f. Canella malabarica f. javanensis. *Baub. pin.* 409. *Raii hist.* 1560.
- Canella f. C. vulgare. *Baub. hist.* 1. 446.
- Cassia lignea. *Blackw. herb. t.* 391. & 354. f. 2.
- C. malabarica. *Herm. lugdb.* 130.
- Carua. *Rheed. mal.* 1. 107. t. 57.
- Leaves triple-nerved lanceolate.
3. Laurus Camphora. *Camphor* or *Camphire Tree.*
Lin. spec. 528. *syft.* 383. *Reich.* 2. 226. *mat. med.* 107. *Woodv. med. bot.* 419. t. 155. *hort. cliff.* 154. 5. *Thunb. jap.* 172. *Lour. cochinch.* 249. *Trew in nov. aët. nat. cur.* 2. app. 358. *Plenck, ic.* 314.
- L. camphorifera. *Kämpf. amoen.* 770. t. 771.
- Camphora officinarum. *Baub. pin.* 500.
- Arbor camphorifera japonica. *Breyn. prodr.* 2. p. 44. 7. *ic.* 16. t. 2, cent. p. 11. t. 12. *Comm. hort.* 1. 185. t. 95. *Raii hist.* 1679.
- Leaves triple-nerved lanceolate-ovate.
- [4. Laurus Culilaban.
Lin. syft. 383. *Reich.* 2. 226. *mant.* 237. *mat. med.* 108. *Plenck, ic.* 317.
- L. Caryophyllus. *Lour. cochinch.* 250.
- Cortex caryophylloides. *Rumph. amb.* 2. 65. t. 14.
- Coelit Lawan. *Eph. nat. cur. dec.* 2. ann. 1. p. 55.
- Leaves triple-nerved opposite.
5. Laurus montana.
Swartz prodr. 65.
- Leaves triple-nerved ovate-acuminate perennial, flowers raceme paniced.
6. Laurus Chloroxylon. *Jamaica Laurel.*
Lin. spec. 528. *Reich.* 2. 226. *Trew in nov. aët. nat. cur.* 2. app. 398. *Brown. jam.* 187. t. 7. f. 1. (*Chloroxylon*).
- Leaves three-nerved ovate coriaceous, nerves reaching the tip.
7. Laurus glauca.
Lin. syft. 385. *Thunb. jap.* 173.
- Leaves nerved lanceolate perennial, branchlets tubercled, flowers solitary.
8. Laurus pedunculata.
Lin. syft. 383. *Thunb. jap.* 174.
- Leaves nerved oblong entire, flowers solitary peduncled.]
9. Laurus nobilis. *Common Sweet Bay.*
Lin. spec. 529. *Reich.* 2. 226. *hort. cliff.* 155. 7. *upf.* 98. *mat. med.* 107. *Woodv. med. bot.* 94. t. 32. *Gærtn. fruct.* 2. 68. *Hall. helv. n.* 1602. *Hofer in aët. helv.* 1. 71. *Scop. carn. n.* 474. *Pallas ross.* 1. 2. 18. *Allion. pedem. n.* 2124. *Blackw. herb. t.* 175. *Zorn. ic.* 52. *Plenck, ic.* 315. *Trew nov. aët. nat. cur.* 2. app. 381.
- L. undulata. *Mill. dict. n.* 2.
- Laurus. *Cambr. epit.* 60. *Tournef. inst.* 597. *Dod. pempt.* 849. *Ger. emac.* 1407. *Baub. hist.* 1. 409. *Raii hist.* 1688.
- L. vulgaris. *Baub. pin.* 460.
- L. foemina. *Ger. herb.* 1222. f. 2.
- L. major f. latifolia. *Park. theat.* 1488. 1.
- β. Laurus nobilis. *Mill. dict. n.* 1.
- L. latifolia Dioscoridis. *Baub. pin.* 460.
- γ. L. tenuifolia. *Mill. dict. n.* 3. *Tabern. ic.* 925.
- L. minor. *Park. theat.* 1488. 2.
- L. mas. *Ger. herb.* 1222. f. 1.
- Leaves ovate-lanceolate perennial veined shining, axils of the veins glandular underneath, flowers in very short racemes.

10. Laurus indica. *Royal Bay, or Indian Laurel.*
Lin. spec. 529. *Reich.* 2. 227. *hort. cliff.* 154. 4. *Thunb. jap.* 173. *Lour. cochinch.* 253. *Gron. virg.* 159. 61. *Pluk. phyt. t.* 304. f. 1. *Ald. farn.* 61. *Barr. rar.* 123. t. 877. *Raii hist.* 1553.
- Leaves oblong-lanceolate perennial somewhat glaucous underneath, the edges at the base rolled back, racemes elongated.
- [11. Laurus foeteus. *Madeira Laurel, or Til.*
Ait. hort. kew. 2. 39.
- Leaves veined elliptic acute perennial, axils of the veins villose underneath, racemes elongated compound panicle-form.]
12. Laurus Persea. *Alligator Pear.*
Lin. spec. 529. *syft.* 383. *Reich.* 2. 227. *Jacqu. obs.* 1. 37. *amer. pist.* 60. t. 264. f. 92. *Brown. jam.* 214. *Sloan. jam.* 2. 132. t. 222. f. 2. *Raii dendr.* 48. *Pluk. phyt. t.* 267. f. 1.
- Persea. *Clus. hist.* 1. p. 2. t. 3. *Baub. pin.* 441. *Plum. gen.* 44. t. 20.—americana. *Mill. dict.*
- Pyro similis fructus in nova Hispania, nucleo magno. *Baub. pin.* 439.
- Leaves ovate coriaceous transversely veined perennial, flowers corymbed.
13. Laurus Borbonia. *Broad-leaved Carolina Bay, or Red Bay.*
Lin. spec. 529. *syft.* 383. *Reich.* 2. 227. *hort. cliff.* 154. 3. *Gron. virg.* 46. *Catejb. car.* 1. t. 63. *Plum. gen.* 4. ic. 60. (*Borbonia*).
- Leaves oblong-lanceolate perennial veined, fruits oblong immersed in a berried receptacle.
- [14. Laurus exaltata.
Swartz prodr. 65.
- Leaves ovate-lanceolate veined coriaceous perennial flat, racemes upright compound, calyx cup-shaped, permanent.
15. Laurus triandra.
Swartz prodr. 65.
- Leaves broad-lanceolate perennial flat, flowers three-stamened, fruit covered by the calyx.
16. Laurus coriacea.
Swartz prodr. 65.
- Leaves ovate-acuminate flat veined shining coriaceous, racemes upright shorter than the leaves.
17. Laurus Leucoxylon.
Swartz prodr. 65. *Brown. jam.* 214. 2.
- Leaves oblong-lanceolate flat perennial, racemes shorter than the leaves, calyxes incrassated warted.
18. Laurus membranacea.
Swartz prodr. 65.
- Leaves oblong acuminate veined convex coriaceous-membranaceous, branches and racemes upright shorter than the leaf.
19. Laurus patens.
Swartz prodr. 65.
- Leaves ovate-lanceolate flat membranaceous, racemes upright diffused longer than the leaves.
20. Laurus pendula.
Swartz prodr. 65. *Brown. jam.* 214. 3.
- Leaves oblong veined membranaceous perennial, racemes loose, fruits pendulous, calyxes deciduous.
21. Laurus floribunda.
Swartz prodr. 65.
- Leaves ovate-lanceolate flat membranaceous, flowers raceme-paniced loose terminating.
22. Laurus lucida.
Lin. syft. 384. *Thunb. jap.* 174.
- Leaves oblong serrate, branchlets in threes, flowers axillary solitary subsessile.
23. Laurus umbellata.
Lin. syft. 384. *Thunb. jap.* 175.
- Leaves ovate serrate, branchlets umbelled, flowers in racemes.]
24. Laurus æstivalis. *Willow-leaved Bay.*
Lin. spec. 529. *syft.* 384. *Reich.* 2. 228. *Gron. virg.* 159. 63. *Trew in nov. aët. nat. cur.* 2. app. 396. *Catejb. car.* 2. t. 28? (*Cornus*).
- L. enervia. *Mill. dict. n.* 8.
- Leaves veined oblong acuminate annual, wrinkled underneath, branches superaxillary.

25. *Laurus Benzoin*. *Common Benjamin-tree*.
Lin. spec. 530. *Reich.* 2. 228. *hort. cliff.* 154. 2.
Gron. virg. 46. 63. *Trew. in nov. act. nat. cur.* 2.
app. 345. *Comm. hort.* 1. 189. t. 97. *Pluk.*
phyt. t. 139. f. 3, 4. *Raii hist.* 1845. n. 7.
Leaves nerveless ovate sharp at both ends entire annual.
26. *Laurus Sassafras*. *Sassafras-tree*.
Lin. spec. 530. *synt.* 384. *Reich.* 2. 228. *hort. cliff.*
154. 1. *mat. med.* 108. *Woodv. med. bot.* 91.
t. 31. *Lour. cochinch.* 254. *Gron. virg.* 46. 62.
Ebret. in nov. act. nat. cur. 2. 326. t. 6. *Trew*
ibid. app. 277. *Cold. noveb.* 94. *Kalm. it.* 2.
270. 434. *Trew Ebret. t.* 59. 60. *Blackw.*
herb. t. 267. *Zorn. ic.* 196. *Plenck, ic.* 316.
Pluk. phyt. t. 222. f. 6. *Catesb. car.* 1. t. 55.
(Cornus).
Sassafras arbor, ex Florida, ficulneo folio. *Baub. pin.*
431.
Sassafras. *Ger.* 1341. *emac.* 1525. *Park. theat.* 1607.
Raii hist. 1568.
Leaves entire and three-lobed.
- [27. *Laurus involucrata*.
Retz. obs. 6. 27. n. 39.
Leaves obovate, umbels involucred.
28. *Laurus Myrrha*.
Lour. cochinch. 251.
Canella zeylanica sylvestris, odore & sapore Myrrhæ,
floribus verticillatis. *Herm. zeyl.* 26.
Cassia cinnamomea, Myrrhæ odore, folio trinervio
subtus cæpio. *Pluk. alm.* 89.
Leaves three-nerved ovate with a long point, flowers
heaped sessile axillary.
29. *Laurus polyadelpa*.
Lour. cochinch. 251.
Leaves obscurely three-nerved lanceolate, flowers axillary
polyadelphous.
30. *Laurus curvifolia*.
Lour. cochinch. 252.
Leaves obscurely three-nerved oblong curved inwards, ra-
cemes small subterminating.
31. *Laurus Cubeba*.
Lour. cochinch. 252.
Leaves nerveless veinless lanceolate, flowers heaped pe-
duncled.
32. *Laurus pilosa*.
Lour. cochinch. 253.
Leaves nerveless oblong hairy, racemes wide termi-
nating.

DESCRIPTIONS, &c.

This genus consists of trees or shrubs. Leaves mostly entire, in a few nearly opposite, commonly perennial, as in most trees of the torrid zone. Flowers in the greater part in a sort of panicle either axillary or terminating, in a few solitary or glomerate from the axils, sometimes dioecous. Calyx of some deciduous, of the rest permanent, entire or lobed. Fruit a drupe, in most like that of the Olive or Cherry; in *L. Persea* pear-shaped and large^a. It contains many important species besides the Sweet Bay, as Cinnamon, Cassia, Camphor, Sassafras, &c.

1. Jacquin describes the Cinnamon tree of America as twenty feet high or more, the trunk about six feet high, a foot and half in diameter, the outer bark smoothish and of a dusky cinereous colour; it has spreading branches that form an elegant head. Leaves opposite or nearly so, ovate-oblong, oblong-acuminate, or subovate, bluntly acuminate, quite entire, shining, coriaceous, on short petioles, from three to five inches long; the three nerves spring from the petiole, and either immediately recede from each other, or continue united for a line or two and then diverge; they are of a bright green on the upper surface, but pale on the under, with the nerves whitish. On the younger branches or twigs arise slender common peduncles, from opposite axils, the terminating ones an inch, the others two or three inches long, three-flowered at top, or else trifid, with each division three-flowered. Flowers small, greenish yellow, almost insipid, with a somewhat fetid smell, resembling that of *Lilium Martagon*. Fruit the form and size of a middling Olive, insipid, deep blue and

soft, inclosing a thin, pale-coloured nut with a white kernel, which germinates soon after it falls, and therefore cannot easily be transported to a distance. The inner bark perfectly resembled the Oriental Cinnamon in smell, taste and figure; the only difference is that it has a coarser texture, and a more acrid taste, which may arise from the climate. But the varieties of Cinnamon are numerous. The timber is white and not very solid. The root is thick and branching, and exudes abundance of Camphor.

Native of Martinico, on the mountain Calebasse: flowering in february and march^b. It is a native also of Brasil.

In the Flora zeylanica of Linneus the fructification only is described. The perianth is said to be six-parted, with ovate-oblong segments. Stamens six, one fastened to each segment of the calyx; with an anther on each side at the tip. Besides these, three other stamens terminated by an anther, and having a gland on each side above the base; finally three other sharp stamens, bearing an anther that is scarcely fertile.—Jacquin and Loureiro mention only nine stamens.

Loureiro describes the wild Cinnamon of Cochinchina as a middle-sized tree. Leaves oblong, three inches in length, sharpish at both ends, quite entire, flat, the three nerves disappearing towards the tip, somewhat veined, smooth, pale green, petioled, scattered. Peduncles many-flowered, long, lateral and terminating. Flowers hermaphrodite, white. Corolla six-parted. The three inner stamens of the nine biglandular. Fruit a small, ovate, blackish, shining oily Berry, containing one seed of the same shape.

Gærtner describes the fruit of the Ceylonese Cinnamon as a subglobular berry, flattened a little at top and torulose, covered at the base by the calyx, which is thick, coriaceous, angular, sublobate, and having from six to nine unequal teeth: the pulp or flesh is very thick, and grows fungose with age, smelling strong of Cinnamon. Seed spherical, covered with a crustaceous, brittle, thin coat.

The following account of the Cinnamon of Ceylon is given by Albertus Seba, from the chief inspector of the Cinnamon trade in that island, and is printed in *Act. nat. cur.* and the Philosophical Transactions.

The best sort of Cinnamon, which grows in great plenty in Ceylon, and is peculiar to that island, is called by the natives *Rasse Coronde*, or sharp sweet Cinnamon. It is this choice sort which is exported by the Dutch East India Company, and it is prohibited, under severe penalties, to mix any other sort with this.

The second is called *Canatte Coronde*, or bitter astringent Cinnamon. The bark of this comes off very easily, and smells very agreeably when fresh, but has a bitter taste. It has an advantage that it is not so plentiful as the first; because it requires much skill and attention to distinguish them. The root of this yields a very good sort of Camphor.

The third is called *Capperoe Coronde* or camphorated Cinnamon, because it has a very strong smell and taste of Camphor. It grows plentifully in the island, but not in the eastern part. However they find means to send it over privately, and sell it to the Danes and English, trading upon the coasts of Coromandel. Besides there is a sort of *Canella* growing upon the continent of India about Goa, which is very like this, though it has nothing of the true Cinnamon. This agrees in many things with *Canella malabarica sylvestris*, a wild Cinnamon tree, growing upon the coasts of Malabar. And although with regard to the shape of the tree, and the outward appearance of the bark and leaves, very little difference is to be observed between these *Canellas* and the first Cinnamon, yet that is vastly superior in richness, quality and sweetness.

The fourth sort is called *Welle Coronde*, or Sandy Cinnamon, because upon being chewed it feels gritty, or as if grains of sand were between the teeth. The bark comes off easily, but is not so readily rolled up. It is of a sharp bitterish taste, and the roots yield only a small quantity of Camphor.

^a Jussieu.^b Jacquin.

The fifth sort is called *Sewel Coronde*, glutinous or mucilaginous Cinnamon. This acquires in drying a considerable degree of hardness: it has little taste, and an ungrateful smell; but the colour is very fine, and the natives mix a good deal of it with the best sort, the colour being much alike, except that in the genuine sort there are some few yellowish spots towards the extremities.

The sixth sort is called *Nieke Coronde*, the tree bearing much resemblance to another tree which the natives call *Nieke Gas*. The bark has no taste or smell, and is only used by the natives in medicine. By roasting it they obtain an oil, with which they anoint themselves, to keep off infection: and they express a juice from the leaves, with which they rub their heads, to cool and strengthen the brain.

The seventh is called *Dawel Coronde* or Drum Cinnamon: the wood being light and tough, and used by the natives for making drums. The bark is taken off whilst the tree is yet growing; is of a pale colour, and is used for the same purposes as the sixth.

The eighth sort is called *Catle Coronde*, thorny or prickly Cinnamon; the tree being very prickly. The bark is in some measure like that of the true Cinnamon, but it has nothing of the taste or smell, and the leaves differ very much. The natives apply the root, bark and leaves in form of cataplasms to tumours.

The ninth sort is called *Mael Coronde* or flowering Cinnamon, being always in blossom. The flowers come nearest to those of the first sort, but they bear no fruit. The wood never becomes so solid and weighty in this as in the others, which are sometimes eight, nine or ten feet in circumference. If this tree be cut or bored into, a limpid water will issue from the wound, as from the Birch tree, but it is of no use, any more than the leaves and bark.

There is a tenth sort called *Toupat Coronde* or three-leaved Cinnamon, which does not grow near the Dutch settlements; but higher up towards Candia.

Some of these are probably the Cassia, and the ninth is the male tree of the true Cinnamon.

With respect to the time when the bark is fit to be taken off, some trees are ready two or three years sooner than others, owing to the difference of soil which they grow in: those for instance which grow in vallies where the ground is a fine whitish sand will be fit to have the bark taken off in five years; but others which stand in a wet slimy soil, must have seven or eight years to grow before they are fit to bark. Those trees are also later which grow in the shade of other large trees, whereby the sun is kept from their roots. Hence also it is, that the bark of such trees has not that sweetness observable in the bark of those which grow in a white sandy ground, where with little wet they stand full exposed to the sun; but is rather of a bitterish taste, somewhat astringent, and smells like Camphor.

For by the heat of the sun's rays the Camphor is made so volatile, that it rises up and mixes with the juices of the tree, where it undergoes a small fermentation, and then rising still higher between the wood, and the thin inner membrane of the bark, it is so effectually diffused through the branches and leaves, that there is not the least footstep of it to be perceived. Mean while that thin and glutinous membrane which lines the bark on the inside attracts all the purest and sweetest particles of the sap, leaving the thick and gross ones to push forwards, in order to nourish the branches, leaves and fruit.

If the bark be fresh taken off, that sap which remains in the tree has a bitterish taste, not unlike that of Cloves. On the contrary, the inner membrane of the bark, when fresh taken off, has a most exquisite sweetness, whilst the outer part differs very little in taste from that of other trees. But when the bark is laid in the sun to be dried and roll up, this oily and agreeable sweetness of the inner membrane is diffused through the whole.

The bark may be taken off from trees that have stood fourteen, fifteen or sixteen years, according to the quality of the soil: but beyond that time they lose by

degrees their agreeable sweetness, and the bark has more of the taste of Camphor. Besides, the bark is then become so thick, that when laid in the sun, it will no longer roll up, but remain flat.

To account for the great quantities of Cinnamon trees still remaining on the island of Ceylon, after the general exportation of the bark that has prevailed during several centuries, some authors have assured us that after the bark has been stripped off the tree, it becomes fit to be stripped a second time in four or five years. But this assertion is no less contrary to observation than it is to the common course of nature. The truth is, the barked trees being cut down, quickly put forth new shoots, which in a period of from five to eight years come again to the knife. Great numbers also of trees are continually springing from the fruit which either drops upon the ground, or is disseminated by the wild doves called there Cinnamon-eaters: inasmuch that here and there along the roads such quantities of these young trees are to be seen, as to look like little woods.

The inner bark of this species in the spice so well known under the name of Cinnamon. The use of the Cinnamon-tree however is not confined to the bark, for it is remarkable that the leaves, fruit, and root, all yield oils of different qualities, and of considerable value. That produced from the leaves is called Oil of Cloves, and *Oleum Malabathri*: that from the fruit is extremely fragrant, and of a thick consistence, and at Ceylon is said to be made into candles, for the sole use of the king; and the bark from the root not only affords an aromatic oil, which has been called Oil of Camphor, but also a species of Camphor, which is purer and whiter than the common Camphor. The bark of the Cinnamon-tree, while on the tree, is first stripped of its outer greenish coat; and is then cut longitudinally from the tree, and dried in the sand, till it becomes fit for the market, when it is of a reddish yellow or pale rusty iron-colour, very light, thin, and curling up into quills or flakes. Cinnamon is one of the most grateful of aromatics; its qualities are extracted both by water and spirit. It is an astringent, and corroborates the viscera, and proves of great service in several kinds of alvine fluxes, and immoderate uterine discharges. An essential oil is sometimes prepared from Cinnamon, which is most excessively pungent, so as to produce an eschar on the skin, if applied to it: but in doses of a drop or two properly diluted, with sugar, mucilages, &c. it is said to be one of the most immediate cordials and restoratives in cases of languor and debility.

Cinnamon is native of the island of Ceylon. Linneus in his *Hortus Cliffortianus* (1737), speaks of it as a forbidden tree not then known in Europe but from dried specimens, and not easy to be introduced; probably from the jealousy of the Dutch; it was however cultivated by Mr. Miller before 1768: and is now cultivated both in our territories in the East Indies, and in the islands of the West Indies. Mons. Poivre also introduced it, along with the Nutmeg and Clove, into the isles of France and Bourbon.

Dr. George Young had one hundred and forty Cinnamon trees at St. Vincent's in may 1772. In 1789 it was successfully cultivated in Jamaica, from trees taken in a French prize by Admiral Rodney, and presented by him to the assembly of that island. In 1792, samples of this Cinnamon, sent by Dr. Dancer, were examined by a committee of the Society of Arts, &c. and some eminent dealers in that spice; who were of opinion that two of the samples were excellent, and even preferable to any Cinnamon imported from Ceylon, both in colour and flavour.

Mrs. Anstey brought two Cinnamon trees from Ceylon to Madras: and Dr. Roxburgh procured six trees in 1789.

2. Cassia or Wild Cinnamon, though distinguished by Linneus and others, is thought by the best judges not to be a distinct species from the preceding or true Cinnamon. Linneus's distinction founded upon the leaves is certainly nugatory, and the difference of the

bark may be owing to soil or situation, but more probably to want of skill or attention in the cultivators. The Cassia bark is coarser, and will not roll up like true Cinnamon, but the essential difference between the bark of Cinnamon and Cassia is that the former is always dry, whereas the latter becomes mucilaginous in chewing; hence it has been suggested to me as a conjecture on the most respectable authority that the superior excellence of Cinnamon bark may be in great measure owing to its having been deprived of that mucilage which adheres to its interior surface. At least we are certain that in a curious drawing of Herman's, now in the possession of Sir Joseph Banks, representing the process of cutting and preparing Cinnamon in the island of Ceylon, one of the principal figures is that of a woman who is evidently employed in this operation of scraping the mucilage from the inner surface of the bark.

The Cassia is described at great length in the Hortus Malabaricus, and Linneus refers to this as an excellent description of the true Cinnamon.

Mr. Marsden informs us that the Cassia trees grow from fifty to sixty feet high, with large spreading horizontal branches, almost as low as the earth. The leaves are about four inches long, narrower than those of the Bay, and more pointed, deep green, with a smooth surface and plain edge: the principal fibres or nerves take their rise from the peduncle. The young leaves are mostly of a reddish hue. The blossoms grow six in number upon slender footstalks, close to the bottom of the leaf. They are monopetalous, small, white, and stellated in six points. The stamina are six (Linneus says nine), with one style growing from the germ, which stands up in three brownish segments resembling a cup. The fruit of Cinnamon and Cassia are very different according to Gærtner's figure and description. The root is said to contain much camphire. The bark is commonly taken from such of the trees as are a foot or eighteen inches diameter, for when they are younger, it is said to be so thin, as to lose all its qualities very soon. Those trees which grow in a high rocky soil have red shoots, and the bark is superior to that which is produced in a moist clay, where the shoots are green. I have been assured, says Mr. Marsden, by a person of extensive knowledge, that the Cassia produced on Sumatra is from the same tree that yields the true Cinnamon, and that the apparent difference arises from the less judicious manner of quilling it. Perhaps the younger and more tender branches, should be preferred; perhaps the age of the tree, or the season of the year ought to be more nicely attended to; and it is suggested that the mucilage which adheres to the inside of the fresh-peeled rind, does, when not carefully wiped off, injure the flavour of the Cassia, and renders it inferior to that of the Cinnamon. It is said to be sometimes purchased by the Dutch merchants, and shipped for Spain as Cinnamon, being packed in boxes which came from Ceylon with that article^d. It is of the same quality with Cinnamon, but inferior in fragrantcy and efficacy. The leaves are called by official writers *folia Malabathri*, and the bark *Cassia lignea*.

It is a native of Malabar, Java, Sumatra, chiefly in the northern and central part of the island, in those districts which lie inland of Tappanooly.]

3. The Camphire-tree is very near a-kin to the Cinnamon-tree, from which it differs in the leaves, those of the latter having three ribs running longitudinally from the foot-stalk to the point, where they soon diminish; whereas in this the ribs are small and extend towards the sides; their surface is smooth and shining. They are male and hermaphrodite in different trees.

[It is a large tree with ascending branches. Leaves quite entire, smooth, mostly alternate, but some opposite, petioled, whitish underneath. Flowers white, on simple, long, lateral peduncles. Berry small, ovate, dusky or brownish red^e.

Mr. Marsden also describes it as equal in height and bulk to the largest timber trees, being frequently found upwards of fifteen feet in circumference. The leaf is

small, of a roundish oval, ending in a long point or tail, the fibres running all parallel and nearly straight. The wood is in much esteem for carpenter's purposes, being easy to work, light, durable, and not liable to be injured by insects, particularly the *coombang*, a species of bee, which from its faculty of boring timber for its nest, is called the *Carpenter*.

Native of China, Japan, Borneo and Sumatra, if the Capoor Barroos of the Malays be the product of the same tree. It was cultivated in 1731, by Mr. Miller^f.

The chief part of the Camphor that is used in Europe is prepared from this tree in Japan. The Japanese split the wood into small pieces, and sublime or distil it with water in an iron retort, covered with an earthen or wooden head, in the hollow of which they fasten hay or straw, to which the Camphor, as it rises, adheres. This Camphor is brownish or white, but in very small semipellucid grains. It is packed up in wooden casks, and thus sent to India and Europe, where it is purified by a second sublimation, and reduced into the solid mass in which we find it in our shops.

Native Camphor, the *Capoor Barroos* of the Malays, is a production for which Sumatra and Borneo, have in all ages been much celebrated; the Arabians being, at a very early period, acquainted with its virtues. Camphor being of a dry nature does not exude from the tree, or manifest any appearance on the outside. The natives, from long experience, know whether any is contained within, by striking the tree with a stick. In that case, they cut it down and split it with wedges into small pieces, finding the Camphor in the interstices in the state of a concrete crystallization. Some have asserted that it is from the old trees alone that this substance is procured, and that in the young trees it is in a fluid state, called *meenio capoor* or camphor oil; but this is a mistake. The same sort of tree that produces the fluid, does not produce the dry, transparent flaky substance, nor ever would. They are readily distinguished by the natives. Many of the trees however produce neither the one nor the other.

The native Camphor is purchased on the spot at the rate of six Spanish dollars the pound, or eight dollars the catty for the best sort; which sells at the China market for about twelve or fifteen hundred dollars the pecul of one hundred catties, or one hundred thirty-three pounds and a third. The traders usually distinguish three degrees of quality, by the names of head, belly and foot, according to its purity and whiteness. Some add a fourth sort, of extraordinary fineness, of which a few pounds only are imported to Canton, and sell there at the rate of two thousand dollars the pecul.

It has been generally supposed that the Chinese mix the Camphor of Sumatra and Borneo with their own and the Japanese. But the truth seems to be that they purchase the former for their own use, from an idea of its superior efficacy, and export the latter as a drug they hold in no estimation. It is certain that the common Camphor will evaporate till it wholly disappears. Whereas that of Sumatra and Borneo, called native Camphor, though doubtless from its volatility it must be subject to some decrease, does not appear to lose much in quantity from being kept.

Camphor oil is a valuable domestic medicine, much used by the Sumatrans in strains, swellings and inflammations; the particles, from their extreme subtilty, readily entering the pores. It is not manufactured, undergoes no preparation, and though termed an oil is rather a liquid and volatile resin, without any oily quality. To procure it, they make a transverse incision into the tree, to the depth of some inches, and then cut sloping downwards from above the notch, till they leave a flat, horizontal surface. This they hollow out, till it is of a capacity to receive a quart. They then put into the hollow a bit of lighted reed, and let it remain for about ten minutes, which acting as a stimulus, draws the fluid to that part. In the space of a night, the liquor fills the receptacle pre-

^d Hist. of Sumatra, p. 125.

^e Loureiro.

^f Hort. kew.

pared for it, and the tree continues to yield a smaller quantity for three successive nights, when fire must be again applied: but on a few repetitions it is exhausted. An oil not much unlike this from the Camphor tree is procured from another tree by the same method. It is called *meenia cayoo* or wood oil, and is used to rub on timber exposed to the weather, to preserve it from decay; and it is also boiled with the *dammar* to pay the bottom of ships and boats^s.

It is supposed by many that the Camphor tree of Borneo and Sumatra is different from that of China and Japan. Loureiro does not presume to decide whether they be the same, but he affirms, from repeated experience, that there is no difference in the efficacy of the drug, whatever country it comes from.

Camphor is considered as one of the principal diaphoretics and antiseptics, and as possessing a degree of anodyne or antispasmodic power. It is a medicine of a subtle and penetrating nature, and quickly diffuses itself through the whole habit. If taken in considerable quantity it produces an uneasy sensation in the stomach: though it does not heat the body so much as might be expected from its taste: on the contrary it often rather occasions a sense of coolness. In acute diseases it is given from a quarter of a grain to one or two grains or more, in conjunction with nitre or other anti-inflammatory medicines of the saline kind. Hoffman observes that it answers best on the approach of a crisis, or in the decline; and that it should be used with caution during the height of fever, where the heat is great and the skin dry; and the same caution, he adds, should be observed in plethoric habits, &c. In chronical disorders it is used more freely; and sometimes is used in conjunction with opium. It is considered as a corrector of the irritating powers of Cantharides. Camphor alone has sometimes been known to cure that peculiar species of spasmodic disorder called St. Vitus's dance. Camphor is also used in a dissolved state in spirit of wine, &c. as an external embrocation in rheumatic pains, paralytic numbness, &c. &c. it is also made an ingredient in many other preparations.

4. Loureiro describes his *L. Caryophyllus* as a middle-sized tree, with brachiate and somewhat spreading boughs. Leaves ovate-lanceolate, quite entire, with three terminating nerves, smooth, an inch and half long, dusky-green above, glaucous beneath, petioled, alternate and opposite, odoriferous, hardish. Flowers white, small, corymb-racemed, terminating. Petals ovate-lanceolate, spreading. Style longer than the stamens. Berry ovate, small, dusky red. Bark and root dusky red, having the smell and taste of Cloves, whence Loureiro's trivial name. He allows that his *L. Caryophyllus* is not far removed from *L. Culilaban* of Linneus, and it is probably the same.

Linneus recommends the fructification to be examined, on account of the singularity of a *Laurus* having opposite leaves. But it appears that the leaves are not constantly opposite, and that the fructification is that of *Laurus*.

Native of the East Indies and CochinChina.

5. Native of Jamaica.

6. This tree rises by a strong branched trunk to a very considerable height; the inward bark is of a light blood colour, and incloses a strong greenish timber, which has given occasion to the trivial name of Linneus, taken from Browne's generic appellation. Leaves smooth, with three considerable arched nerves, resembling those of the Camphor-tree in shape, size and texture. Fruit scattered up and down upon the branches, seldom exceeding a hazel nut in size.

Wood very tough and hard, answering better than any other sort for the cogs in the rolls of a sugar-mill. Generally esteemed one of the best timber woods in the island of Jamaica, and used on all occasions where strength and durability are required^h.

Introduced in 1778, by Thomas Clark, M. D.ⁱ—Browne calls it Greenheart or Cogwood tree.

7. This is a tree with spreading branches, rugged

with raised dots, but without any pubescence, ash-coloured. Twigs or shoots like the branches, but in a sort of whorl. Leaves frequent towards the ends of the shoots, alternate, petioled, acuminate with a blunt point, quite entire with a reflex margin, patulous; pale green above, glaucous beneath, or yellow, smooth, two inches or more in length. Petioles semicylindric, grooved above, smooth. Flowers on the shoots below the leaves, scattered, on very short peduncles, one-flowered or bifid, thick, ash-coloured, half a line in length. Drupe ovate, a little attenuated at top, blunt, very dark blue, succulent, smooth, the size of a pea, containing a blue juice. Nut the form of the drupe, striated, ferruginous. Kernel whitish. The expressed oil is used for making candles in Japan, of which country it is a native.

8. Stem shrubby. Branches round, knobbed with the fallen leaves, ash-coloured, wrinkled, smooth. Leaves opposite, on short petioles, acuminate, smooth, two inches long. Flowers scattered at the ends of the shoots. Peduncles solitary, one-flowered, half the length of the leaves.

Native of Japan^k.

9. The *Laurus* or Bay has been celebrated in all ages, and hence is called *nobilis* by Linneus. With us it appears as a shrub, but in the southern parts of Europe it becomes a tree of twenty or thirty feet in height; much subject however in general to put out suckers. Leaves evergreen, of a firm texture, the largest from an inch and half to two inches in breadth in the broad-leaved variety, and from three to four inches in length, entire, on short petioles, having an agreeable smell, and an aromatic, subacid, bitterish taste. Flowers dioecous, or male and female on different trees, in racemes shorter than the leaves, of an herbaceous colour. Corollas four-petalled in the male flowers, with from eight to twelve stamens. Berry superior, ovate, fleshy, dark purple almost black. Receptacle none except a small tubercle at the bottom, whence a vascular band rises on each side the whole length of the seed; which is large, ovate, slightly mucronate above^l.

Native of the southern parts of Europe, and of Asia. Ray observed it not uncommon in woods and hedges in Italy. Haller says it abounds in all the orchards about Moutru, near the lake of Geneva. According to Scopoli, it is found in the woods of Istria. Bellonius remarked it on mount Ida, and very large trees on mount Athos. Abbé St. Pierre observes that fine Bay-trees are no where more common than on the banks of the river Peneus in Thessaly, which might well give occasion to the fable of the metamorphosis of Daphne daughter of that river. Pallas sets it down as a native of the Chersonesus Taurica, &c. It is wild also in the South of France, Spain, Crete, and many parts of the Levant. In England, it was cultivated certainly in 1562, as we learn from Turner^m; probably much earlier.

Mr. Miller makes three sorts of the Sweet Bay.]

1. The broad-leaved Bay of Asia, Spain and Italy, almost too tender for the open air in England; with leaves much broader and smoother than those of the common sort.

2. The Common Bay, seldom hurt with us except in very severe winters. Of this there are two varieties, one with plane leaves, the other with leaves waved on the edges.

3. The narrow-leaved Bay, with very long narrow leaves, not so thick as those of the two preceding, and of a light green: the branches are covered with a purplish bark, and the male flowers come out in small clusters from the axils of the leaves, sitting close to the branches.

[It is to be found in the nurseries with variegated leaves, and other trifling varieties are mentioned in the old authors.

The leaves and berries of this well-known species have an aromatic, astringent taste and a fragrant smell: the berries are much stronger than the leaves: both are accounted stomachic, carminative, and uterine; in

^s Marfden's Sumatra, p. 120—123.

ⁱ Hort. kew.

^h Browne.

^k Thunberg.

^l Gærtner.

^m Hort. kew.

which intentions the leaves are infused and drank as a tea, and the essential oil of the berries administered on sugar, or dissolved by means of mucilages or in spirit of wine in the dose of a few drops. The principal use of Bay leaves and berries however in the present practice is external; viz. for fomentations, &c. &c.

There is some confusion among persons ignorant of botany, between the Sweet Bay and what we now commonly call Laurel (*Prunus Laurocerasus*), which is known only to more modern times in Europe. What we now call Bay was formerly called Laurel, and the fruit of it only named Bayes.

In Greek it is *Δάφνη*: in German, *Lorbeerbaum*; in Danish, *Laurbartræ*; in Swedish, *Lagerbarsträd*; in French, *Laurier*; in Italian, *Alloro*; in Spanish, *Laurer*; in Portuguese, *Loiro*, *Loireiro*; in Russian, *Lawr* or *Lawro woe derewo*.

This is certainly the true *Laurus* of the Romans, and *Daphne* of the Greeks, destined to furnish the Delphic wreath, to grace the head of the triumphant hero, to guard the gate of the Cæsars and the Pontifex maximus, to be placed on the houses of the sick, and to be worn on the head of the priests of Delphi, who also chewed the leaves, and threw them on the sacred fire.

10. This is a large tree with ascending branches. The branches, and particularly the shoots are tubercled with scars from the fallen leaves; they are alternate, curved inwards, wrinkled and smooth. Leaves scattered, acuminate with a bluntish point, quite entire, smooth, veined, reflex, four inches long. Petioles semicylindric, grooved, smooth, reflex. Flowers terminating, below racemed, above paniced. Panicle trifid. Ovate, red nectareous scales at the base of the filaments, which vary in number from seven to nine; six outer, and one, two or three inner: they are unequal, flat, and nearly equal to the calyx. Anthers compressed, four-celled. Germ roundish. Style very short. Berry globular, small, brown^a.

Native of Madeira; the Canary islands, Virginia, Japan, Cochinchina.]

Mr. Miller says it was brought from the Canary islands to Portugal, where it has been propagated in so great plenty, as to appear now as if it were a native of that country. In the year 1620 it was raised in the Farnesian garden from berries brought from India, and was supposed to be a bastard sort of Cinamon.

[Loureiro observes that the wood is of a yellow colour, not heavy, good for building, but better still for furniture. This wood is called *Vigniatico* in the island of Madeira, and is probably what is imported into England under the name of Madeira Mahogany. It is hardly to be distinguished from Mahogany, except that it is somewhat less brown^o.

It appears from Rea's Flora, that it was cultivated here in 1665.

11. Native of Madeira and the Canary islands. Introduced in 1760, by Lord Adam Gordon^p.]

12. The Alligator or Avocado Pear grows to the height of thirty feet or more in the West Indies, and has a trunk as large as our common Apple-trees; the bark is smooth, and of an ash colour: the branches are beset with pretty large, oblong, smooth leaves, like those of Laurel, of a deep green colour. The flowers are for the most part produced towards the extremities of the branches. The fruit is the size of one of our biggest pears, inclosing a large seed with two lobes, included in a thin shell.

[The branches are very succulent and soft. The pulp of the fruit is covered with a tough skinny coat, and contains a large rugged seed, which is wrapped up in one or two thin membranous covers. This fruit is held in great esteem in the West Indies: the pulp is of a pretty firm consistence, and has a delicate rich flavour; it gains upon the palate of most persons, and becomes soon agreeable even to those who cannot like it at first; but it is so rich and mild, that most

^a Thunb. and Loureiro.

^o Hawksw. voy. 2. p. 5.

^p Hort. kew.

people make use of some spice or pungent substance to give it a poignancy; and for this purpose, some make use of wine, some of sugar, some of lime-juice; but most of pepper and salt. This fruit seems equally agreeable to the horse, the cow, the dog and the cat, as well as to all sorts of birds; when plentiful, it makes a great part of the delicacies of the negroes^q.

Native of the West Indies. Cultivated in 1739 by Mr. Miller^r.]

13. In some situations near the sea this rises with a straight large trunk to a considerable height; but in the inland parts of the country it is of an humbler stature. The leaves are much longer than those of the common Bay, and are a little woolly on their under side; their edges are a little reflexed; the veins run transversely from the midrib to the sides. The male flowers come out in long bunches from the axils of the leaves: the female flowers in loose bunches on pretty long red peduncles. Berries blue in red cups: [grow two and sometimes three together. These trees are not common in Virginia, except in some places near the sea. In Carolina they are every where seen, particularly in low swampy lands. The wood is fine-grained, and of excellent use for cabinets, &c. Some of the best resembles watered Satin, and is very beautiful^s.

Cultivated in 1739, by Mr. Miller^t.

Plumier, regarding it as a genus distinct from *Laurus*, gave it the name of *Borbonia* from Gaston Bourbon, son of Henry IV. and uncle of Louis XIV.

14 to 21. All these species are natives of Jamaica^u.

17. This is called Loblolly Whitewood, or white Sweetwood. The berries are as large as Cherries, plump and black, and the cups pretty thick and swelling. The leaves and tender shoots make excellent fodder for cattle.

20. This grows to about twelve feet in height, is four inches in diameter near the root, and divides into a great number of branches near the top. Berries oblong, even, elliptic, seldom less than an inch in length: they are black, very succulent, and contain a single two-lobed kernel, without any partial covering^x.

22. This is a smooth tree, with the branches and shoots in threes; branches round, knobbed, ash-coloured, divaricated; shoots angular. Leaves scattered at the ends of the shoots, on very short petioles, acuminate with a blunt point, obscurely ferrate with a reflex margin; shining above, with the midrib standing out; pale underneath, smooth, from an inch to an inch and half in length. Flowers usually solitary, but sometimes two together. Fruit oblong, with the pistil permanent.

Native of Japan.

23. Stem shrubby, very much branched. Branches in threes or thereabouts, wrinkled, tubercled, ash-coloured, smooth, curved inwards. Shoots four, five or more together forming a sort of umbel, angular, upright. Leaves scattered about the ends of the twigs, petioled, blunt, margined, nerved, shining above, paler underneath, smooth, an inch or more in length. Drupe, or rather berry globular, blue the size of a pea.

Native of Japan^y.]

24. This rises with a shrubby branching stalk eight or ten feet high, covered with a purple bark. Leaves opposite, near two inches long and one inch broad, smooth on their upper side, but veined on their under, where they are rough. Berries red, nearly the size and shape of the common Bay-berry.

[Linneus remarks that the fruiting peduncles are coloured.]

Native of North America, in swampy lands. It was introduced in 1765, by Mr. John Cree^z.]

25. This rises to the height of ten or twelve feet, dividing into many branches. Leaves near three inches long, and an inch and half broad, smooth on their upper surface, but with many transverse veins on their

^q Browne.

^r Hort. kew.

^s Hort. kew.

^t Swartz.

^u Thunberg.

^x Hort. kew.

^y Catesby.

^z Browne.

under side. Flowers of a white herbaceous colour, with six stamina in each.

[Involucre sessile, four-leaved, much resembling that of *Cornus*, including five petioled florets, the length of the involucre. Proper calyx (or corolla) six-parted, yellow, with linear segments. Stamens eight or nine, the length of the calyx, appendicled on the sides. Germ ovate, within the calyx. Style simple^a. Number of petals and stamens uncertain; sometimes eight of the former and twelve of the latter^b.

Native of Virginia; whence it was sent by Banister to Compton Bishop of London, and cultivated in his garden at Fulham in 1688, by Mr. George London^c.

This tree has been confounded with the true Benzoin tree, for which see *Styrax Benzoin*.]

26. The Sassafras tree is commonly rather a shrub, seldom rising more than eight or ten feet high. (It sometimes however grows into a large tree.) The leaves are of different shapes and sizes; some oval and entire, about four inches long and three broad; others are deeply divided into three lobes; these are six inches long, and as much in breadth from the extremity of the two outside lobes; they are placed alternately on pretty long foot-stalks, and are of a lucid green; they fall off early in the autumn, and in the spring, soon after the leaves begin to come out, the flowers appear just below them, on slender peduncles, each sustaining three or four small, yellow (greenish white) flowers, which have five oval, concave petals, and eight stamina in the male flowers, which are upon different plants from the hermaphrodite flowers. These are succeeded by an oval berry, which, when ripe, is blue.

[Ehret, in the year 1735, observed the male flowers in the nursery of Mr. Christopher Gray at Fulham to have usually nine stamens, with glands between them uncertain in their number. These flowers had a simple style, a stigma variously constructed, and no germ. He also examined the female flowers in Mr. James Gordon's nursery at Mile End, and found the petals smaller, six stamens with an uncertain number of glands, from three or four to nine, style simple crowned with its stigma, and a germ^d. From this description it appears that the two sorts of flowers should have been called imperfect hermaphrodites, rather than male and female.

Catesby describes the Sassafras as a small tree, the trunk usually not a foot thick. The leaves divided into three lobes by very deep incisures. In march bunches of small five-petalled flowers coming forth, succeeded by berries, in size and shape not unlike those of the Bay-tree, hanging on red foot-stalks, with a red calyx, resembling that of an acorn: they are at first green, and when ripe blue.

This tree is described at full length in the second volume of *Nova Acta Nat. Cur.* by Trew, who has there given an ample account of its Natural History. He there observes that the male flowers have eight or nine stamens, and sometimes as many as thirteen, and six glands; two to each inner filament: the female or rather hermaphrodite flowers only four stamens without any glands.

The wood of this tree, which is of a light and spongy texture, has a fragrant smell, and a sweetish aromatic taste, and with the bark, is much used in the *Materia Medica*. It gives out its virtues both to spirit and water, but most readily to the former.

Sassafras is used as a mild corroborant, diaphoretic, and sweetener, in scorbutic, venereal, cachetic, and catarrhal disorders. Infusions made in water from the cortical or woody part rasped or shaved, are commonly drank as a tea: and this, in some constitutions, from its fragrance, is said to affect the head at first; which inconvenience ceases on continuing its use a little time. It is made an ingredient in several diet-drinks, both empirical and such as are used in regular practice.

Native of almost all America, commonly in a sandy soil, never in swamps. It was also observed by Loureiro in the north of Cochinchina near Tunquin. It

has withstood the cold of several winters at Mr. Collinson's at Peckham, Mr. Bacon's at Hoxton, Mr. Gray's at Fulham, Mr. Gordon's at Mile-end, &c. &c. and was cultivated before 1633, by Mr. Wilmot, at Bow^e.

A decoction of Sassafras with sugar was sold in coffee-houses at the end of the last century, under the name of *Bochet*^f. There was a shop in Fleet-street for the sale of it within these few years, and perhaps others. The bark has been substituted in America for spice. It is said that bedsteads made of the wood will never be infested with bugs^g. Loureiro remarks, that it is very proper for making cabinets in hot climates, on the same account, because the smell repels insects. Willdenow however doubts whether the Cochinchinese Sassafras be the same with the American.

27. This is a tree with the branches warted by the fallen petioles. Leaves alternate, quite entire, petioled, naked, paler underneath. Peduncles from the axils of the leaves solitary or in pairs, with three or four umbels, as in *Cornus*, many-flowered. Involucre four-leaved; leaflets the length of the umbel, ovate, concave, blunt, hirsute on the outside. Pedicels short, hirsute. Calyx minute, hirsute. Petals sometimes small, but in general none. Stamens twelve to fifteen; with the filaments hirsute on the outside, ending in dilated anthers. Three or four corpuscles pedicelled and peltate, shorter than the stamens; probably the nectaries. Germ oblong, rough-haired. Style longer than the stamens. Stigma peltate. It has the appearance of a *Laurus*, but perhaps it may be a species of *Tomex*.

Native of Tranquebar in the East Indies, whence it was sent by König^h.

28. This is a small tree, five feet high, very much branched, with an unarmed twisted trunk. Leaves quite entire, with terminating nerves, smooth, alternate, dusky green above, pale beneath, petioled. Flowers white. Common calyx four-leaved; leaflets roundish, concave, the two outer smaller, hairy: containing five peduncled florets. Proper calyx none. Corolla six-petalled; petals ovate, concave, almost equal. Filaments nine, flattish, shorter than the corolla; the three inner biglandular: anthers compressed, blunt. Germ ovate, superior: style short: stigma blunt. Berry ovate, juicy, smooth, red, small. Root thick, vertical, many-cleft, brown, oily. The whole plant is extremely bitter, and has the taste and smell of Myrrh; whence the trivial name.

Native of Cochinchina. The root is warm, diuretic, emmenagogue, antiputredinous and anthelmintic. A red oil expressed from the berries, and having the smell and taste of the plant, is used by the natives in the itch, wounds, pustules and putrid ulcers, against worms and insects that attack the human body. Loureiro suspects that this may be the plant which affords the true Myrrh.

29. This is a large tree, with spreading boughs. Leaves quite entire, flat, coriaceous, veined, petioled, alternate, dusky green. Flowers reddish white, in axillary corymbs. Calyx (or corolla) cup-shaped, coloured, six-parted, with oblong, upright segments. Nectary of six peduncled glands. Stamens nine, unequal, of which three are appendicled; all collected into three bundles. Anthers oblong, flattish, truncate, not opening longitudinally, but emitting the pollen by four holes. Germ roundish. Style filiform, equal to the stamens. Stigma blunt. Berry roundish, fleshy, very small.

Native of mountains in Cochinchina.

30. This also is a large tree with spreading branches. Leaves acuminate, quite entire, veined, pale, odorous, hard, shining, reflex, alternate. Flowers white in loose racemes. Calyx (or corolla) fleshy, lobed, sharply six-cleft, inferior, permanent. Stamens nine, flat, widening above, and thence emitting four very slender filaments from four holes, with as many oblong, two-celled little anthers. Nectary glanduliferous. Berry oblong-ovate, black.

Native of Cochinchina in mountain woods.

^a Linn. cliff.

^b Colden.

^c Raii hist. and hort. kew.

^d Eph. nat. cur.

^e Hort. kew. from Ger. emac.

^f Houghton's collections, 3. 65.

^g Cudler in med. acad. Amer. vol. 1.

^h Retzius.

This and the preceding have a great affinity with *Ocotea guianensis* of Aublet, 780. t. 310.—*Porostema* of Schreber, n. 1226.

31. This is a middle-sized and very branching tree; the branches spreading. Leaves quite entire, flat, shining, two inches long, alternate, petioled. Flowers white, on one-flowered, lateral peduncles. Common calyx four-leaved: leaflets roundish, concave, coloured, deciduous; containing five florets. Petals six, roundish, spreading, unequal, with the border bitten. Nectary of six, sessile, oblong, reflex glands. Filaments nine very short, six declining to the petals, the other three upright, without glands. Six of the anthers compressed and square, with four oblique cells. Germ roundish, superior. Style none. Stigma simple. Berry globular, black, peduncled, very small. Seed globular.

Native of Cochinchina, and probably also of China.

Berries corroborant, cephalic, stomachic and carminative. A decoction of them is of service in the vertigo, hysterics, palsy, &c. The bark has the same qualities, but in an inferior degree. The natives use the fresh berries as a sauce for fish. The smell is fragrant: the taste aromatic and warm. They have the size, colour and form of Black Pepper; and being fastened to a long slender peduncle, are not unaptly called *Piper caudatum* or tailed Pepper.

The fruit having the form, size and quality of the Cubebe, Loureiro supposes this to be the tree which produces it: but the Cubebe is represented as a climbing plant, and the younger Linneus decides that it is a species of Pepper.

32. This is a large tree with spreading branches. Leaves acuminate, quite entire, scattered, petioled, five inches long. Flowers polygamous, greenish yellow: in the hermaphrodites, calyx spreading bell-shaped, six-cleft, with sharp segments. Filaments nine, awl-shaped, shorter than the calyx, very hairy; with oblong, two-celled, incumbent anthers. Germ roundish. Style thick, equal to the calyx. Stigma bifid, reflex. Berry globular, coriaceous, small. Male flowers on a distinct plant, with a six-leaved calyx; the leaflets ovate, concave, lanuginose. Filaments nine, short, hairy, with flat, four-celled anthers.

Native of mountain woods in Cochinchina.

The wood is yellow, durable, and fit for building or turningⁱ.

This species resembles the 27th described by Retzius^k.

Loureiro remarks, that in all the species of *Laurus* which he found in India, he observed always hermaphrodite flowers, berries and not drupes, and the leaves perennial: but the latter circumstance is common to almost all trees in the torrid zone.]

PROPAGATION AND CULTURE.

1, 2. Cinnamon and Cassia are not so tender as most persons imagine, and the tender treatment of the plants brought to England has generally destroyed them. Great heat is certainly prejudicial to them; when the plants therefore have taken new roots in the pots or tubs, they should in summer be placed in a glass-case, where they may have plenty of air in warm weather; and in winter they should be placed in a stove moderately warm.

3. In Europe this tree is propagated by layers, which are generally two years, and sometimes longer, before they take root, so that the plants are very scarce; and as all those which I have seen flower are male trees, so there can be no hopes of procuring seeds from them here: but if the berries of this, and also of the Cinnamon-tree, were procured from the places of their growth, and planted in tubs of earth, as is directed for the Sassafras-tree, there may be a number of these plants procured in England: and if they were sent to the British colonies in America, they might be there cultivated, so as to become a public advantage; especially the Cinnamon-tree, which will grow as well in some of our islands in the West Indies, as it does in the native places of its growth, and in a few years the trees might be had in plenty; for they propagate easily

by the berries, as the French experienced in their American islands. The Portuguese brought some of the Cinnamon-trees from the East Indies, and planted them on the island of Princes, on the coast of Africa, where they now abound, having spread over a great part of the island.

The Camphire-tree does not require any artificial heat in winter, so that if it be placed in a warm dry green-house it will thrive very well. During the winter season it must be sparingly watered, and in the summer be placed abroad in a warm situation, where it may be defended from strong winds, and not too much exposed to the direct rays of the sun. But during this season it must be frequently refreshed with water.

It may be propagated by laying down the young branches in autumn, which should be treated in the same manner as is directed for *L. Benzoin*.

9, 10, 13. These may be propagated by layers, and the common sort (n. 9.) is generally propagated by suckers; but those plants never keep to one stem, but generally send out a great number of suckers from their roots, and form a thicket, but do not advance in height; therefore the best way to have good plants, is to raise them from the berries, when they can be procured, for the plants which come from seeds, always grow larger than the others, and do not put out suckers from their roots, so may be trained up with regular stems. The best way is to sow the berries in pots, and plunge them into a moderate hot-bed, which will bring up the plants much sooner than if they are sown in the full ground, and they will have a longer time to get strength before winter; but the plants must not be forced with heat, therefore they should be inured to bear the open air the beginning of June, into which they should be removed, where they may remain till autumn; then the pots should be placed under a common frame, that the plants may be protected from hard frost, but in mild weather they may enjoy the free air; for while the plants are so young, they are in danger of suffering in hard frost, even the common sort of Bay. The spring following, those sorts which will not live in the open air, should be each transplanted into separate pots; but the common sort may be planted in nursery-beds six inches asunder each way, where they may grow two years, by which time they will be fit to plant where they are designed to grow. The other sorts must be constantly kept in pots, and should every year be new potted, and as they advance in growth, they must have larger pots. As these plants require shelter in winter, a few of each sort will be enough for a large green-house.

The common Bay will make a variety in all ever-green plantations; and as it will grow under the shade of other trees, where they are not too close, it is very proper to plant in the borders of woods, where it will have a good effect in winter.

[Mr. Evelyn makes mention of Bay-trees thirty feet high, and almost two feet in diameter in the trunk. In the last century abundance of these trees were raised and kept in tubs, with curious round heads, and brought over here from Holland and Flanders^l. In a warm dry sandy or gravelly soil the Bay however will grow to the height of thirty or forty feet: but to secure its fine verdure it should be planted in situations defended from north and north-east winds, from which it sometimes suffers in severe winters; generally however recovering in summer. The Bay should never have a branch taken from it but in the spring. As a plant of elegance and beauty, yielding a most refreshing and salubrious smell to a considerable distance, it cannot be too much encouraged^m: and to persons of classical taste it can never fail to furnish many pleasing ideas, by recalling to their minds various fine passages and allusions of the ancient poets.

The berries are ripe the end of January or beginning of February, when they ought to be gathered and preserved in dry sand till the beginning of March. Then, or as soon as the weather becomes favourable, on a shady border of rich loose undunged soil, made fine and well protected, drop the berries in rows fifteen

ⁱ Loureiro.

^k Willdenow.

^l Hought. collect. 3. 54.

^m Boutcher.

inches asunder, and four inches in the row, sifting over them fine rich mould an inch thick. As soon as you perceive the plants to heave up the earth, refresh them frequently but moderately with water, in the morning, when cold, in the evenings when mild weather, and continue to do so all the summer months. Let them remain two years, watering the second summer.

Such as are intended to be increased by layers, may be laid down in march or august; the latter is the best season, and by the second spring will make good plants.

The Bay will also grow by cuttings, but in the open ground slowly: in the beginning of april therefore prepare a moderate hot-bed of tanners bark, and cover it eight inches deep with rich loose fresh earth. Plant the cuttings five inches deep, and eight or nine asunder, rubbing off their leaves; water them gently every evening while the bed continues warm, and cover the glasses with mats during the heat of the day. When the cuttings have shot, let them receive all mild gentle showers, and the evening dews. The beginning of august the glasses may be taken off, and replaced when the weather begins to be frosty; keeping them open every mild day. The beginning of april following, or as soon as the weather becomes temperate, remove both glasses and frames; continue frequent and plentiful waterings during the summer months as the weather may require, and the succeeding april, the plants will be strong, well rooted, and fit for removal.

The plants raised in any of these ways may now be removed to the nursery; when having cut away their superfluous roots and branches, attentively encouraging the leading shoot, plant them in a well-sheltered quarter of light mould, in rows three feet and a half asunder and eighteen inches in the row. Dig the ground autumn and spring; keep it clean, loose and mellow in summer, and prune the plants annually in april. Let them continue three, but not more than four years, before they are planted out, where they are to remain.

The gold-striped Bay is tender, commonly kept in pots, and housed with hardy greenhouse plants. It will stand in the open ground, but will be tarnished and sometimes much injured in severe winters. It is a strong rich variegation. The method of increasing it is by budding it on the plain sortⁿ.]

The broad-leaved and narrow-leaved Bay are not so hardy as the common sort, and will scarcely live abroad whilst young, in common winters, without shelter. In severe winters the old trees are frequently killed, or at least the branches are much injured. The plants therefore are frequently kept in tubs and housed in winter: as are those of the tenth or Indian Laurel always.

Although some plants of *L. Borbonia* have lived abroad in a mild winter, when planted in a warm situation, yet the first sharp winter destroys them; they must be kept in pots or tubs therefore, and housed in winter.

12. The Alligator Pear is propagated by seeds, which should be obtained as fresh as possible from the countries of its growth; if they are brought over in sand they will be more likely to grow than when dry. Set them in pots filled with rich light earth; plunge them into a hot-bed of tanner's bark, which should be kept pretty warm; water them frequently but moderately when the earth appears dry. In five or six weeks the plants will come up; treat them very tenderly by keeping up the bed to a due temperature of heat; and when the weather proves warm admit the fresh air by raising the glasses a little. When they are about four inches high transplant them carefully; and where there are several plants in one pot, part them, preserving a ball of earth to the root of each, and put them into separate small pots filled with light rich earth, which plunge into a hot-bed of tanner's bark, shading them until they have taken new root; after which fresh air should be admitted to them, in proportion to the warmth of the season. Towards michaelmas the plants must be removed into the stove,

ⁿ Boucher.

and plunged into the bark bed, where during the winter season they should be kept in a moderate warmth, and must be gently watered twice a week. In the spring the plants should be shifted into pots a size larger, and the bark-bed should be then renewed with fresh tan, which will set the plants in a growing state early, whereby they will make great progress the following summer. These plants must be constantly kept in the stove, for they are too tender to bear the open air in this country at any season, but in warm weather they should have a large share of air admitted to them.

24, 25, 26. These three sorts will live in the open air in England, but the Sassafras is often injured by very severe frosts, especially if it be in an exposed situation; therefore these plants should have a warm situation and a loose soil; and in moist ground this, and also the twenty-fourth sort, will thrive much better than in a dry soil; for when they are planted on a hot gravelly soil, they frequently die in summer when the season proves dry. They are all of them now much cultivated in England, to add to the variety of shrubs, but they are not very ornamental plants; though indeed the Sassafras makes a good appearance in summer, when it is fully clothed with its large leaves, which being of different shapes, makes an agreeable variety, when intermixed with shrubs of the same growth.

26. The Sassafras-tree is commonly propagated by the berries, which are brought from America; but these berries generally lie in the ground a whole year, and sometimes two or three years before they grow, when they are sown in the spring; therefore the surest method of obtaining the plants will be, to get the berries put into a tub of earth soon after they are ripe, and sent over in the earth; and as soon as they arrive, to sow the berries on a bed of light ground, putting them two inches in the earth; and if the spring should prove dry, the bed must be frequently watered, and shaded from the great heat of the sun in the middle of the day; with this management many of the plants will come up the first season, but as a great many of the berries will lie in the ground till the next spring, so the bed should not be disturbed, but wait until the season after, to see what will come up. The first winter after the plants come up, they should be protected from the frost, especially in the autumn; for the first early frost at that season is apt to pinch the shoots of these plants, which, when young, are tender and full of sap, so will do them more injury than the severe frost of the winter; for when the extreme part of the shoots are killed, it greatly affects the whole plant.

When the plants have grown a year in the seed-bed, they may be transplanted into a nursery, where they may stand one or two years to get strength, and may then be transplanted into the places where they are to remain for good.

There have been some of these plants propagated by layers, but these are commonly two, and sometimes three years before they put out roots; and if they are not duly watered in dry weather, they rarely take root; so that it is uncertain whether one in three of these layers succeed, which renders these plants scarce in England.

24. Willow-leaved Bay may also be propagated by seeds, when they can be procured, and by layers, which put out roots pretty freely.

25. The Benjamin-tree also, as it is falsely called, may be propagated by sowing the berries. They generally lie long in the ground, so that unless they are brought over in earth, they often fail. But this may likewise be increased by layers, which put out roots freely, when the young shoots are made choice of.

[*LAURUS*. See *Canella*, *Kiggelaria*, *Magnolia*, *Medeola*, *Myrica*, *Ruscus*, *Viburnum*, *Uvularia*, *Winterania*.]

LAWSONIA. (From *Isaac Lawson*, M.D. author of a new voyage to Carolina, Lond. 1709. 4°.)

Lin. gen. n. 482. *Reich.* n. 521. *Schreb.* n. 655. *Juss.* 331.

Henna. *Ludw.* 143. *Alcanna*. *Gertn. t.* 110.

Class. 8. 1. *Octandria Monogynia*.

Nat. order of *Salicaria*, *Juss.*

GENERIC CHARACTER.

- CAL. *Perianth* four-cleft, small, permanent.
 COR. *Petals* four, ovate-lanceolate, flat, spreading.
 STAM. *Filaments* eight, filiform, length of the corolla, in twin pairs between the petals. *Anthers* roundish.
 PIST. *Germ* roundish. *Style* simple, length of the stamens, permanent. *Stigma* headed.
 PER. *Capsule* (or berry) globose with a point, four-celled.
 SEEDS many, cornered, pointed.

ESSENTIAL CHARACTER.

Cal. four-cleft. Pet. four. Stam. in four pairs. Caps. four-celled, many-seeded.

SPECIES.

1. *Lawsonia inermis*. *Smooth Lawsonia*.
Lin. spec. 498. *yst.* 362. *Reich.* 2. 163. *suppl.* 219.
fl. zeyl. n. 135. *mat. med.* 102. *Gron. orient.* 47.
Ligustrum ægyptiacum. *Alp. ægypt.* 47. *ed.* 1. f. 18.
—*latifolium*. *Bauh. pin.* 476.
Alhenna f. *Henna arabum*. *Waltb. hort.* 3. t. 4.
Alcanna arabum. *Bellon. itin.* 35.
Poutaletsje. *Rheed. mal.* 4. 117. t. 57.
Branches unarmed, leaves subsessile ovate sharp at both ends.
- [2. *Lawsonia Acronychia*.
Lin. syst. 362. *suppl.* 219. *Forst. fl. austral. n.* 165.
Acronychia lævis. *Forst. gen.* 27.
Branches unarmed, leaves on long petioles wedge-shaped.]
3. *Lawsonia spinosa*. *Prickly Lawsonia*.
Lin. spec. 498. *Reich.* 2. 163. *fl. zeyl. n.* 134.
Hasselqu. itin. 464. *Lour. cochinch.* 229.
Alcanna spinosa. *Gært. fruct.* 2. 133.
Rhamnus malabaricus. *Pluk. phyt. t.* 220. f. 1.
Cyprus Alcanna. *Rumph. amb.* 4. 42. t. 17.
Mail-Anfchi. *Rheed. mal.* 1. 73. t. 40.
Branches spiny.
- [4. *Lawsonia falcata*.
Lour. cochinch. 229.
Adulterina, Daun Salawar. *Rumph. amb.* 6. 58. t. 25.
f. 1.
Leaves sickle-shaped, slightly crenate.]

DESCRIPTIONS, &c.

1. This rises with a shrubby stalk eight or ten feet high. The branches come out by pairs opposite; they are slender and covered with a whitish yellow bark. Leaves small, opposite, oblong, ending in acute points, pale green. Flowers in loose terminating bunches, gray or dirty white. Petals small, turning back at the top.

Native of India, Egypt, &c. The leaves of this shrub are much used by the Egyptian women, to colour their nails yellow, which they esteem an ornament. [Cultivated in 1739, by Mr. Miller^a.

2. This differs from the preceding in having the leaves on long petioles, somewhat jointed at the insertion; the calyx extremely small; the petals not flat and ovate, but linear, and having bent claws^b. From this latter circumstance Forster gave it the name of *Acronychia*, from *ακρος*, *extremus* and *ονγξ*, *unguis*. But it does not seem to have any character to distinguish it from *Lawsonia*.

Native of New Caledonia: where it was found the 11th of September, 1774.]

3. This rises with a woody trunk eighteen feet high or more. The wood is hard and close, covered with a light gray bark. Branches alternate. Leaves oblong oval. At the joints where the leaves are placed come out single, strong, sharp thorns. Flowers in loose bunches from the sides of the branches, pale yellow, of a disagreeable scent.

[Loureiro describes it as eight feet high, with few, long, spreading branches, having a few straight spines terminating the shoots. Leaves broad-lanceolate, quite entire, sessile, opposite, subtomentose, small. Flowers white, in racemed, terminating corymbs. Calyx bell-shaped, with acute, coloured segments. Petals curled and plaited, inserted into the calyx, than which they are somewhat longer. Stamens quickly falling.

Linneus and Loureiro call the fruit a capsule, Gærtner names it a dry berry, globular flattened a little

^a Hort. kew.^b Linn. suppl.

at top, crowned by the style, obscurely four-grooved, somewhat coriaceous, honey or ochre-coloured, four-celled. Seeds in each cell five to nine, variously angular, sharply pyramidal, ferruginous, suberoso-barked. The pericarp does not divide into regular valves.

Native of the East Indies. Mr. Miller, who cultivated it in 1759, says that he received specimens of it also from the Spanish West Indies.

4. This shrub or small tree is six feet high, and very much branched. Leaves acuminate, smooth, petioled, scattered, strong-scented. Flowers white, in a racemed terminating corymb. Fruit a superior, roundish, small, four-celled berry, containing many seeds. The fruit has frequently three, two or even one cell only.

Native of Cochinchina.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, sown on a hot-bed early in the spring, that the plants when they come up may have time to get strength before winter. When the plants are fit to remove, plant each in a small pot filled with light sandy earth, and plunged into a hot-bed of tanner's bark, where they must be screened from the sun till they have taken new root. Then treat them as the Coffee tree, only giving them less water, especially in winter. They are too tender to thrive in the open air, they must therefore constantly remain in the stove, having plenty of air in hot weather.

[LAXMANNIA. (From *Ericus Laxmann*, a Swede. Member of the Academy at Petersburg, and Professor there. He travelled in Siberia.)

Lin. gen. Schreb. n. 1746.

Cyminosma. *Gært. t.* 58.

Class. 6. 1. Hexandria Monogynia.

GENERIC CHARACTER.

- CAL. *Perianth* one-leafed, bell-shaped, compressed, four-toothed, rather acute, inferior, very small.
 COR. *Petals* four, linear, leathery, long, upright at the base, spreading, with inflexed tip, a villose line on the upper part, two more approximated than the rest.
 STAM. *Filaments* six, linear below, upright, awl-shaped at the tip, spreading, rather shorter than the corolla. *Anthers* roundish, affixed to the back.
 PIST. *Germ* roundish, extremely villose. *Style* shorter than the stamens, thick, cornered. *Stigma* simple.
 PER. *Berry* subglobose, tetragonal at the top, four-celled; the cells covered by a membrane.
 SEEDS solitary, oblong, compressed.

ESSENTIAL CHARACTER.

Cal. one-leafed, four-toothed, inferior. Cor. four-petalled. Berry four-celled. Seeds solitary.

Gærtner describes the fruit under the name of *Cyminosma Ankænda*, and refers to *Ankænda* of *Herm. mus.* 23. and *Burm. zeyl.* 27.

Mr. Dryander remarks, that Gærtner's first species, *t.* 58. f. a—H, cannot be the same with Dr. Koenig's *Jambolifera*, as the petals are nearly of the same length with the calyx: the other species, which Gærtner describes with petals three times the length of the calyx, may perhaps be the same as Dr. Koenig's plant, and if so, it is figured in *Rheed. mal.* 5. t. 15. which figure agrees tolerably well with Dr. Koenig's specimen in regard to flowers and leaves, and as to fruit with Gærtner, *t.* 58. f. i. Mr. Dryander has given the description of the flower from Koenig's manuscripts, which may be compared with Gærtner and with Schreber's character of *Laxmannia* above. He remarks that the four stamens, which alternate with the petals, have no doubt been taken for petals by Gærtner, who counts eight petals permanent below the fruit^c. Possibly after all, this plant may be a species of *Jambolifera*. See *Calyptanthus*.

Forster has given the name of *Laxmannia* to a Syn-genefious plant, which has the air of a *Bidens*.]

LAYING of Trees and Shrubs. This operation is thus performed:

First; having well dug the ground and made it very light, take some of the most flexible boughs, and lay them into the ground about half a foot deep, pegging them down with forked sticks, if necessary, leaving the

^c Linn. trans. 2. 233.

end of the layer a foot or a foot and half out of the ground; keep them moist during the summer season, and they will probably have taken root and be fit to remove in autumn; or if not, they must remain another season.

Secondly: Tie a piece of wire hard round the bark of the bough, at the place you intend to lay in the ground, and twist the ends of the wire, so that they may not untie, prick the part above the wire through the bark with an awl in several places, and then lay it in the ground as before directed. This method will often succeed when the other fails.

Thirdly: Cut a slit upwards at a joint, as is practised in laying Carnations; which by gardeners is called tonguing the layers.

Fourthly: Twist the part of the branch designed to lay in the ground like a withy, if it be pliable, and lay it in the ground as directed above.

Fifthly: Cut a circle almost round the bough that is designed to be laid half an inch, where it is to lay in the ground.

Though branches may be laid at any time, yet the proper season for laying hardy trees that shed their leaves is october; for such as are tender, the beginning of march; for evergreens, june or july.

When the boughs cannot be bent down into the ground, lay them in baskets, boxes or pots, filled with fine mould mixed with a little rotten willow dust, and elevated by blocks or treffels. Too much of the head must not be left on; and the smaller the boughs are, the less way they should be left out of the ground.

In trees of a hard wood, the young shoots, but in trees of a soft wood, the older boughs will take root best.

Many trees and plants will not put out roots from the woody branches; yet if the young shoots of the same year be laid in july, they will often put out roots very freely: but as these shoots will be soft and herbaceous, they must not have too much wet, which would cause them to rot; cover, therefore, the surface of the ground with moss, which will prevent it from drying too fast, and a little water will suffice.

[To raise trees by layers in quantity, a sufficient number of trees must be headed down for stools, within a few inches of the ground, in autumn; and the summer following they will afford plenty of young shoots proper for laying in the autumn. In many trees, however, it will be better to wait two years.

The ground in the mean time should be dug in winter; and constantly hoed, as the weeds rise, in summer.

After the layers are taken up, the stools must have all the wounded parts taken away, and the old branches should be cut off pretty close to the stem: in the spring they will shoot out fresh branches, which may be laid the second year after. Nurserymen, who raise great quantities of trees this way, have two quarters of stools, to come in alternately, and furnish a crop every year.

LEADWORT. See *Plumbago*.

LEATHERWOOD. See *Dirca*.

LEBBECK. See *Mimosa*.

LECHEA. (So named by Kalm, from John Leche, Professor at Abo in Sweden; author of *Flora Scanica*. 1744.)

Lin. gen. n. 109. Reich. n. 116. Schreb. n. 142.

Juss. 303. Gertn. t. 129.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved: *leaflets* ovate, concave, extremely spreading, permanent.

COR. *Petals* three, linear, narrower than the calyx, but almost longer, concave.

STAM. *Filaments* three, (sometimes four or five,) capillary, longer than the corolla, incumbent on the pistil, equal. *Anthers* roundish.

PIST. *Germ* ovate. *Style* none. *Stigmas* three, feathery, divaricated.

^a Hunter's Evelyn.

PER. *Capsule* ovate, three-sided, three-celled, (one-celled. G.) three-valved; and also with three internal valves converging towards the exterior ones, constituting partitions.

SEEDS solitary, ovate, cornered inwards.

OBS. In *L. major* there are four stamens, of which the two superior are approximated. Clayt. R.

ESSENTIAL CHARACTER.

CAL. three-leaved. PET. three, linear. CAPS. three-celled, three-valved, with as many internal ones. SEEDS solitary.

SPECIES.

1. *Lechea minor*.

Lin. spec. 133. Syst. 130. Reich. i. 252. amoen.

3. 10. Gertn. fruct. 2. 223. Gron. virg. 16.

Capraria foliis integerrimis. Gron. virg. ed. 1. 75.

Scoparia fol. tenuissimis, &c. Raii suppl. 132.

Leaves linear-lanceolate, flowers panicled.

2. *Lechea major*.

Lin. spec. 133. Syst. 130. Reich. i. 252. amoen.

3. 11. f. 4.

Menandra ramis alternis. Gron. virg. ed. 2. 20.

Leaves ovate-lanceolate, flowers lateral, wandering.

3. *Lechea chinensis*.

Lour. cochinch. 60.

Leaves ovate-lanceolate, spathes three-flowered, terminating.

DESCRIPTIONS, &c.

1. Root fibrous, perennial, putting up several upright, simple stems, panicled at top, and round. Leaves scattered, upright, quite entire, sharp, above smooth and shining, beneath somewhat pubescent, with a reflex margin, on very short petioles. Flowers numerous, on terminating, peduncled racemes.

Towards the root the branches are opposite or in threes; frequently also the leaves are in fours, ovate, and more hairy.

Capsule the size of the head of a small pin, ovate-globular, very obscurely if at all three-cornered, one-celled, half-three-valved; the valves marked within with a longitudinal, raised, deeper coloured streak. Receptacle three short linear scalelets, springing from the middle of the base, and lying on the belly of the seeds. Seeds three, oblong, acuminate at both ends, three-sided, convex on one side, angular on the other, obscurely dotted, brown. It is constantly one-celled, and has no inner valves. The embryo is not circular, as in most of its congeners, but almost straight.

Native of North America, Virginia, Canada.

2. Stems purplish, round, with simple, alternate, remote branches. Leaves alternate, rugged above, tomentose beneath, with a reflex margin, scarce manifestly petioled. Flowers two, three or four from the uppermost shoots. Clayton assigns four stamens to the flower, the two upper ones approximating.

Native of North America, Virginia, Canada.

The plant described by Linneus for *Lechea major* is supposed to be *Cistus canadensis*. But the plant intended by Kalm for *Lechea major* is very different, as may be seen by comparing the specimens in the Banksian herbarium.

3. Stem annual, manifold, creeping, short. Leaves marked with lines, smooth, with sheathing petioles. Flowers from a large blunt spathe. Petals blue, with claws. Styles three, equal to the stamens, with simple stigmas. Capsule superior, three-lobed, three-valved, three-celled, with one seed in each cell. This plant seems at first sight to be related to *Commelina* and *Tradescantia*, but it has not either villose filaments like the latter, or cruciate nectaries like the former. Native of China, near Canton.

LECETHIS. (From *Λεκηθός*, a pot. The fruit resembling a pot with its lid, or a cup and cover.)

Lin. gen. n. 664. Reich. n. 720. Schreb. n. 904.

Loefl. 189. Jacq. amer. 168. Juss. 327. Aubl. t. 284, 285.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Myrti*, Juss.

^a Linn. amoen.

^b Gertner.

^c Linn. amoen.

^d Loureiro.

GENERIC CHARACTER.

CAL. *Perianth* six-leaved: *leaflets* roundish, concave, permanent.

COR. *Petals* six, oblong, obtuse, flat, very large: of which the two upper ones are very spreading.

Nectary petal-form, one-leaved, tongue-shaped: flat at the base, perforated for the germ, margined: a *strap* bent upwards from the lower side of the flower: linear, outwardly convex, thick at the tip, ovate, together with the stamens covering the organs.

STAM. *Filaments* extremely plentiful, inserted on every side into the interior disk of the base of the nectary, very short, thicker above. *Anthems* oblong, small.

PIST. *Germ* depressed, acuminate, girt with the receptacle of the flower. *Style* very short. *Stigma* rather obtuse, conic.

PER. roundish at the base, woody, girt above by the rudiments of the calyx, truncated, subquadrilocular, circumcised, with orbiculated operculum.

SEEDS several, glossy, with rough margin.

ESSENTIAL CHARACTER.

Cal. six-leaved. Cor. six-petalled. Nect. ligulate, stamiferous. Peric. circumcised, many-seeded.

SPECIES.

1. *Lecythis grandiflora*.
Aubl. guian. 712. t. 283, 284, 285.
Leaves ovate, peduncles of the flowers thick.
2. *Lecythis amara*.
Aubl. guian. 716. t. 286, 285.
Leaves ovate-lanceolate, acuminate, fruit small, with a bitter kernel.
3. *Lecythis parviflora*.
Aubl. guian. 717. t. 287, 285.
Leaves ovate-lanceolate acuminate, fruit small two-celled, lid with the appendix woody, produced inwards.
4. *Lecythis Jacapucaya*.
Aubl. guian. 718. t. 288.
Jacapucaya. Marcgr. bras. 128.
Jacapucaio. Pif. bras. 135.
Leaves lanceolate-oblong acuminate, fruit large, with an eatable kernel.
5. *Lecythis Idatimon*.
Aubl. guian. 721. t. 289.
Leaves ovate-lanceolate acuminate, fruit small, four-celled.
6. *Lecythis minor*.
Aubl. guian. 723. *Jacqu. amer.* 168. t. 109. *piet.* 82. t. 160.
L. Ollaria. Lin. spec. 734. *syft.* 494. *Reich.* 2. 586. *Loeff. it.* 189.
Leaves lanceolate-oblong, petioled.

DESCRIPTIONS, &c.

These are trees or shrubs, with alternate leaves; flowers in terminating spikes, and from the axils of the shoots; in the spikes alternate; on pedicels that have a single bracte at the base, and frequently two scales under the calyx. It is peculiar to this genus to have a pitcher-shaped body in the centre of the flower, which Linneus calls the nectarium, inserted into the calyx below the petals, perforated in the middle for the passage of the style, shaped like a petal, coriaceous, entire at the edge, not stamiferous on the edge as in *Pirigara* (*Gustavia*) and *Butonica*, but covered on the inside with numerous subsessile stamens, and produced on the side into a membranaceous bilamellated strap. Calyx six-lobed at top, equal, the lobes deciduous. Petals six, inserted into the calyx under the divisions, and fastened to the nectary, coriaceous and concave. Germ half inferior, ending in a conical style, and a blunt stigma. Capsule woody, four-celled, but sometimes varying in the number of cells from two to six; differing in form, size and density; the vestiges of the calyx remain on it about half way down, at the top it is cut round, and furnished with a lid, which is produced or continued down into a central angular receptacle; and fastened to the partitions of the capsule. Seeds in each cell solitary or few, inserted into the receptacle, angular, covered by a membranaceous aril^a.

^a Jusseu.

1. This tree grows to a very large size (to the height of thirty feet). Leaves strong, thick, waved, seven inches long, and three inches wide, ending in a little point, midrib prominent the whole length underneath. Flowers at the end of the shoots from the axils of the leaves, and also from the branches and shoots themselves. The pedicel enlarges as it approaches the calyx, which is of a reddish colour on the inside. Corolla rose-coloured; two petals longer and wider, and four smaller. Capsule shaped like an urn, hard, woody, thick, about seven inches in height, four inches or more in diameter, and the opening of the cover two inches and a half, rounded next the peduncle, convex at top, and ending in a point; the remains of the calyx form a woody border, and above that is a collar near an inch high, which in the flower was covered by the claws of the petals. The periphery of the opening, which is closed by a lid or cover that descends the whole height of the collar, and often to the very bottom, is convex in its outer face, but the inner is produced into a long, woody, conical body, having several sides, to which are attached large oblong kernels, of an irregular shape, enveloped in a membrane, and very good to eat.

Native of the forests of Guiana; flowering in January, and fruiting in April. Called by the Caribbs *Canari Makaque*, by the French *Marmite de Singe*, by Monf. Aublet *Quatelé à grande fleur*.

2. This is also a very lofty tree. Flowers small, yellow, with two or three scales on the peduncle. Capsule the size of an egg, thin, hard and woody, in the form of a little oval pot; the cover is divided at bottom into four parts, to each of which an oblong, angular, bitter kernel is attached. This is eaten by monkeys. The Creoles call it *Petite Marmite de Singe*. Monf. Aublet names it *le Quatelé amer*.

There is a variety of it with a scale at the base of the peduncles, and the capsule compressed on one side.

3. This is not a very high tree. The boughs and twigs bend towards the ground. Leaves shorter than those of the preceding. Flowers much smaller, of a golden yellow colour, and smelling very sweet. Capsule small, thin, brittle; cover produced internally into a thin but strong wide partition, extending to the bottom of the capsule, and dividing it into two cells, in each of which is an oblong angular kernel, fastened to the upper part of the cell. The kernel being bitter, is eaten only by monkeys. Native of Guiana, on the banks of rivers.

4. This is a very lofty tree, the trunk attaining sixty feet in height and more, and being two feet and upwards in diameter. The bark rough and irregular. The wood white, except towards the middle, where it is red. The boughs extend every way at top, and the shoots are loaded with leaves ten inches long, two inches and a half wide, entire about the edge, smooth, strong, pale green, on a short petiole, which is convex underneath, and channelled above. Flowers at the extremity of the shoots in pendant racemes, on fleshy pedicels, thickening as they approach the flower, and having a deciduous scale at the base. Calyx cut into six unequal sharp, narrow, fleshy reddish segments. The corolla consists of six unequal petals, white, with rose-coloured edges, wide, very thick and fleshy at the claws; four smaller, and two larger. Nectary rose-coloured. Capsule thick, hard, woody, oval, rounded at bottom, convex at top, with a point in the middle, which is the remains of the style; it is about four inches in diameter, and five, six or more inches high. The cover falls off when the fruit is ripe; it is boxed into the hole of the disk that bears the stamens some lines in depth, and is produced into a woody, conical, angular body to the bottom of the capsule, which contains several oblong kernels, irregular in shape, and fastened to the different faces of this body. Immediately under the cover, towards the upper part, this capsule has a prominent border, marked by the six pieces of the calyx; and above this is a collar, which in the flower was covered by the claws of the petals, and which forms the periphery of the aperture when the cover has fallen off.

The

L E D

The Portuguese turn boxes and other toys out of these capsules. The kernels are eaten; they are sweet, delicate, and preferable to Almonds. (They are sold in London under the name of Brasil nuts). Birds and monkeys feed much on them. On this account the Creoles of Cayenne call the fruit of this and the other species *Canari Makaue* or *Marmite de Singe*^b. In Brasil they extract an oil from the kernels, which is much esteemed. The Indians use the bark for making cordage, and as oakum for stopping the seams of boats. The wood being hard and durable, is excellent for mill-work. The capsules are made into drinking cups, pots, &c. Piso relates, that a single tree will yield fruit sufficient to feed a moderate army.

Native of America; Brasil, Guiana. Introduced into the isle of France before 1761, by M. le Comte d'Estaing.

5. This resembles the preceding species in its leaves, and rises to the same height. The trunk also is as large. Flowers axillary, at the ends of the shoots, on simple peduncles that bear several alternate flowers, having two scales at their base. Pedicels red, with small whitish glands. Calyx veined with red. Corolla rose-coloured. Capsule woody, an inch high, and an inch or more in diameter, rounded at the base, and convex at the top; about the middle it has a circular border, formed by the remains of the calyx, and above that a collar forming the opening, which is closed by a lid, convex, and terminating in a blunt point; within it has four cells, and a brown, oblong, bitter kernel fastened to each.

Native of the forests of Guiana, and called Idatimon by the Caribbs.

There is a variety of this with yellow flowers^c.

6. This is an elegant, branching, upright tree, sixty feet high. Leaves acuminate, ferrate, smooth, subdistich, half a foot in length. Racemes terminating, and frequently an axillary flower at the uppermost leaves. Pedicels one-flowered, thick, very short. Flowers large, the corolla and nectary white, the stamens and corpuscles of the nectary yellow. Fruit very hard, brown, two inches in diameter. The cover falls off when the fruit is ripe; the dried pulp and seeds follow; but the pot or body of the capsule hangs on frequently two years in an inverted state. The separation of the cells is commonly incomplete, and in each there are two or three seeds, and sometimes only one, in all about eight. Monkeys are fond of these, whence the inhabitants call the tree *Ollita de mono*. Jacquin relates, that having eaten a whole nut, he was seized with a nausea in half an hour after, accompanied with a giddiness of the head. The flowers are infested with a sort of black wasp, which attacks those who gather them. Native of woods about Carthage in New Spain, flowering in June and July. The fruits are ripe in December^d.

Jacquin is of opinion that his *L. minor* is very different from the *Lecythis* of Loeffling, and probably also from the *Jacapucaya* of Marcgraaf. Aublet supposes *L. minor* of Jacquin and *L. Ollaria* of Linneus to be the same species, and distinct from *Jacapucaya* of Marcgraaf, n. 4.

LEDON. See *Cistus*.]

LEDUM (a *ledendo* odore, from its disagreeable injurious scent. Lin.)

Lin. gen. n. 546. Reich. n. 591. Schreb. n. 744. Gertn. t. 112. Juss. 159.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Bicornes*.—*Rhododendra*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, very small, five-toothed.

COR. one-petalled, flat, five-parted: *divisions* ovate, concave, rounded.

STAM. Filaments ten, filiform, spreading, length of the corolla. Anthers oblong.

PIST. Germ roundish. Style filiform, length of the stamens. Stigma obtuse.

PER. Capsule roundish, five-celled, gaping five ways at the base.

SEEDS numerous, oblong, narrow, sharp on each side, extremely slender.

^b Aublet.

^c Ibid.

^d Jacquin.

L E D

OBS. In *Syst. Veg. R.* p. 337 the calyx is called *quinquefid*; the corolla flat, and five-parted.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. flat, five-parted. Caps. five-celled, gaping at the base.

SPECIES.

1. *Ledum palustre*. Marsh *Ledum*.
Lin. spec. 561. *Juss.* 404. *Reich.* 2. 289. *fl. lapp.* n. 160. *fl. suec.* n. 352. *mat. med.* 115. *Gertn. fruct.* 2. 145. *Hort. kew.* 2. 65. *Pallas res.* 1. 2. 50. *Gmel. sib.* 4. 127. *Du Roi herb.* 1. 361. *Fl. dan. t.* 1031. *Krock. fles.* n. 623.
L. filetiacum. *Clus. parr.* 68. *Park. theat.* 75.
Cistus Ledon foliis Rosmarini ferrugineis. *Baub. pin.* 467. *Raii hist.* 1006. *Dubam. arb.* 1. 168. n. 13. t. 67.
C. L. filetiacum. *Ger.* 1106. *emac.* 1288. 11.—item *rosmarini folio*. *Ger.* 1106. 12. *emac.* 1289. 12.
Rosmarinum sylvestre. *Camer. epit.* 546. *Park. theat.* 75.
 β . *L. decumbens*.
Leaves linear, rolled back at the edge, tomentose underneath.
- [2. *Ledum latifolium*. Broad-leaved *Ledum*, or *Labrador Tree*.
Ait. hort. kew. 2. 65. *Jacqu. ic.* 3. 464. *collect.* 2. 308.
L. groenlandicum. *Fl. dan. t.* 567. *Gunn. norv.* 1067. *Retz. scand.* 436.
Leaves oblong, rolled back at the edge, tomentose underneath, flowers subpentandrous.
3. *Ledum buxifolium*. Box-leaved *Ledum*.
Ait. hort. kew. 2. 65. *Berg. in act. petrop.* 1777. *part.* 1. p. 213. t. 3. f. 2.
L. serpillifolium. *L'Herit. stirp. nov.* 2. t. 10.
Leaves ovate-oblong, flat, smooth.

DESCRIPTIONS, &c.

1. Root branched, running widely and deeply into the ground. Stems shrubby, slender, three or four feet long, dividing into simple branches, and covered with a brown bark, which is tomentose or villose whilst they are young, but afterwards becomes smooth. Leaves linear-lanceolate, dusky green above, and smooth, underneath covered with a brown pile, quite entire, resembling those of *Rosemary*, but wider, petioled, perennial. Flowers on peduncles an inch or more in length, nodding before and after flowering, whitish, in axillary bundles or corymbs^a. Capsule small, obovate, terminated by a long permanent style: valves coriaceous; partitions membranaceous, springing from the edges of the valves, doubled, opening at their inner angle by a longitudinal chink. Receptacles five, filiform, curved a little, springing from the upper part of the axis of the fruit, and hanging down freely in the cavity of the cells. Seeds extremely numerous and small, irregularly shaped like saw-dust, pointed at each end, of a brownish straw-colour^b.

Native of the North of Europe— β . Dwarf *Ledum*, of Hudson's Bay. It flowers here in April and May. Introduced in 1762 by Mr. John Bush^c.

Mr. Miller seems to confound it with *Andromeda polifolia*.

2. This shrub grows three or four feet in height, with a trunk as thick as a man's finger; branches the first years woolly and whitish, the second tomentose and rust-coloured, afterwards smooth and brown. Leaves scattered alternately, on short petioles, quite entire, perennial, blunt, an inch or an inch and half in length; when young pale green, hairy above and woolly white beneath, when older smooth, dark green, and sometimes rust-coloured beneath. Common peduncles terminating, scarcely an inch long, upright, covered with imbricate rust-coloured scales. Pedicels from each scale filiform, somewhat villose, corymbed. Flowers very like those of the preceding, except in having only five stamens. In most of them, indeed, one fifth part is wanting in all the parts^d.

Native of Greenland, Hudson's Bay, Labrador, Newfoundland and Nova Scotia. It flowers here in

^a Krock.

^b Gertner.

^c Hort. kew.

^d Jacquin.

April

april and may; and was introduced in 1763 by Mr. Bennet^c.

Bees are very fond of the flowers of these plants. Animals do not browse on them, and they are reputed in some degree poisonous: they are, however, put into beer in order to inebriate. The smoke of them destroys bugs and other insects. The Russians are said to use them in tanning leather. A decoction is given in the itch, &c.^f

3. This is a small shrub, scarcely a foot in height. Stem upright, roundish, rugged with scars, ash-coloured. Branches at stated intervals, in a sort of whorl, leafy or scarred, each subdivided and upright. Leaves like those of Box, scattered, frequent, on short petioles, blunt, two or three lines in length, somewhat wrinkled above, smooth beneath, dotted, shining on both sides, the edges rolled back. Corymbs of flowers terminating, simple, on one-flowered, pubescent peduncles. Bractes oblong, blunt, subimbricate, spreading. Calyx smooth, five-parted, five-cornered at the base; segments lanceolate, acute, erect. Corolla white; petals five, blunt, longer than the calyx, sessile, spreading. Filaments longer than the corolla, from upright spreading. Anthers purple, ovate, small, flattish on one side, twin and grooved on the other. Germ superior, grooved all round and rugged. Style cylindric, upright. Stigma simple, submarginate, truncate. Capsule ovate, acute, somewhat wrinkled, three-celled, three-valved; the valves opening longitudinally on their inner side^g.

Native of New Jersey and Carolina in North America. Introduced in 1736 by Peter Collinson, Esq. It flowers in april and may^h.]

PROPAGATION AND CULTURE.

These shrubs growing on mosses or bogs, where the roots spread freely, cannot be preserved in gardens, at least so as to thrive, but in a proper soil and a shady situation. The plants must be procured from the places of their growth, and taken up with good roots; they must be planted in a border of bog earth, and frequently watered.

[LEDUM. See *Cistus*, *Kalmia*, *Rhododendron*.

LE-CHEE or Li-tchi. See *Sapindus*.]

LEES. See *Allium Porrum*.

[LEEA. (So named by David van Royen from James Lee, nurseryman at Hammer-smith.)

Lin. gen. Reich. n. 1158. Schreb. n. 1432. & emend. p. 796. mant. 17. Juss. 153. Aquilicia. Lin. mant. 2. 146. Gartn. t. 57. & 108. Cavan. diff. 7. t. 218.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Tribilatae*.—*Sapotæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, bell-shaped, coriaceous, five-toothed, permanent.

COR. one-petalled. *Tube* length of the calyx. *Border* five-cleft; *divisions* ovate, acute.

Nectary placed on the tube of the corolla, and shorter than it, upright, pitcher-shaped, five-cleft: *lobes* emarginate.

STAM. *Filaments* five, inserted below, within the nectary, between the lobes, incurved. *Anthers* ovate, versatile, before impregnation converging and covering the stigma.

PIST. *Germ*, subglobose, superior? *Style* simple, shorter than the nectary. *Stigma* headed.

PER. *Berry* orbiculate, depressed, quinque-torulose, one-celled.

SEEDS five, on one side gibbous, on the other cornered.

ESSENTIAL CHARACTER.

Cor. one-petalled. *Nect.* on the tube of the corolla, upright, five-cleft. *Berry* five-seeded.

SPECIES.

1. *Leea sambucina*. *Elder-leaved Leea*.

Aquilicia sambucina. Lin. syst. 243. Reich. 1. 568. mant. 211. Gartn. fruct. 2. 127. Burm. ind. 73. t. 24. f. 2. (Staphylæa.)

Stem, peduncles and leaves smooth.

2. *Leea æquata*. *Shrubby Leea*.

Lin. syst. 855. Reich. 4. 149. mant. 124.

Leaves smooth, stem and peduncles scurfy.

^c Hort. kew.

^f Kröcker.

^g Berg. in aft. petrop.

^h Hort. kew.

3. *Leea crispa*. *Fringe-stalked Leea*.

Lin. syst. 855. Reich. 4. 149. mant. 124.

Stem angular fringed curled.

DESCRIPTIONS, &c.

1. This is a small tree resembling the Elder. Leaves like those of *Sambucus canadensis*, alternate, petioled, pinnate: divisions at the base nearer, often ternate, or even pinnate: leaflets oval-oblong, acuminate, ferrate. Peduncles opposite to the leaves, usually trichotomous^a. Berry marked with from three to six swellings, black, aromatic, containing from three to six seeds^b.

Native of the East Indies, Africa and New South Wales.

Gærtner has another species (vol. 1. 275.) which he calls *Aquilicia Otilis*, and suspects to be the same with *Leea æquata* (n. 2.) It differs, according to him, from *Leea sambucina* in the number of seeds, the pale colour of the berry, and the entire want of any aromatic flavour.

2. Stem round, pubescent. Leaves alternate, pinnate: leaflets in fives, petioled, lanceolate, acuminate, ferrate, a span long, two inches wide, smooth, but when young pubescent underneath. Corymbs trichotomous. Native of the East Indies. Introduced before 1777, by Mr. James Lee^c.

3. Root tuberous. Stem somewhat woody but annual, jointed, three feet high, with curled membranaceous angles. Leaves alternate, pinnate, with the rachis or midrib margined: leaflets petioled, three or five, oval-oblong, marked with lines, smooth, sharply ferrate, with transverse nerves interwoven with parallel transverse streaks. Stipules solitary, under the leaves, femilunar, ciliate along the keel. Peduncle corymbed. Flowers snowy-white, very small. The nerves are opposite in both these species^d. Native of the Cape of Good Hope. Introduced in 1767, by Mr. William Malcolm. It flowers in october^e.

LEERSIA. (So named by Solander and Swartz from John Daniel Leers, author of *Flora Herbornensis*.)

Swartz. prodr. 21. Lin. gen. Schreb. p. 818.

Asprella. Lin. gen. Schreb. n. 105.

Homalocenchrus. Mieg. Hall. Allion.

Class. 3. 2. Triandria Digynia.

Nat. order of *Gramina* or *Grasses*.

GENERIC CHARACTER.

CAL. none.

COR. *Glume* bivalve: *valves* navicular, concave, compressed, ciliate-prickly on the back, nearly equal: the exterior larger, oblong, mucronated; the interior twice as narrow, linear, acute. (In the emendations, p. 818, the corolla is described thus, viz. *Glume* bivalve, one-flowered, shut.)

Nectary two-leaved: *leaflets* lanceolate, acute.

STAM. *Filaments* three, capillary, shorter than in the corolla. *Anthers* oblong.

PIST. *Germ* ovate, compressed; *Styles* two, capillary, short. *Stigmas* feathered.

PER. none. Corolla includes the seed.

SEED single, obovate, compressed.

OBS. *The number of stamens varies, from one to six.* Swartz.

ESSENTIAL CHARACTER.

Cal. none. *Glume* two-valved, closed.

SPECIES.

1. *Leersia monandra*.

Swartz. prodr. 21.

Panicle spreading, *spikes* remote, loose, *spikelets* directed all one way, roundish, one-stamened, *glumes* even.

2. *Leersia hexandra*.

Swartz. prodr. 21.

Panicle spreading, *spikelets* alternate, six-stamened, *glumes* almost even.

3. *Leersia oryzoides*.

Swartz. prodr. 21.

Phalaris oryzoides. Lin. spec. 81. syst. 104. Reich. 1. 151. Schreb. gram. 2. t. 2. Jacqu. vind. 206.

^a Linn. mant.

^b Gartner.

^c Hort. kew.

^d Linn. mant.

^e Hort. kew.

Homalocenchrus. *Hall. belv. n. 1411. Mieg. in act.*

belv. 4. 307. Pollich pal. n. 56.

Oryza glumis carina hispida. *Gron. virg. 153. 11.*

Gramen palustre panicula speciosa. *Baub. pin. 3. prodr. 7.*

Gr. miliaceum pal. ferotinum, &c. *Monti prodr. 51. Segu. veron. 1. 351.*

Panicle spreading, spikelets three-stamened, keel of the glumes ciliate.

1, 2. Natives of Jamaica.

3. Native of Virginia, in marshes. Introduced into Italy along with Rice. Switzerland; the Palatinate, Persia.

It is a tall Grass, two feet high and more, with rough leaves, and an upright, stiff, branching panicle. The pedicels are flexuose; and the flowers white, with green lines.

LEGNOTIS. (From λεγνωλος, fimbriatus, fringed; the petals being fringed.)

Swartz. prodr. 84. Lin. gen. Schreb. n. 900.

Cassipourea. *Aubl. guian. 211. Juss. 432.*

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, half four or five-cleft, permanent: divisions ovate, acute, upright.

COR. Petals four or five, longer than the calyx. Claws slender, almost the length of the calyx, inserted into the receptacle. Borders ovate, fringed with a great many villose divisions.

STAM. Filaments sixteen, twenty, or more, as far as fifty, filiform, equal, length of the calyx, inserted into the receptacle. Anthers oblong, upright.

PIST. Germ roundish. Style cylindric, length of the stamens. Stigma headed.

PER. Capsule large, three-cornered, three-celled, three-valved, elastic.

SEED solitary, on one side convex, on the other cornered.

OBS. The number of parts of the fruit is sometimes increased by a fourth.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five, jagged, inserted into the receptacle. Caps. three-celled.

SPECIES.

1. Legnotis elliptica.

Swartz. prodr. 84.

Leaves elliptic, flowers pedicelled.

2. Legnotis Cassipourea.

Swartz. prodr. 84.

Cassipourea guianensis. *Aubl. guian. 529. t. 211.*

Leaves ovate, flowers sessile.

DESCRIPTIONS, &c.

1. Native of Jamaica^a.

2. This is a middle-sized tree; the trunk five feet or more in height, with a gray bark. The wood is white. It has many branches at top, putting forth opposite shoots, on which are opposite almost sessile leaves, joined at the base by a very short acute stipule. The leaves are entire, shining, pointed. Flowers axillary, several together, enveloped in two small bractes. Calyx hard, coriaceous. Petals white. Native of Guiana, where it flowers in January^b.]

LEMNA. (Λεμνα or Λημνα of Theophrastus. Lens of Pliny.)

Lin. gen. n. 1038. [Reich. n. 1130. Schreb. n. 1400. Lenticula. Mich. 11. Dill. gen. 6.

Juss. 19. Hydrophace. Buxb. cent. 11. t. 37. f. 2.

Class. 21. 2. Monoecia Diandria.

Nat. order of *Miscellaneæ*.—*Naiades*, Juss.

GENERIC CHARACTER.

* Male Flower.

CAL. one-leafed, roundish, gaping on the side, obliquely dilated outwards, obtuse, spreading, depressed, large, entire.

COR. none.

STAM. Filaments two, awl-shaped, incurved, length of the calyx. Anthers twin, globose.

PIST. Germ ovate. Style short, permanent. Stigma obscure.

^a Swartz.

^b Aublet.

PER. abortient.

* Female Flower in the same plant with the male.

CAL. as in the male.

COR. none.

PIST. Germ subovate; Style short, permanent. Stigma simple.

PER. Capsule globose with a point, one-celled.

SEEDS some, oblong, sharp on each side, nearly the length of the capsule, striated on one side.

OBS. Ebrhart and Hedwig have seen hermaphrodite flowers. S.

ESSENTIAL CHARACTER.

MALE. Cal. one-leafed. Cor. none.

FEM. Cal. one-leafed. Cor. none. Style one. Caps. one-celled.

SPECIES.

1. Lemna trifulca. Ivy-leaved Duck's-meet.

Lin. spec. 1376. Reich. 4. 92. fl. lapp. n. 470.

fl. suec. n. 828. hort. cliff. 417. Hudf. angl. 399.

Wither. arr. ed. 3. 43. Lightf. scot. 537. Relb.

cant. n. 671. Pollich pal. n. 867. Villars dauph.

2. 21. Scop. carn. n. 1143. (Lenticula) Mich.

gen. 16. t. 11. f. 5. (Lenticularia) Hall. belv.

n. 1901. (Hydrophace).

Lenticula aquatica trifulca. *Baub. pin. 362. Baub.*

hist. 3. 786. 1. Raii hist. 118. syn. 129.

Hederula aquatica. *Lob. ic. 2. 36. 1. Ger. 681. 2.*

emac. 830. 2.

Ranunculus hederaceus aquaticus. *Park. theat. 1216. 9.*

Leaves petioled, lanceolate.

2. Lemna minor. Least Duck's-meet or Duckweed.

Lin. spec. 1376. syst. 840. Reich. 4. 92. hort.

cliff. 417. fl. suec. n. 827. Hudf. angl. 399.

Wither. arr. ed. 3. 44. Lightf. scot. 537. Relb.

cant. n. 672. Gron. virg. 143. Pollich pal. n.

868. Villars dauph. 2. 22. Scop. carn. n. 1142.

(Lenticula) Mich. gen. 16. t. 11. f. 3 (Len-

ticularia) Hall. belv. n. 1900. (Hydrophace).

Lens palustris. *Camer. epit. 852. Dod. pempt. 587. 1.*

Lob. ic. 2. 249. 1. Raii hist. 117. syn. 129. t. 4.

f. 1. Vallisn. 2. 81. t. 14, 15. & Eph. nat. cur.

1. app. t. 2. Blackw. t. 380. Ger. 680. emac.

829. 1. Baub. hist. 3. 773. 2.—f. aquatica vulga-

ris. Park. theat. 1262. 1.

Lenticula palustris vulgaris. *Baub. pin. 362. Vaill.*

par. t. 20. f. 3.

Leaves sessile, flattish on both sides, roots solitary.

3. Lemna gibba. Gibbous Duck's-meet or Duckweed.

Lin. spec. 1377. syst. 841. Reich. 4. 93. hort. cliff.

417. fl. suec. n. 826. Wither. arr. ed. 3. 44.

Relb. cant. n. 673. Villars dauph. 2. 22. Mich.

gen. 15. t. 11. f. 2. (Lenticularia) Hall. belv.

n. 1898. Hydrophace).

L. minor β. *Hudf. angl. 399.*

Leaves sessile, hemispherical underneath, roots solitary.

4. Lemna polyrhiza. Greater Duck's-meet or Duckweed.

Lin. spec. 1377. syst. 841. Reich. 4. 93. hort. cliff.

417. fl. suec. n. 825. Hudf. angl. 399. Wither.

arr. ed. 3. 44. Lightf. scot. 538. Relb. cant.

n. 347. Pollich pal. n. 869. Villars dauph.

2. 22. Wigg. primit. 66. Mich. gen. 16. t. 11.

f. 1. (Lenticularia) Hall. belv. n. 1899. (Hy-

drophace).

Lenticula palustris major. *Raii syn. 129. t. 4. f. 2.*

Vaill. par. t. 20. f. 2.

Leaves sessile, roots clustered.

5. Lemna obcordata.

Vahl. symb. 2. 95.

Leaves sessile obcordate, roots clustered.

6. Lemna arhiza.

Lin. syst. 841. Reich. 4. 93. mant. 294.

Lenticularia omnium minima arhiza. *Mich. gen. 16.*

t. 11. f. 4.

Leaves in pairs, rootless.

DESCRIPTIONS, &c.

1. Stem dichotomous, filiform, divaricated, having a lanceolate leaf at the angle of the branches, but proli-ferous ones terminating the branches: that is, similar leaves growing out of their sides at right angles: where these three leaves are conjoined there shoots out a pen-
dent

L E M

dent radicle, with a conical papilla at its base^a. Linneus observes, that the stems are flatted and proliferous, crossing each other, and thus resembling in the mode of growth *Cactus Opuntia* or Indian Fig. Dr. Withering adds, that the leaf-stalks issue from the edge of another leaf, from a fissure parallel to the sides of the leaf.

Native of most parts of Europe in ditches and stagnant waters; flowering from June to September.

2. The leaves of the common Duckweed are very small, of a roundish ovate form, collected into heaps, by twos or threes, and forming extensive green plats on stagnant waters, and covering the ditches; each leaf drops a single radicle^b.

It is common in most parts of Europe, and flowers from June to September. Linneus says in the Dog-days.

This plant affords nourishment not only to Ducks, but to the fresh-water Polype, *Phalæna Lemnata*, &c. Its quick and extensive propagation makes it troublesome in some cases, but at the same time it must be considered that it arrests a vast quantity of inflammable air from putrid water, and converts it into vital elastic air, adapted to respiration^c.

3. This differs from the preceding in having the leaves obovate, or narrowest where they are joined together, the under surface slightly convex, and generally tinged with purple, the upper surface very convex, white, of a reticulated spongy appearance, and filled with water, something resembling the internal structure of *Scirpus lacustris*, but not so regular^d. Roots filiform, from the centre of the under side of the leaf. Leaves three, four or five together; one growing out of the edge of the other^e. Capsule two-celled, containing two seeds, somewhat compressed, and a little depressed in the middle, more globular when farther advanced^f.

According to Gerard and Hudson this is a mere variety of the preceding.

Native of several parts of Europe, in ditches and ponds; flowering in July and August. Observed by Dr. Stokes in Worcestershire, Sept. 8, 1776.

4. The leaves of this are much larger than in the common sort; they are thick, succulent, inflated, oblong-cordate, blunt, grooved above, bright green, smooth, purple underneath, five lines long, and four wide. This species is also distinguished by its dropping packets of thick black fibres from the lower surface of the leaves^g. The flowers are the same as in the preceding, but are placed differently; they are to be found between the duplicature of each lamina, on that side where one leaf insinuates itself into the other. The fruit is larger and more flatted^h.

Linneus says, it floats on the surface of the water on the appearance of the swallows, and sinks again at their disappearance. All the species sink in the winter season, and rise again in the spring.

Native of most parts of Europe, in ditches, ponds, &c. flowering in July and August.

5. Leaves very small, the upper surface in front bright green, but the hinder part, with the lower surface, and roots purple; they have a longitudinal groove running along the middle which is forked in front, each branch running to the end of each lobe, and dividing them as it were in two. Native of the East-Indiesⁱ.

6. This has commonly two leaves cohering together, one smaller than the other, and no roots^k. This latter circumstance makes it very probable that it is only *Lemna polyrhiza* in a nascent state, as Wiggers has observed.

Native of Italy and France.

These plants are all annual, and float on stagnant water. Their flowers were observed in Italy long since by Micheli and Vallisneri, but not being produced so freely in more northern climates, they were long thought by some to be cryptogamous plants. The fructification, however, has been well ascertained by Ehrhart

^a Lightfoot.
^d Woodward.
^e Pollich.

^b Villars, Pollich.
^c Withering.
^h Wiggers.
^k Linn. mant.

^f Villars.
^g Wiggers.
ⁱ Vahl.

L E O

and Graner in *L. gibba*, by Linneus in *L. minor*, and by Graner in *L. polyrhiza*¹. Dr. Withering, also, having examined some of them in a flowering state, bears witness to the accuracy of Micheli's figures.

LEMNA. See *Marsilea*.

LEMNISCIA. (*Λρμνίσκος*, *fasciola a fillet or ribband or bandage; from the form of the petals.*)

Lin. gen. Schreb. n. 902.

Vantanea. Aubl. t. 229. Juss. 434.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-toothed, acute, short.

COR. *Petals* five, linear, long, acute, recurved, growing to the nectary.

Nectary cup-shaped, fleshy, very short, girding the germ.

STAM. *Filaments* numerous, (seventy to eighty), capillary, longer than the corolla, inserted into the nectary.

Anthems roundish, small.

PIST. *Germ* roundish, immersed into the nectary. *Style* filiform, length of the stamens. *Stigma* obtuse.

PER., five-celled.

SEEDS solitary.

ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. five-petalled, recurved.

Nect. cup-shaped, girding the germ.

Per. five-celled. Seeds solitary.

SPECIES.

1. *Lemniscia guianensis*.

Vantanea guianensis. Aubl. guian. 572. t. 229.

DESCRIPTION, &c.

The trunk of this tree rises from fifteen to twenty feet in height, and is a foot in diameter. The bark is brown and smooth. The wood white and compact. Abundance of twisted branches spread in every direction. Leaves alternate, smooth, firm, entire, ovate, acuminate, on a short petiole; the largest leaves are five inches in length, and two in breadth. Flowers at the ends of the shoots, very numerous, in large corymbs, on a woody peduncle. Corolla of a fine coral red.

Native of Guiana, where it is called *Jouantan*, whence Aublet has constructed its name. It flowers in August^m.]

LEMON TREE. See *Citrus*.

LENS. See *Ervum*, [*Glycine*, *Hedysarum*, *Lemna*, *Marsilea*, *Medicago*, *Mimosa*, *Riccia*.]

LENTAGO. See *Viburnum*.

LENTIBULARIA. See *Utricularia*.

LENTICULA. See *Aldrovanda*, *Callitriche*, *Fucus*, *Lemna*, *Marsilea*, *Pistia*.

LENTICULARIA. See *Lemna*.

LENTIL. See *Ervum*.]

LENTISCUS. See *Pistacia* [& *Schinus*.]

LEONITIS. See *Phlomis*.

LEONTICE. (*An abbreviation, by Linneus, of the Leontopetalon of Tournefort. Adopted from Pliny. Λεοντίκη from Λεων.*)

Lin. gen. n. 423. Reich. n. 456. Schreb. n. 571.

Juss. 287. Leontopetalon. Tournef. 484.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Corydales*. *Berberides*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* six-leaved, caducous; *leaflets* linear, expanding: the alternate ones smaller.

COR. *Petals* six, ovate, twice the length of the calyx. *Nectary* of six scales, which are semi-ovate, spreading, foot-stalked, inserted into the claws of the petals, equal.

STAM. *Filaments* six, filiform, very short. *Anthems* upright, two-celled, two-valved, gaping at the base.

PIST. *Germ* oblong-ovate. *Style* short, somewhat columnar, obliquely inserted into the germ. *Stigma* simple.

PER. *Berry* hollow, globose-acuminate, inflated, one-celled, subsucculent.

SEEDS few, globose.

ESSENTIAL CHARACTER.

Cal. six-leaved, deciduous. Cor. six-petalled. Nect. six-leaved, placed on the claws of the corolla, spreading.

¹ Wiggers,

^m Aublet.

SPECIES.

LEO

SPECIES.

1. *Leontice Chrysogonum*. Oak-leaved *Leontice*.
Lin. spec. 447. *Reich.* 2. 66. *hort. cliff.* 122. *Gron. orient.* 113.
Leontopetalum affinis, foliis quernis. *Baub. pin.* 324.
Mor. hist. 2. 285. f. 3. t. 15. f. 7.
Chrysogonum Dioscoridis. *Rauw. itin.* 119. t. 21.
Raii hist. 1326. *Baub. hist.* 3. 876. f. 2. *Park. theat.* 683.
Leaves pinnate, common petiole simple.
2. *Leontice Leontopetalum*. *Decomound-leaved Leontice*, or *Lion's-leaf*.
Lin. spec. 448. *Reich.* 2. 67. *hort. cliff.* 122. *Gron. orient.* 114.
Leontopetalum. *Baub. pin.* 324. *Cam. epit.* 565.
Ger. 182. *emac.* 236. *Park. theat.* 682. *Mor. hist.* 2. 285. f. 3. t. 15. f. 6. *Raii hist.* 1326.
Baub. hist. 3. 489.
Leaves decomound, common petiole trifid.
- [3. *Leontice Thalictroides*. *Columbine-leaved Leontice*.
Lin. spec. 448. *Reich.* 2. 67. *Gron. virg.* 151. 52.
Cold. noveb. 75.
Stem-leaf triternate, floral leaf biternate.]

DESCRIPTIONS, &c.

1, 2. These two plants have large tuberous roots about the size of those of *Cyclamen*, covered with a dark brown bark. Leaves on slender petioles from the roots, about six inches long. Those of the first are single, having many leaflets ranged along the midrib; but the petioles of the second are branched into three smaller; upon each of these are ranged several leaflets, in the same form as pinnate leaves. The flowers are on naked peduncles: in the first sort they are yellow; in the second they are smaller and paler.

Native of the islands of the Archipelago, and of the corn fields about Aleppo, flowering at Christmas. Here they do not flower till the beginning of april, and they do not produce seeds.

2. [This was cultivated before 1597, by Lord Zouch, as appears from Gerarde's herbal^a. *Rauwolf* observed it about Aleppo; it has been found in several parts of the Levant: and *Matthioli* says, that he remarked it in the fields of Tuscany, &c. and that it is common in Apulia.

3. Stem simple. Leaves triply-ternate, on long common petioles; the middle proper petioles shorter, the side ones scarcely any. Leaflets smooth, ovate, the middle ones often three-lobed. Raceme simple, terminating, loose, upright^b.

Native of North America. Introduced in 1784, by Mr. William Young^c.]

PROPAGATION AND CULTURE.

When seeds are procured from abroad (which should be sent in sand), sow them as soon as they arrive, and cover them with glasses in the winter. In spring, when the plants begin to appear, admit free air to them whenever the weather is mild. If they are not too close, let them remain unremoved till the second year; but where they are very close, take up a part of the roots in october, and plant them close to a warm wall; and in november lay some old tanner's bark over the surface, three or four inches thick. Take this off again in march, before the roots begin to push, leaving a thin covering to prevent the spring winds from drying the ground. These roots should have a dry loose soil, and must be seldom removed. October is the best time for removing them.

The plants are very difficult to preserve in England, for the roots will not thrive in pots; and in the full ground, the frost frequently destroys them in winter, especially when the roots are young. Before the severe winter of 1740, Mr. Miller had some of the roots in a south-west border, that flowered several years, without any shelter.

[These and most tender bulbs do best in a south border in front of a greenhouse or stove, covered with glasses.

LEONTICE LEONTOPETALOIDES. See *Tacca*.]

^a Hort. kew.

^b Gron. virg.

^c Hort. kew.

LEO

LEONTODON. (*Asotlos edous*, *Lion's-tooth*. So called from the toothing of the leaves.)

Lin. gen. n. 912. [*Reich. n.* 991. *Schreb. n.* 1237. *Gartn. t.* 158. *Taraxacum*, *Hall. Juss.* 169. *Dens leonis*. *Tournef. t.* 266. *Vaill. art. gall.* 1721. 50. 12.]

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semisiliculosæ*. *Cichoraceæ*, *Juss.*

GENERIC CHARACTER.

CAL. Common imbricate, oblong, scales interior linear, parallel, equal: exterior fewer, often reflex at the base.

COR. Compound imbricate, uniform: corollets hermaphrodite numerous, equal.

Proper one-petalled, strap-shaped, linear, truncated, five-toothed.

STAM. Filaments five, capillary, very short. Anthers cylindric, tubular.

PIST. Germ subovate. Style filiform, length of the corollet. Stigmas two, revolute.

PER. none. Calyx oblong, straight, at length reflex.

SEEDS solitary, oblong, rough. Down capillary, footstalked.

REC. naked, dotted.

ESSENTIAL CHARACTER.

Cal. imbricate, with loofish scales. Down capillary. Recept. naked, dotted.

SPECIES.

1. *Leontodon Taraxacum*. Common Dandelion.

Lin. spec. 1122. *syst.* 715. *Reich.* 3. 631. *fl. lapp.* n. 280. *fl. suec. n.* 693. *mat. med.* 128. *Woodv. med. bot.* 7. *hort. cliff.* 386. *Gartn. fruct.* 2. 363. *Huds. angl.* 339. *Curt. lond.* *Lighf. scot.* 432. *Relb. cant. n.* 566. *Gron. virg.* 176. 114. *Thunb. jap.* 304. *Gmel. fib.* 2. 14. *Pollich pal.* n. 734. *Fl. dan. t.* 574. *Krock. files. n.* 1266. *Allion. pedem. n.* 758. *Mill. illustr.* *Blackw. t.* 1. & 501. *Bulliard. f.* 217. *Zorn. ic. t.* 69.

Taraxacum. *Hall. helv. n.* 56.—*officinale*. *Wigg. primit.* 56. *Villars dauph.* 3. 72. *Wither. arr. ed.* 3. 679.

Dens leonis. *Ger.* 228. 1. *emac.* 290. 1. *Raii hist.* 244. *syn.* 170. *Pet. brit. t.* 11. f. 7. *Matth.* 506. *Dod. pempt.* 636. 1. *Lob. obs.* 117. 2. *ic.* 1. 232. 2. *Mor. hist. f.* 7. t. 8. f. 1.—*vulgaris*. *Camer. epit.* 286. *Park. theat.* 780. 1.—*latiore folio*. *Baub. pin.* 126.

Hedypnois. *Fuchf. hist.* 680. *Baub. hist.* 2. 1035.—*Taraxacum*. *Scop. carn. n.* 957.

β. *Dens leonis angustiore folio*. *Baub. pin.* 126. *Park. theat.* 780. *Raii syn.* 171. *Pet. brit. t.* 11. f. 8. *Segu. ver.* 2. 188.

γ. *L. Taraxacon*. *Wither. arr. ed.* 3. 679.

L. palustre. *Lyons. fascic.* 48. *Huds. angl. d.* *Relb. cant. γ.* *Krock. files. p.* 284. *Wigg. prim.* 56.

Hedypnois paludosa. *Scop. carn. n.* 958.

Lower calycine scales reflex, leaves runcinate toothletted even.

2. *Leontodon bulbosum*. Bulbous Dandelion.

Lin. spec. 1122. *Reich.* 3. 632. *Gouan hort.* 410.

flor. 348. *Sauv. monsp.* 297. n. 223. (*Taraxacum*).

Chondrilla bulbosa. *Baub. pin.* 130.

C. altera Dioscoridis. *Col. phyt.* 11. t. 4.

C. pusilla marina lutea bulbosa. *Lob. ic.* 230.

Leaves oblong-ovate somewhat toothed smooth, calyx even, scape rough-haired at top.

3. *Leontodon aureum*. Golden Dandelion.

Lin. spec. 1122. *syst.* 715. *Reich.* 3. 632. *Jacqu. vind.* 268. *austr.* 3. 53. t. 297.

Andryala aurea. *Scop. ann.* 2. 59.

Hieracium aureum. *Scop. carn. n.* 965.

Taraxacum. *Hall. helv. n.* 57. t. 1.

Dens leonis fel. extremo subrotundis, flor. aureis.

Raii exter. 399. *Segu. ver.* 3. 265.

Hieracium alterum minus 4. *Col. ecphr.* 2. 31. t. 29.

Leaves runcinate, stem one-leaved, calyx hispid.

4. *Leontodon muricatum*.

L'Herit. stirp. nov. 173. t. 82.

Leaves runcinate rugged, calyxes muricated imbricate loose somewhat reclining.

DESCRIPTIONS, &c.

Most of the species that were ranged by Linneus under this genus have been separated by subsequent authors,

authors, on account of a difference in the calyx, down, and receptacle. *Leontodon hispidum*, *hirtum*, *danubiale*, *hastile*, *tuberosum*, *autumnale*, *pyrenaicum*, *alpinum*, may be found under *Apargia*; and *Leontodon tomentosum* is the same with *Tussilago albicans*. Perhaps none of the species but the first ought to have remained under this genus. The following are the generic characters of the three genera into which this has been separated.

APARGIA. *Cal.* subimbricate with linear parallel unequal scales.

Down plumose, subsessile.

Rec. naked, subvillose.

HEDYPNOIS. *Cal.* calyced with short scales.

Down none to the outer seeds: the inner have five, almost erect, awned chaffs.

Rec. naked.

LEONTODON. *Cal.* imbricate with loofish scales.

Down capillary.

Rec. naked, dotted.

Haller has *L. Taraxacum* and *aureum* only under the name of *Taraxacum*, and associates most of the other *Leontodons* with *Picris*. Scopoli separates these from *Picris*, and *L. Taraxacum* and *paludosum*, under Fuchsius's name of *Hedypnois*. Wiggers distinguishes *L. Taraxacum*, by its stipitate capillary down, under the name of *Taraxacum*, and refers those which have a sessile plumose down to *Leontodon*. He would associate *L. paludosum* with *Chondrilla*, were it not for the difference of habit. But there is no end to reform in the genera of the class Syngenesia.

1. Root perennial, tapering, milky, pale brown. Leaves varying from pinnatifid or deeply runcinate in a very dry situation to nearly entire in a very moist one, generally smooth, but sometimes a little rough. A single, large yellow flower is supported on a hollow milky scape, covered with a kind of down towards the top. Calyx smooth, glaucous; the scales perfectly smooth, the lowest turning back. The flowers sometimes contain more than one hundred and forty florets. Seeds a little crooked, flattish, somewhat four-cornered, striated or grooved, prickly at top, of a pale olive colour. Down on a long stipe or foot-stalk, simple not feathered, shorter than the stipe. Receptacle naked, full of little holes^a.

Common all over Europe in meadows, on walks, dry banks, &c. A common weed in gardens. It flowers from april to september. The flowers expand about five or six in the morning, and close early in the afternoon^b. As the flower advances the calyx is gradually pressed out at top; when the flowering is past, it contracts again into a conical form; and finally, when the seeds are mature, the calyx is again pushed back, and the aggregate of down assumes a spherical form, till the whole is loosened and dissipated by the wind.

Early in the spring, whilst the leaves are hardly unfolded, they are no bad ingredient in salads. The French eat the roots, and the leaves blanched, with bread and butter. Its diuretic effects have given it a vulgar name, not only in England, but other European nations. The expressed juice has been given to the quantity of four ounces, three or four times a day; and Boerhaave had a great opinion of the utility of this and other milky plants in visceral obstructions. When a swarm of locusts had destroyed the harvest in the island of Minorca, many of the inhabitants subsisted upon this plant. Goats eat it, swine devour it greedily, sheep and kine are not fond of it, horses refuse it; small birds are fond of the seeds. *Phalæna fascelina* and *Thrips Physapus* feed upon it^c.

Our common name of Dandelion is corrupted from the French *Dent de Lion*, which was given it from the toothing of the leaves.

Leontodon palustre seems scarcely to be any thing more than a variety. In this species which varies so much in the leaves, the having few notches or being even almost entire, can hardly be admitted as a specific difference: and though the lower calycine leaflets are erect, yet finally they become reflex. The plant is smaller, neater, and more levigated and glaucous than

the common Dandelion; but all this may be owing to situation.

2. Root tuberous. Leaves attenuate-petioled, subspatulate^d.

Native of Montpellier and Italy.

3. Root perennial, end-bitten, the thickness of a reed or of the human finger, with long white fibres, white on the inside, but usually blackish without. Leaves all radical, sometimes very few, sometimes more, oblong, narrowing gradually towards the base, bright green, smooth on both sides, unequally sinuate-toothed, blunt sometimes with a small point. Scape one or two, round, striated, upright, smooth below, but hispid towards the top with black hairs, and having a small scale or two at different heights; it is from three to ten inches high, and has one flower at the top; sometimes, but very seldom, there is a branch with a second flower. The flower is elegant, each floret being yellow on the inside but saffron-coloured on the outside, both colours turning deeper. Calycine scales lanceolate-oblong, acute, erect, dark green, hispid with black hairs, with short scales at the base. Seeds linear, with a sessile, snowy-white, simple down^e.

Linneus remarks, that it has the leaves of *L. Taraxacum*, but smaller and blunter. The scape naked and striated, with a linear leaflet in the middle. The calyx brown, upright, rough-haired at the base, with the keels of the leaflets ciliate. The corolla tawny, red underneath. The receptacle villose.

This plant, having a simple down, cannot be an *Apargia*; and having the down sessile, the scales of the calyx erect, and the receptacle villose, it is not a *Leontodon*.

Native of Switzerland, Austria, and Italy. Introduced in 1769, by Mons. Richard^f.

4. The whole plant is rugged and milky. Root perennial, fusiform, almost simple. Stems diffused, a foot and half high, branched, round, flexuose, somewhat striated, muricated, milky, red. Branches alternate, resembling the stem. Root-leaves prostrate, petioled, longer: stem-leaves half-embracing, alternate, spreading: both having a red rib, villose-muricate, very rugged, from six to nine inches long, and two inches broad. Peduncles one, two or three, one-flowered, almost upright, the length of half the plant, round, muricated, bracted. Flowers yellow, two inches in diameter. Seeds narrow-oblong, sharp at both ends, striated, rufous. Down stiped, feathered, spreading. Receptacle naked, flat, dotted.

The flowers are not radical as in *Leontodon*, it has leaves like it, but the whole plant is muricated. It has the calyx of *Scorzonera tingitana* and *picroides*, but the down is stiped. It differs from *Crepis* in having an imbricate calyx^g. It has the stiped down of *Leontodon*; but it is feathered or plumose, as in *Apargia*.

Native of the coast of the Mediterranean near Tunis and Algiers, where it was first observed by René Louiche Desfontaines^h.

LEONTODON. See *Apargia*, *Crepis*, *Hedypnois*, *Hieracium*, *Tragopogon*, *Tussilago*.

LEONTODONTOIDES. See *Hyoseris*.

LEONTOPETALO AFFINIS. See *Leontice*.

LEONTOPETALOIDES. See *Tacca*.

LEONTOPETALON and LEONTOPETALUM. See *Leontice*.

LEONTOPODIUM. See *Filago* and *Plantago*.]

LEONURUS. (From *λεων* and *ουρα*; *Lion's tail*.)

Lin. gen. n. 722. *Reich. n.* 780. *Schreb. n.* 977.

Juss. 114. *Cardiaca. Tournef. 87.*

Class. 14. 1. *Didynamia Gymnospermia.*

Nat. order of Verticillatæ. Labiatæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular, cylindric-cornered, pentagonal, five-toothed, permanent.

COR. one-petalled, ringent. *Tube* narrow. *Border* gaping. *Mouth* long. *Upper lip* longest, semicylindric, concave, gibbose, rounded-obtuse at the tip, entire, villose. *Lower lip* reflex, three-parted; *divisions* lanceolate, about equal.

^a Gouan.

^c Jacquin.

^f Hort. kew.

^g L'Heritier.

^h Ibid.

^a Curtis, Woodw.

^b Withering.

^c Linn. Withering.

STAM. *Filaments* four, covered beneath the upper lip, of which two are shorter. *Anthers* oblong, compressed, bifid in the middle, incumbent, sprinkled with very small, elevated, globose, glossy, solid points.

PIST. *Germ*s four. *Style* filiform, of the length and situation of the stamens. *Stigma* bifid, acute.

PER. none. *Calyx* unchanged containing the seeds, which are shorter than it.

SEEDS four, oblong, convex on one side, cornered on the other.

OBS. *The lips of the corolla differ in the different species.*

ESSENTIAL CHARACTER.

Anthers having shining dots sprinkled over them.

SPECIES.

[1. *Leonurus Cardiaca*. Common Motherwort.

Lin. spec. 817. *syft.* 538. *Reich.* 3. 67. *hort. cliff.* 313. *fl. suec. n.* 532. *mat. med.* 150. *Huds. angl.* 261. *Wither. arr. ed.* 3. 534. *Lightf. scot.* 316. *Relh. cant. n.* 443. *Engl. bot.* 286. *Scop. carn. n.* 703. *Pollich pal. n.* 571. *Gouan illustr.* 36. *Gmel. fib.* 3. 238. *Neck. gallob.* 258. *Fl. dan.* 1. 727. *Allion. pedem. n.* 118. *Villars dauph.* 2. 391. *Krock. files. n.* 949. *Bulliard fr.* 273. *Zorn. ic.* 114. *Thunb. jap.* 247.

Cardiaca. *Fuchs. hist.* 395. *Blackw. t.* 171. *Hall. belv. n.* 274. *Dorst. bot.* 651. *Baub. hist.* 3. 320. *Park. theat.* 42. 7. *Raii hist.* 571. *syn.* 239. *Riv. mon. t.* 20. f. 1. *Dod. pempt.* 94. *Lob. obs.* 278. 1. *ic.* 1. 516. 1. *Lonic.* 110. 3.

Marrubium Cardiaca dictum. *Baub. pin.* 230. *Mor. hist. f.* 11. t. 9. f. 18. *Ger.* 569. *emac.* 705.

Stem-leaves lanceolate trifid.

2. *Leonurus crispus*. Curled Motherwort.

Lin. syft. 538. *Murr. in comm. gott.* 1777. p. 44. t. 4.

Cardiaca crispa. *Raii hist.* 572. *Mill. dict. ed.* 7.

All the leaves acutely serrate, very much wrinkled, unequally reflex at the edge, stem-leaves five-lobed.

3. *Leonurus Marrubiastrum*. Small-flowered Motherwort.

Lin. spec. 817. *syft.* 538. *Reich.* 3. 68. *mant.* 412. *Jacqu. austr.* 5. 3. t. 405. *Scop. carn. n.* 704. *Krock. files. n.* 950. *Allion. pedem. n.* 119. *Lour. cochinch.* 360.

Marrubiastrum foliis Cardiacæ. *Bocc. mus.* 2. 120. t. 98.

Sideritis fol. ovatis lanc. inciso-serratis. *Lin. cliff.* 213. *Sauv. monsp.* 279.

Leaves ovate and lanceolate serrate, calyxes sessile spiny.

4. *Leonurus tataricus*. Tartarian Motherwort.

Lin. spec. 818. *syft.* 538. *Reich.* 3. 68. *hort. upf.* 171. *Gmel. it.* 1. 111. *fib.* 3. 238. n. 63.

Sideritis fol. tripartito-multifidis. *Lin. hort. cliff.* 313. *upf.* 169.

Cardiaca fol. tenuius & profundius incisus, glabra s. villosa. *Amm. ruth.* 62. 63. *Mill. fig.* 53. t. 80. *Dict. ed.* 7. n. 3.

Leaves three-parted jagged, calyxes villose.

5. *Leonurus fibiricus*. Siberian Motherwort.

Lin. spec. 818. *syft.* 539. *Reich.* 3. 68. *hort. upf.* 170. *Gmel. fib.* 3. 239.

Ballote inodora, foliis Coronopi. *Amm. ruth.* n. 60. t. 8.

Leaves three-parted multifid linear bluntish.

DESCRIPTIONS, &c.

1. The root seems to be perennial, though most authors mark it as biennial. Stem upright, hard, from two to three feet in height; grooved, pubescent at the angles and joints, branched, frequently purple. Leaves lanceolate and acutely three-lobed, with some notches besides; uppermost undivided; lowest very much and obtusely lobed and broad, somewhat like those of the Gooseberry. Whorls of flowers numerous. Corolla whitish on the outside, elegantly stained with paler and darker purple within. Calyx streaked with five green lines, and every outer one subtended by a setaceous bracte. Filaments hairy. Anthers brown, before they burst sprinkled with white globular points, looking like enamel. Linneus chiefly distinguishes the genus from *Phlomis* by this minute circumstance.

The herb is bitter and tonic, with no very pleasant though pungent smell. It was formerly used in the

cardialgia, whence its old name, but it is now become wholly obsolete, except perhaps among cow-leeches and farriers. Bees are fond of the flowers.

Native of many parts of Europe on banks or under hedges, in a gravelly or calcareous soil. Near Combe wood, Surrey^a. Oxfordshire, Cambridgeshire, Norfolk and Suffolk; Monmouthshire.

Motherwort in German is called *Herzgespau* or *Herzkrout*. In Danish, *Hiertespan*. In Swedish, *Bonafsla*. In French, *Agripaume*, *Cardiaque*, *la Cordiale*. In Italian, Spanish and Portuguese, *Agripalma*, *Cardiaca*.

2. This is a biennial plant. Stems several, from two to three feet in height, upright, deeply hollowed on each of the four sides, smooth except at the joints, where they are hairy. Branches scarcely any at bottom, but decussately opposite at top, slender, the length of a foot and more. Internodes a hand and half, a hand, or less in length. Leaves very much wrinkled, tomentose, soft, pale green, reflex, unequally ferrate with sharp ferratures, but entire at the base of the leaf and the origin of the lobes, acuminate, opposite. Lower stem-leaves very large, roundish, five-lobed or sometimes seven-lobed; lobes gash-ferrate, ovate-oblong, approximating, bent back variously, the middle one trifid, the next bifid, the rest multifid; the upper leaves and those on the branches wedge-shaped, three-lobed, the lobes seldom divided, acuminate; the uppermost undivided but ferrate. Petioles three times the length of the leaves, channelled, horizontal or declining. Whorls very numerous, terminating, distant, composed of many axillary flowers heaped together in four divisions. Involucres bristle-shaped: bristles almost pressed close, to each division five, shorter than the calyx, green, and below them a leaf on each side. Flowers sessile, white. It is very nearly allied to the preceding; but that is of a darker green and more hirsute, the stems are not only hairy at the angles but over the whole surface, the sides are flatter, the branches more spreading, and of a dusky purple colour. Leaves narrower, the margin of the whole leaf and of the lobes straighter, perfectly flat and not reflex at the edge; the uppermost trifid, not at all ferrate, and the rest less ferrate, with the ferratures ruder and more equal; the lobes also of the sub-axillary leaves so narrow as not to cover each other, and blunter. Whorls more numerous, and nearer, with larger and distant bractes. Flowers smaller. Calyx dusky-red. Corolla pale red, seldom white; with the upper lip narrower, less tomentose. The upper end of the seeds obtruncated, smooth or subtomentose, not hirsute^b.

Native of Switzerland and the South of France. Ray had it from London before the year 1686. Mr. Miller asserted, before 1759, that having frequently raised it from seed, it was a distinct species from the common one.—In the Kew catalogue (3. p. 494.) it is said to be a native of Siberia, and to have been introduced in 1784, by William Pitcairn, M. D.

3. This is an annual or biennial plant, with something of the same smell with *Lamium*. From a branched, fibrous, whitish root, a stem rises three feet in height, (and even almost twice as high in gardens) upright, leafy, branched. Leaves petioled, acuminate, veined: the lower leaves in the cultivated plant rounded-ovate and wide. The stem, branches, calyx, corolla, and back of the leaves are soft with villose hairs, scarcely visible without a glass. There are about twenty flowers in a whorl, they are small, and are supported by a many-leaved involucre of setaceous-spiny bractes. The toothlets of the calyx end in a stiff spinule. Corolla flesh-coloured: throat long, very much curved inwards above the tube: upper lip rounded: lateral segments of the lower lip half-ovate; the middle one twice as wide and roundish. Anthers subovate, dirty green, twin, cylindric, without any of those shining dots which Linneus gives for the essential character^c.

Linneus adds, that the calyx is five-cleft and awned,

^a Engl. bot. Relh. Lightf. Wither.

^b Murray.

^c Jacquin.

that there are awns also under the whorls; that the corolla is scarcely longer than the calyx, like that of *Nepeta*, with the helmet or upper lip entire, and the middle segment of the beard or lower lip not crenate.

Loureiro says that the flowers are saffron-coloured, and that he remarked the little shining, raised, subglo-bular dots scattered over the anthers, which he found to be the vesicular conglobate pollen, separately or in small particles jointly shining on the germ, the fila-ments, and the inside of the tube of the corolla, on which it fell.

Native of Austria, and in Hungary more abundant^d. In Bohemia, the Ukrain, Germany, and even Java^e. In Piedmont^f. On the eastern coast of Africa in Zanguebar^g. Cultivated in Chelsea garden in 1713. It flowers from June to August^h.

4. This is a biennial plant. It differs from the common sort in having the leaves divided to the pe-tiole, and the segments of the leaves under the whorls commonly ferrate and gashedⁱ. Corolla flesh-colour: upper lip erect, vaulted, covering the stamens: lower lip trifid, the lateral segments approximating to the upper lip, the middle one obcordate^k.

Native of Russia. Gmelin says it grows all over Siberia. Mr. Miller received the seeds from Dr. Amman of Petersburg, and cultivated this plant in 1756. He says, there are two distinct varieties, one with smooth stalks and leaves, and the other very hairy^l. Linneus also remarks that the plant from the East Indies is more smooth.

5. This also is a biennial plant. Stems several, from eighteen inches to a yard in height, tinged with purple: branches seldom more than two or three pairs. Flowers in close whorls, the lower three or four inches from each other, the upper much closer; corolla red, the outside paler and hairy; filaments red. Structure of the flower as in the common Ballote. Under each whorl two soft leaves, divided like those of *Coronopus*, into three principal segments; the lower wider and cut into more parts, the upper narrower and seldom subdivided, sometimes having violet-coloured spots on them^m.

Gmelin affirms that it is a mere variety of the pre-ceeding, with much larger flowers, and the upper lip almost equal to the lower.

Native of Siberia and China.

Mr. Miller cultivated it in 1759ⁿ. Probably in-tending in the eighth edition of his Dictionary to re-move these plants from *Cardiaca*, under which name the first, fourth and fifth stand in the seventh edition, to *Leonurus*, he has there omitted them wholly. He says, that the seeds of *L. sibiricus* were sent him from Venice by the Chevalier Rathgeb, who received them from Istria. The two species, under the name of *Leo-nurus* in the eighth edition of the Dictionary, belong to the genus *Phlomis*.

PROPAGATION AND CULTURE.

1, 2. These plants, when once planted in a garden, will soon multiply, especially if the seeds be permitted to scatter. The roots will continue many years.

3, 4, 5. These rise easily from seeds, sown in the spring upon a bed of common earth, and require no other care, but to keep them clean from weeds, and thin them where they are too close. In autumn they may be transplanted where they are designed to flower and seed, and require no farther culture.

LEONURUS. See *Galeopsis* and *Phlomis*.

LEOPARD'S-BANE. See *Doronicum*.]

LEPIDIUM, (of Pliny, *Λεπιδιον* of Theophrastus; from *λεπίς*, a scale.)

Lin. gen. n. 801. Reich. n. 865. Schreb. n. 1077.

Gartn. t. 141. Juss. 241. Tournef. t. 103.

Nasturtium. Tournef. t. 102.

Class. 15. 1. Tetradinamia Siliculosa.

Nat. order of *Siliquosæ* or *Cruciformes*. *Cruciferae*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate, concave, de-ciduous.

^d Jacquin.

^e Linn.

^f Allion.

^g Loureiro.

^h Hort. kew.

ⁱ Gmelin.

^k Linn.

^l Mill. fig.

^m Amman.

ⁿ Hort. kew.

COR. four-petalled, cross-shaped. Petals obovate, twice the length of the calyx: with narrow claws.

STAM. Filaments six, awl-shaped, length of the calyx, the two opposite ones shorter. Anthers simple.

PIST. Germ heart-shaped. Style simple, length of the stamens. Stigma obtuse.

PER. Silicle heart-shaped, emarginate, compressed, sharp on the margin, two-celled: valves navicular, keeled, opposite the lanceolate dissepiment.

SEEDS some, ovate-acuminate, narrower at the base, nod-ding.

OBS. In *Nasturtium*. Tourn. the pericarp is sharp on the margin, and commonly more emarginate at the tip.

In *Lepidium*. Tourn. the pericarp is obtuse on the margin, and not emarginate at the tip.

Iberis has a diandrous flower, which is unusual in this class: the rudérale is apetalous, and the alpinum is tetrandrous.

ESSENTIAL CHARACTER.

Silicle emarginate, cordate, many-seeded: valves keel-ed, contrary.

SPECIES.

1. *Lepidium perfoliatum*. Various-leaved Pepperwort. Lin. spec. 897. syst. 586. Reich. 3. 216. hort. cliff. 331. 3. upf. 183. Gron. orient. 196. Pallas it. 2. 329. Jacqu. austr. 4. 24. t. 346. Trew. rar. 2. 4. t. 13. Mor. hist. 2. 294. f. 3. t. 25. f. 6. (Thlaspi).

Thlaspi alexandrinum. Baub. pin. 108. prodr. 50. Baub. hist. 2. 933. Raii hist. 834. Park. theat. 849. n. 3.

T. verum Dioscoridis i. Zan. hist. ed. 1. 191. t. 73. Raii hist. 830.

Nasturtium orientale, &c. Zan. hist. 2. 172. t. 129. Tournef. inst. 214.

Stem-leaves pinnate-multifid, branch-leaves cordate em-bracing entire.

2. *Lepidium vesicarium*. Bladdery Pepperwort.

Lin. spec. 898. Reich. 3. 216.

L. orientale, *Nasturtii folio*, caule vesicario. Tournef. cor. 15. Buxb. cent. 1. 17. t. 26.

Joints of the stem inflated.]

3. *Lepidium nudicaule*. Naked Pepperwort.

Lin. spec. 898. syst. 586. Reich. 3. 216. mant. 424.

Loefl. it. 155. Gouan illustr. 40. Sauv. monsp.

228. 281. Villars dauph. 3. 285. Crantz. crucif.

83.

Nasturtium minimum vernal, &c. Magn. monsp. 187. fig.

Scape naked quite simple, flowers four-stamened, leaves pinnatifid.

4. *Lepidium procumbens*. Prostrate Pepperwort.

Lin. syst. 586. Reich. 3. 217. Sauv. monsp. 228.

Allion. pedem. n. 926. Crantz. crucif. 83. n. 4.

Nasturtium pumilum supinum vernal. Magn. monsp. 185. t. 184. Rob. ic. 244. Ger. prov. 346. n. 2.

Leaves sinuate-pinnatifid the outmost larger, scape naked, stems prostrate racemiferous.

5. *Lepidium alpinum*. Alpine Pepperwort.

Lin. spec. 898. syst. 586. Reich. 3. 217. amoen. 4.

321. Jacqu. vind. 258. austr. 2. 23. t. 137.

Fl. dan. t. 569. Hall. helv. n. 516. Allion.

pedem. n. 927. Villars dauph. 3. 284. Krock.

filef. n. 1017.

L. Halleri. Crantz. austr. 5. t. 1. f. 3.

Draba Nasturtium. Scop. carn. n. 791.

Nasturtium. Ger. prov. 347. n. 4.—alpinum. Crantz. crucif. 80. n. 4. t. 1. f. 3.—tenuissime divifum.

Baub. pin. 105. Baub. hist. 2. 918. Raii hist. 826.

Cardamine alpina. Ger. 202. f. 6. emac. 260. f. 6.—minima. Clus. hist. 2. 128. Park. theat. 827.

n. 4.

Thlaspi montanum minimum. Dalech. hist. 1180.

Leaves pinnate quite entire, scape subradicate, silicles lan-ceolate mucronate.]

6. *Lepidium petræum*. Rock Pepperwort.

Lin. spec. 899. syst. 586. Reich. 3. 217. fl. suec.

n. 573. Hudf. angl. 280. Wither. arr. ed. 3. 567.

Engl. bot. 111. Jacqu. austr. 2. 19. t. 131.

Hall. helv. n. 515. (Nasturtium). Villars dauph.

3. 284.

3. 284. Krock. filef. n. 1018. Allion. pedem. n. 928. Rob. ic. 244. Lour. cochinch. 395.
- L. Linnæi. Crantz. austr. 7. t. 2. f. 4, 5.
- Nasturtium petraeum. Crantz. crucif. 80. n. 5. t. 2. f. 4, 5.—annuum. Pluk. phyt. t. 206. f. 4.
- N. pumilum vernal. Baub. pin. 105.
- Nasturtium montanum annuum tenuissime divisum. D. Bobart. Raii syn. 304.
- Cardamine pusilla saxatilis montana discoides. Col. ecphr. 1. 274. t. 273.
- Leaves pinnate quite entire, petals emarginate smaller than the calyx.
- [7. *Lepidium cardamines*.
Lin. spec. 899. syst. 586. Reich. 3. 218. Loeft. it. 154. amoen. 4. 278. Aët. Stockb. 1755. p. 273. t. 8, 9. Arduin. spec. 1. 19. t. 18.
Root-leaves pinnate, stem-leaves lyrate.
8. *Lepidium spinosum*. Prickly Pepperwort.
Lin. syst. 586. Reich. 3. 218. mant. 253. Arduin. spec. 2. 34. t. 16.
Leaves pinnate, leaflets lunate, the outer elongated, branches mucronate.]
9. *Lepidium sativum*. Garden or Common Cress.
Lin. spec. 899. Reich. 3. 218. vir. cliff. 63. hort. upf. 183. cliff. 331. 4. mat. med. 159. fl. succ. n. 571. Lædw. ect. t. 166. Zorn. ic. t. 16. Villars dauph. 3. 285. Krock. filef. n. 1019. Gært. fruct. 2. 281.
Nasturtium sativum. Crantz. austr. 21.
N. hortense. Dod. pempt. 711. Dalech. hist. 655. Ger. 194. emac. 250. Park. theat. 824. Raii hist. 825. Blackw. t. 23.—vulgatum. Baub. pin. 103. Mor. hist. 2. 200. f. 3. t. 19. f. 1.
N. vulgare. Baub. hist. 2. 912.
β. N. hortense crispum. Baub. pin. 104. prodr. 44. t. 43.
Flowers tetradynamous, leaves oblong multifid.
10. *Lepidium lyratum*.
Lin. spec. 899. Reich. 3. 219.
L. orientale nasturtii crispifolium. Tournef. cor. 15. itin. 2. 339.
Leaves lyrate curled.
11. *Lepidium latifolium*. Broad-leaved Pepperwort, or Dittander.
Lin. spec. 899. syst. 586. Reich. 3. 219. hort. cliff. 330. fl. succ. n. 533. Hudf. angl. 279. Wither. arr. ed. 3. 567. Lightf. scot. 339. Engl. bot. 182. Crantz. austr. 11. Pallas it. 1. 238. Fl. dan. t. 557. Allion. pedem. n. 929. Villars dauph. 3. 285. Blackw. t. 448. Kniph. cent. 3. 53. Sabb. hort. rom. 4. t. 15. Baub. pin. 97. Raii hist. 828. syn. 304. Petiv. brit. t. 48. f. 10. Mor. hist. f. 3. t. 21. f. 1.
L. Plinii. Dod. pempt. 716. 1.
L. Aeginetæ. Tabern. 456. Camer. epit. 378. Lob. obs. 172. 4. ic. 1. 318. 2.
L. Pauli. Baub. hist. 2. 490. 1. 2.
L. Fuchf. hist. t. 484.
Raphanus sylvestris officinarum. Ger. 187. emac. 141.
Piperitis f. L. vulgare. Park. theat. 855. 1.
Nasturtium. Hall. helv. n. 505.
Leaves ovate-lanceolate entire serrate.
- [12. *Lepidium oleraceum*. Notch-leaved Pepperwort.
Forst. escul. 69. flor. austral. 46. n. 248. Ait. hort. kew. 2. 374. Nov. aët. upf. 3. 193.
L. bidendatum. Nov. aët. nat. cur. 6. 324. t. 5. a.
Leaves elliptic-oblong acute serrate, flowers four-stamened.]
13. *Lepidium subulatum*. Awl-leaved Pepperwort.
Lin. spec. 899. Reich. 3. 219. D'Asso arrag. n. 586. t. 6. f. 3.
L. capillaceo fol. fruticosum hispanicum. Tournef. inst. 216.
Nasturtium. Hall. helv. n. 506.
Leaves awl-shaped undivided scattered, stem suffruticose.
- [14. *Lepidium graminifolium*. Grass-leaved Pepperwort.
Lin. spec. 900. syst. 586. Reich. 3. 219.
Thlaspi lusitanicum umbellatum, gramineo folio, flore albo. Tournef. inst. 213.
Leaves linear, the upper ones quite entire, stem panicled wandlike, flowers six-stamened.

15. *Lepidium suffruticosum*.
Lin. syst. 586. Reich. 3. 220. mant. 91.
Leaves lanceolate-linear slender quite entire, stem suffruticose.
16. *Lepidium didymum*. Procumbent Pepperwort.
Lin. syst. 586. Reich. 3. 220. mant. 92. Wither. arr. ed. 3. 567. Engl. bot. 248.
L. anglicum. Hudf. angl. 280.
Flowers two-stamened, leaves pinnatifid, fruits twin.]
17. *Lepidium ruderales*. Narrow-leaved Pepperwort.
Lin. spec. 900. syst. 587. Reich. 3. 220. fl. succ. n. 572. hort. cliff. 335. Hudf. angl. 279. Wither. arr. ed. 3. 568. Lightf. scot. 340. Relb. cant. n. 471. Pallas it. 1. 213. Pellich pal. n. 606. Neck. gallob. 275. Fl. dan. t. 184. Villars dauph. 3. 286. Krock. filef. n. 1020. t. 29, 30. Crantz. crucif. 85.
Iberis ruderalis. Crantz. austr. 21.
Nasturtium. Hall. helv. n. 508.—ruderales. Scop. carn. n. 801.
N. sylvestre ofsyridis folio. Baub. pin. 105. Park. theat. 829. Mor. hist. 2. 301. f. 3. t. 19. f. 7. Raii syn. 303. Petiv. brit. t. 50. f. 1.
N. sylvestre. Baub. hist. 2. 914. Raii hist. 825.
Thlaspi angustifolium. Fuchf. hist. 307.
T. minus. Ger. emac. 262. 4.
T. minimum. Dod. pempt. 713. 1. Trag. 83. 2.
Flowers two-stamened apetalous, root-leaves tooth-pinnate, branch-leaves linear quite entire.
18. *Lepidium virginicum*. Virginian Pepperwort.
Lin. spec. 900. Reich. 3. 221. Kniph. cent. 10. n. 55. Gron. virg. 76. 97. Brown. jam. 272.
Iberis humilior annua virginiana ramosior. Mor. hist. 2. 311. f. 3. t. 21. f. 2. Sloan. jam. 1. 195. t. 123. f. 3. Raii hist. 827.
Flowers subtriandrous? tetrapetalous, stem-leaves lanceolate-linear serrate pinnatifid, lower ones pinnate.
- [19. *Lepidium divaricatum*. Divaricated Pepperwort.
Ait. hort. kew. 2. 375.
Leaves pinnatifid, stem very much branched, filicles ovate subemarginate.]
20. *Lepidium Iberis*. Bushy Pepperwort.
Lin. spec. 900. syst. 587. Reich. 3. 221. mant. 425. hort. cliff. 331. Gmel. fib. 3. 254. D'Asso arrag. 587. Allion. pedem. n. 930.
Iberis. Dod. pempt. 714.—2. Tabern. 457.—latiore folio. Baub. pin. 97.
Flowers two-stamened four-petalled, lower leaves lanceolate serrate, upper leaves linear quite entire.
21. *Lepidium bonariense*.
Lin. spec. 901. Reich. 3. 222. Murr. prodr. 165. Pallas it. 2. 329.
Thlaspi bonariense multiscissum, flore invisibili. Dill. elth. 381. t. 286. f. 370.
Flowers two-stamened? four-petalled, petals minute, all the leaves pinnate-multifid.
22. *Lepidium chalepense*.
Lin. syst. 587. Reich. 3. 222. amoen. 4. 321. cent. 169.
Draba chalepensis repens humilior, &c. Mor. hist. 2. 314.
Leaves sagittate sessile toothed.
- [23. *Lepidium Piscidium*.
Forst. escul. 70. flor. austral. n. 249.
Leaves elliptic-oblong acute quite entire, flowers tetradynamous.

DESCRIPTIONS, &c.

1. Root annual. Stem about a foot high, round, upright, smooth, tinged with purple, dividing into many slender branches. Root-leaves and lower stem-leaves, and sometimes the lowest on the branches bipinnatifid; with narrow, acuminate, flat segments: the next to these less divided have an entire embracing base: the upper ones are all quite entire, heart-shaped, embracing, some sharp, others blunt: all glaucous, somewhat thick; some very smooth, others having hairs at the edge and on the upper surface, visible only with a glass. Flowers in corymbs, or long loose spikes from the ends of the branches; they are small and compressed: calycine leaflets blunt, upright, yellowish green, two oblong, the other two twice as broad and ovate: petals spatulate, narrow, yellow, flat, blunt, a little

little longer than the calyx. Silicles orbiculate, compressed, scarcely emarginate, and the terminating style so short as to be scarcely observable; they are smooth, and there is a single seed of a bay colour in each cell^a.

Native of Austria and the Levant. Cultivated in 1640, according to Parkinson. It flowers in July^b.

2. Leaves like those of *Iberis vulgaris*. Flowers white. Silicles small, acuminate, containing a single seed in each cell. It is an annual plant, native of Iberia and Media, in dry places. It flowers there in July and August^c.

3. This is a small annual plant, [with many linear root-leaves, pinnatifid or toothed at the top, tender, smooth,] spreading on the ground. Among these rises a naked stalk, two or three inches high, terminated by five or six small white flowers, [with equal petals. Silicles flattened, emarginate,] inclosing four or five roundish seeds.

[Gouan mentions a variety with all the leaves cordate-ovate on long petioles; and says that he has often remarked six stamens.

Native of Spain and the South of France. Cultivated by Mr. Miller in 1768. It is distinct from *Iberis nudicaulis*.

4. This also is an annual plant. Some of the leaves are ovate and entire, others three-lobed, five-lobed, lyrate. Scapes radical, and some peduncles from the stem, longer than the leaf. Calycine leaflets concave. Petals wedge-shaped, white, not longer than the calyx. Stamens six. Style scarcely any. Silicle like that of *Draba verna*^d.

Allione remarks, that the stems are not really naked, but leafy, and that the mistake has arisen from the leaves falling off very easily.

Gouan affirms, that the specimens of *L. petræum*, which he received from Haller and Jacquin, differed in nothing from this.

Native of the South of France and the county of Nice.

5. Root perennial, slender. The whole plant is smooth, and has the same taste with Cress. Stems very short, clothed with alternate leaves, putting out round, upright scapes, from one to two inches long, with flowers in a corymbed raceme. Leaves thick, the first simple, ovate-roundish, and wider; the next trifid, with the end one larger; the rest pinnate, with two or three pairs of leaflets, and an odd one frequently a little larger; leaflets quite entire, lanceolate. Calycine leaflets somewhat oblong, spreading very much. Petals milk white, quite entire, wide. Stamens always six, tetradynamous. Germ ovate-oblong. Style short, crowned with a blunt thickish stigma. Silicle ovate or lanceolate, compressed, with the style at the end. Seeds few^e.

Native of the Alps of Germany, Switzerland, and Italy. Introduced in 1775 by Doctors Pitcairn and Fothergill. It flowers from April to June^f; in the Alps from May to August.

6. Root biennial (annual, *Lin. Jacqu.*) taper and fibrous. Stem much and alternately branched (from near the root, spreading. Leaves dark green, elegantly pinnate, or rather very deeply pinnatifid, with an odd lobe; the segments oval or spatulate, more or less pointed, entire, smooth, (from six to twelve pairs.) Flowers in a close corymb, gradually lengthening out into a spike, very minute, erect. Calyx and corolla spreading: calycine leaflets ovate, concave. Petals somewhat obovate, but narrow, about the length of the calyx or shorter, sometimes but not always slightly notched at the tip. Stamens six, of which from the smallness of the flower, the inequality can scarcely be perceived, but the shortest stand remote from the others. Silicle exactly oval, flat, with the remains of the style in a minute notch at the tip, smooth; valves with a sharp but not dilated keel. Seeds two in each cell, on slender footstalks. This has the proper silicle of a *Lepidium*, in some of the foreign species it approaches so to that of *Thlaspi*, that it is scarcely possible to define the limits of the two genera^g.

^a Jacquin. ^b Hort. kew. ^c Buxbaum. ^d Linn. mant.
^e Jacquin. ^f Hort. kew. ^g Engl. bot.

Native of several parts of Europe, as Oeland, Austria, Switzerland, Dauphiné, Silesia, England, and according to Loureiro, of China. With us it is found on St. Vincent's rocks and walls near Bristol, at Uphill in Somersetshire, near Pembroke, &c. flowering in March and April.

7. This is a biennial plant. The root-leaves bear a great resemblance to those of Cardamine, whence the trivial name: they have three or five pairs of ovate leaflets, the end one larger than the rest. Stems a span high, branched, terminated by a raceme of white flowers. Stem-leaves smaller, composed of five leaflets, the odd one larger and ovate.

Native of Spain, by way sives in a dry clay soil^h.

8. This is an annual plant. Root-leaves pinnate, petioled, decurrent; lower leaflets roundish, crescent-shaped, palmate in front; outer much larger, outwardly semipinnatifid with linear segments, the odd one entire. Stem-leaves few, linear, erect, scarcely divided. Stem a span high, stiffish, thickish, awl-shaped, branched at bottom: branches awl-shaped, quite simple, stiff, spiny at the end. Flowers scattered, white, on a very short stiff peduncle. Calyx small, ovate, upright, gaping, pale, deciduous. Petals obovate, twice as long as the calyx, spreading between the segments of the calyx. Stamens white, simple, the length of the calyx. Silicle wedge-form, bifid, stiff, compressed at the tip, subsessile.

Native of the Levantⁱ.

9. Root annual, white, fusiform, slender. Stem upright, round, smooth, from a foot to two feet in height, branched at top; both stem and branches terminated by loose narrow spikes of flowers. Leaves oblong, alternate, pinnate, the pinnae of the lower multifid, of the upper more entire, linear or lanceolate. Flowers small. Calyx very small, greenish. Petals white, larger than the calyx. Silicle roundish, without any style; the valves winged, whence Crantz makes it a *Thlaspi*. Seeds small rufescent, ovate, marked with lines, having a sharp taste, like Mustard^k. According to Gärtner, the silicle is ovate, a little notched at each end, compressed; keel of the valves ending in a membranaceous margin: partition lanceolate, contrary to the valves. Seeds solitary, ovate, compressed a little, with a depressed line along the middle on each side, smooth, ferruginous or fulvous, mucilaginous. He remarks, that those species which have simple cotyledons and several seeds, may be referred to *Thlaspi*; and such as have one seed only in each cell to *Nasturtium*.]

Of the *Garden Cress*, so much used in winter and spring salads, there are several varieties, one with broad leaves, another with curled leaves, and the common sort. [Linneus remarks, that in the common sort the leaves are multifid; that there is one variety in which they are lanceolate, entire and gash-ferrate; and another in which they are pinnate and curled; but that no one can doubt their being of the same species who considers the fructification, structure, taste and appearance of the plants.

The native place of this commonly cultivated plant being unknown, Linneus suspects it to have had its origin from *L. ruderale*, but this notion has not obtained credit. It is inserted by Linneus, Krockner and Villars in their local floras.

The young plant has the smell and taste of this natural order, but in a far inferior degree to Scurvy-grass; it may be however of some use as a diuretic and antiscorbutic, if taken largely.]

10. This is a biennial plant. The lower leaves, which spread on the ground, are near two inches long, and about half an inch broad. Stalks a foot high, dividing into a great number of slender branches, having small oblong leaves on them, which are cut on their sides, and a little curled on their edges. The stalks and leaves are of a gray colour inclining towards hoariness. The flowers are produced in clusters at the end of the branches; they are very small and white, appear in July, and are succeeded by roundish bordered seed vessels, which are compressed, and have one

^h Linn. amoen. ⁱ Linn. mant. ^k Krockner.

small oblong seed in each cell, ripening in the autumn. Native of the Levant, and Spain. [Cultivated by Mr. Miller in 1759.]

11. Root perennial, long, branching, spreading very far. Stems erect, a yard high and more, alternately branched, leafy, round, smooth, frequently flexuose, paniced at top with numerous branches of small white flowers, in little corymbs. Leaves alternate, acute, broad-lanceolate, lengthened out at the base and tip, ferrate in the middle, glaucous especially beneath¹. Silicle heart-shaped, with a short style and globular stigma. The young leaves are eaten sometimes in salads: they have a pungent acrid taste^m. This plant is one of the acrid antiscorbutics, and was formerly used in the place of Horse-radish. An infusion of it vomitsⁿ.] Having a hot biting taste like Pepper, and the leaves having been often used by the country people to give a relish to their viands instead of Pepper, it had the appellation of *Poor-man's Pepper*.

[Native of several parts of Europe. In Britain, at Hythe near Colchester, Heybridge near Malden, in marshes near Grays, and other places in Essex: below Sheringham cliffs in Norfolk: between Benningborough and Mitton in the North Riding of Yorkshire: near Seaton, plentifully: about the castle of Weems, in Fifeshire, &c. It flowers in July.]

12. Stem perennial, herbaceous, round, from upright ascending, with paniced branches, from a foot to a yard in height. Leaves scattered, alternate, attenuated at both ends; deeply ferrate, spreading, smooth; the upper ones smaller, ferrate only at the tip. Petioles shorter by half than the leaves, flat, keeled on the outside. Universal peduncles terminating, round, even, leafless: racemes simple, during the time of flowering contracted, corymbed; whilst fruiting cylindrical. Pedicels very many, scattered, filiform, round, spreading, half an inch long, one-flowered. Flowers white, two lines in diameter. Silicles ovate-cordate, compressed, with one ovate, acute, reddish yellow seed in each cell.

Native of New Zealand, especially at Charlotte Sound.

This plant, with *Apium* or Smallage and *Tetragonia halimifolia*, was of considerable service to the ships crews under Captain Cook, when they lay in Charlotte Sound^o.

Introduced in 1779, by Jonas Dryander, M. A.^p

13. Root perennial, producing a tuft of permanent leaves and branches. Stems scarcely a span high, simple, subtomtose. Leaves linear, acute, flat above, semicylindric beneath. Racemes terminating, and from the axils of the upper leaves, simple. Petals white. Silicle as in *L. rudérale*. Stamens six.

Native of Spain^q. Cultivated by Mr. Miller in 1768.

14. Root perennial. Stature of *L. fativum*. Stems round, smooth and even. First root-leaves pinnately-lyrate; lower stem-leaves ferrate, upper linear, quite entire. Flowers small, white. Calyxes tinged with purple. It resembles *Iberis graminifolia*, but is distinct from it. When adult, it casts the leaves.—Native of the South of Europe^r.

15. Stems upright, filiform, green. Leaves narrow-lanceolate, quite entire, even, thin not fleshy, green, spreading, often several at the buds. Corymbs small, white. Petals scarcely longer than the calyx, distant. Stamens six, with yellow anthers. Fruit of Nasturtium. It differs from the preceding in being two feet high, with flat leaves; the lower ferrate; calyxes red; petals broader, obovate.—Native of Spain^s.

16. Root annual, small, fibrous. Stems procumbent, hairy, alternately branched, leafy. (Linneus says they are a foot long and even.) Leaves alternate, smooth, pinnatifid: the lobes notched especially on the fore side. Spikes generally opposite to the leaves, many-flowered, soon lengthened out into racemes. Flowers very small, with two or four stamens, scarcely more. Silicle very distinctly two-lobed, rugged, very

much resembling that of *Cochlearia Coronopus*, to which this plant is very nearly related as to generic character; and indeed Linneus says, it is an intermediate species between the two genera^t.

This plant escaped Ray and Dillenius. Hudson mentions it as a native of Devonshire and Cornwall, among rubbish. About Exeter, Truro and Penryn. At Dale, near the entrance of Milford Haven. It flowers in July.

17. Root annual or biennial. Stem a foot high, usually crooked, woody, stiff, branched. Leaves fleshy, smooth. Peduncles slender. Flowers very small, in clustered spikes or racemes. Calyxes pale yellow. Haller, (in the second edition of *Stirp. Helvet.*) Gouan and others affirm that there are no petals, and Pollich could never find any. Scopoli on the contrary says that it is not apetalous, and De Necker describes each of the four petals as obovate, clawed, and twice as long as the calyx. The truth seems to be that the petals are more frequently wanting, but that they do exist; and accordingly Haller, in the first edition of his *Stirpes Helveticæ* describes the flowers as white, though very small. Linneus assigns two stamens only to the flowers, this seems generally to be the case, but there are sometimes four, though Gouan could never discern that number. Scopoli affirms that the flowers are never diandrous in Carniola. Silicles numerous, small, much compressed, containing one seed in each cell. The plant has a pungent taste, and a fetid smell like a fox^u.

Native of most parts of Europe, in waste places, especially near the sea coast: Malden, Essex. Wivbeach, Cambridgeshire. Yarmouth, Lynn, and Clay, Norfolk. By the Severn above Worcester; near King's Weston below Bristol. Truro, Cornwall. Coast of Scotland. It flowers in June and July.

18. Root annual, single, white, an inch long. Root-leaves an inch in length, half of them being foot-stalk and reddish, with three or four deep jags, at the beginning oval, half an inch broad, indented about the edges, smooth, dark green. Stalk round, whitish green, a foot and half high, having longer, narrower, deeper cut leaves set thick about it without any order; the branches also come out frequently on all sides, and round them many flowers, small, white, four-petalled, on peduncles the eighth part of an inch in length. Silicle round, emarginate, containing one oblong reddish seed in each cell.

Native of all the Caribbee islands^x, and Virginia. Cultivated in Chelsea garden in 1713. It flowers in June and July^y.] In the West Indies the inhabitants eat the leaves in their salads, as we do those of *L. fativum* or Garden Cress.

[19. Native of the Cape of Good Hope, where it was found by Mr. Francis Maffon. Introduced in 1774. It flowers from May to August^z.]

20. This has a long fleshy root, which runs deep into the ground, and sends out many oblong leaves spreading flat on the ground. Stalks slender, stiff, branching out horizontally on every side, about two feet high. The flowers come out in small close clusters at the ends of the branches: they are white, and appear in June and July. The seeds ripen in autumn. The plant is recommended as having the same qualities with *L. latifolium*, and is sometimes called *Sciatica Cress*.

Native of the South of France, Italy, Sicily, [Germany, Spain, Siberia.—Cultivated in 1683 by Mr. James Sutherland^a.]

21. Leaves and stalks much like those of Garden Cress, but more divided, and of a different taste and smell. Petals so small as to be almost imperceptible; and only two stamens to each flower. [Murray affirms that it has six stamens. Dillenius observed only two. The number certainly varies much in this genus. Dillenius describes this plant as two feet high and more, with many branches very full of leaves in bundles, resembling those of Tansey, but less cut, and

¹ Engl. bot.
^o Forst. escul.

^m Lightf.
^p Hort. kew.

ⁿ Withering.
^q Linn.

^r Ibid.

^s Linn. mant.

^t Engl. bot. and Linn. mant.

^u Haller. Woodw. Wither. Lightf.

^v Hort. kew.

^z Ibid.

^x Sloane.

^y Ibid.

having small hairs on the back and along the edges. Flowers in oblong terminating spikes, that lengthen out as the fructification advances. Flowers so small as not to be seen with the naked eye. Petals roundish, white, reflex. Silicles small, compressed, emarginate, with one compressed, yellowish seed in each cell^b.

Native of Buenos Ayres, Brasil and other parts of America. Cultivated before 1732 in the Eltham garden.] Mr. Miller says that the seeds came up in the earth from several parts of America. [It has also been found at the southern end of Africa.]

22. This has creeping roots. Leaves longer and narrower than those of *Cochlearia Draba*, and less hoary. Flowers in loose bunches at the end of the branches, small and white. [Linneus remarks, that it has the appearance of *Thlaspi campestre*, inasmuch that it can scarcely be distinguished but by the silicles. It is to be removed from *Lepidium Draba*, which is a *Cochlearia*, the silicles being perfectly those of a *Lepidium*, and not gibbous at the base as in that.

Native of the Levant, about Aleppo.

23. Stem herbaceous, two feet high, with the branches spreading at bottom and thence ascending, round and even. Leaves alternate, spreading, loose, two inches long, the lower ones of the stem attenuated at the base. Racemes terminating, solitary, simple. Peduncles round, even, almost upright, two hands in length. Pedicels scattered, filiform, spreading, corymbed, even, one-flowered, two lines in length. Flowers small, white. Nectary of six minute, compressed green glands, between the stamens. Silicle oval, compressed, emarginate. Seeds subsolitary.

Native of the islands in the South Sea; Botany island, Teautea and Huaheine. It is used by the inhabitants for taking fishes by inebriating them. It is very acrid, and was used by our circumnavigators in their salads with *L. oleraceum*, which it resembles, but differs in many essential marks^c.]

PROPAGATION AND CULTURE.

1. Sow the seeds in autumn, for those which are sown in the spring seldom flower the same year, and are often killed by the frost in winter; whereas those which are sown in the autumn, or the plants that rise from scattered seeds always flower about midsummer, and the seeds ripen in august and september following. The plants require no other care but to thin them, and keep them clean from weeds.

3. If the seeds of this and the other annual sorts be sown in the autumn, the plants will flower in april, may or june, and the seeds will ripen in may, june or july. If these be permitted to scatter, the plants will come up in autumn, and require no other care but to thin them when they are too close, and to weed them.

9. The seeds of common Garden Cress are sown in drills pretty close, in winter on moderate hot-beds, in spring and autumn on borders, and are soon fit for use. It should be cut young, otherwise it will be too rank.

11. This, with the other perennial sorts, is easily propagated, for every piece of the root will grow and multiply wherever it is planted, and will become difficult to root out in a garden, when it is once established.

13. This may be increased by seeds or cuttings. Sow the seeds in the spring on a bed of light earth in the open air, and when the plants are fit to transplant, set a few in pots, that they may be sheltered in winter under a common frame; for in sharp winters those plants which are exposed to the open air are frequently killed. Put the remaining plants in a dry rubbishy ground, in a sheltered situation, where by growing slowly they will become more shrubby, and be in less danger of suffering by cold.

18. Sow the seeds in april upon an open bed where the plants are designed to remain; thin them where they are too close, and keep them clean from weeds. If the seeds be permitted to scatter in the autumn, the plants will come up very well. N. 10. may be propagated in the same way.

20. The roots will abide several years in a dry soil.

^b Dill. elth.

^c Forster.

If the seeds be permitted to scatter, they will come up early in the spring without care.

21. Sow the seeds on a moderate hot-bed in the spring, and when the plants have obtained strength transplant them on a warm border.

22. This is a perennial plant which increases by its creeping roots in great plenty.

[*LEPIDIUM*. See *Cochlearia*, *Iberis*, *Plumbago*, *Thlaspi*.]

LEPIDOCARPODENDRON. See *Protea*.

[*LEPTAUREA*. See *Zoegia*.]

LEPTOSPERMUM. See *Melaleuca*.

LEPTOSTACHYA. See *Phryma*.

LERCHEA. (So named from John Lerche, who collected plants from 1745 to 1747 about Astrachan. Amoen. 2. 356.)

Lin. gen. Reich. n. 891. Schreb. n. 1107. mant. 155. Juss. 421.

Class. 16. 2. Monadelphia Pentandria.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, five-toothed, permanent.

COR. one-petalled, funnel-form. Tube longer than the calyx. Border five-parted, rather erect.

STAM. Filaments scarce any, but the tube of the germ. Anthers five, oblong, seated on the tube of the germ.

PIST. Germ subovate, superior, terminated (within the corolla) by an obtuse tube. Style within the tube of the germ, filiform, length of the stamens. Stigmas two or three, rather obtuse.

PER. Capsule subglobose, torulose, three-celled, sometimes two-celled.

SEEDS very many.

ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. funnel-form; five-cleft. Anthers five, placed on the tube of the germ. Style one. Caps. three-celled, many-seeded.

SPECIES.

1. *Lerchea longicauda*.

Lin. syst. 610. Reich. 3. 300. mant. 256.

DESCRIPTION, &c.

This is an irregular growing shrub, with sordid, jointed branches. Leaves opposite, lanceolate, petioled, even, quite entire, a foot long. Stipules ensiform, shorter than the petioles. Spike terminating, filiform, a foot in length; with remote, scattered, minute flowers.—Native of the East Indies^d.

LERCHEA. See *Salsola*.

LESKIA. (So named by Hedwig, from Nath. Godofr. Leske, Professor of Natural History and Oeconomy in the University of Leipzig.)

Lin. gen. Schreb. n. 1657. Hedw. fund. 2. 93.

Hypni spec. Linn.

Class. 24. 3. Cryptogamia Musci.

Nat. order of Mosses.

GENERIC CHARACTER.

CAPS. oblong. Peristome double: the exterior with sixteen teeth, which are acute: the interior membranaceous, divided into equal segments.

MALES gemmaceous in different individuals.

Hypnum complanatum, polyanthos. Schreb. n. 1070. viticulosum, attenuatum. Schreb. n. 1037.—myosuroides, paludosum, &c.]

LETTUCE. See *Lactuca*.

——— Lamb's. See *Valeriana*.

[*LEUCADENDRON*. See *Protea*.]

LEUCANTHEMUM. See *Chrysanthemum* and *Osmites*.

LEUCAS. See *Dryas* and *Nepeta*.]

LEUCOIUM. (*Λευκοιον* of Theophrastus and not of Dioscorides. *Ιου λευιον*, *Viola alba*, white Violet.)

Lin. gen. n. 402. Reich. n. 434. Schreb. n. 548. Juss. 55.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathacea*. *Narcissi*, Juss.

GENERIC CHARACTER.

CAL. Spathe oblong, obtuse, compressed, gaping on the flat side, withering.

COR. bell-shaped-expanding. Petals six, ovate, flat, conjoined at the base: with the tips thickish and stiffish.

STAM. Filaments six, setaceous, very short. Anthers oblong, obtuse, quadrangular, upright, distant.

^d Linn. mant.

PIST. Germ roundish, inferior. Style clavate, obtuse. Stigma fetaceous, upright, sharp, longer than the stamens.
PER. Capsule top-shaped, three-celled, three-valved.
SEEDS several, roundish.

OBS. *L. autumnale* has a filiform style. Lin. R.

ESSENTIAL CHARACTER.

Cor. bell-shaped, six-parted, thickened at the tips. Stigma simple.

SPECIES.

1. *Leucoium vernum*. Great Spring Snow-drop.
Lin. spec. 414. fyst. 316. Reich. 2. 15. hort. cliff. 135. upf. 74. Jacqu. austr. 4. 6. t. 312. Scop. carn. n. 392. Villars dauph. 2. 247. Krock. filef. n. 498. Curt. magaz. t. 46.
Galanthus vernus. Allion. pedem. n. 1865. Hall. belv. n. 1253.
L. bulbosum. Clus. hist. 1. 169.—vulgare. Baub. pin. 55. Raii hist. 1144. Rudb. elyf. 2. 95. f. 1.—hexaphyllum. Dod. coron. 202. hist. 230.—cum unico flore, rarius bino. Baub. hist. 2. 590.—primum. Tabern. ic. 613.—serotinum. Ger. 120. 2. emac. 148. 3.—præcox majus. Park. parad. 109. t. 107. f. 9.
Narcissus septimus. Matth. 1246. Cam. epit. 957.
Narcisso Leucoium vulgare. Tournef. inst. 387.
Spathe one-flowered, style club-shaped, leaves flat.
2. *Leucoium æstivum*. Summer Snow-drop.
Lin. spec. 414. fyst. 316. Reich. 2. 16. Curt. lond. 5. 23. Wither. arr. ed. 3. 331. Scop. carn. n. 393. Jacqu. austr. 3. 2. t. 203. Krock. filef. n. 499. Rob. ic. 198.
L. bulbosum polyanthemum. Dod. penpt. 230.—tardius florens, floribus minoribus. Baub. hist. 2. 592. Raii hist. 1145.—majus f. multiflorum. Baub. pin. 55.—serotinum majus. Clus. hist. 1. 170. 1. Park. parad. 110. 3. t. 107. f. 11.—majus polyanthemum. Ger. emac. 148. 4.
Polyanthemum. Renealm. spec. 99. t. 100.
Spathe many-flowered, styles club-shaped, leaves flat.
- [3. *Leucoium autumnale*. Autumnal Snow-drop.
Lin. spec. 414. Reich. 2. 16. Loeft. it. 136.
L. bulbosum autumnale. Baub. pin. 56. Park. parad. 110. 2. t. 107. f. 10.—tenuifolium. Clus. hist. 1. 170. 2. Raii hist. 1145.—aut. minus tenuif. Baub. hist. 593. f. 1.—aut. minimum. Ger. emac. 148. f. 5.
Tricophyllum. Renealm. spec. 101. t. 100.
Spathe two-leaved many-flowered, styles and leaves filiform.
4. *Leucoium strumosum*.
Ait. hort. kew. 1. 407. t. 5. Jacqu. ic. 2. t. 361. collect. 3. 222.
Crinum tenellum. Linn. suppl. 194. (excl. synonym.)
Spathe two-leaved many-flowered, flowers erect, style inflated at the base globular.]

DESCRIPTIONS, &c.

1. Bulb oblong, shaped like that of the Daffodil, but smaller. Leaves flat, deep green, four or five in number, broader and longer than those of the common Snow-drop (*Galanthus nivalis*). Scape angular, near a foot high, hollow and channelled: towards the top comes out a whitish sheath, opening on the side, out of which come two or three flowers, hanging on slender peduncles. Corolla much larger than that of the common Snow-drop; and the ends of the petals are green. They appear in march, and have an agreeable scent, not much unlike those of the Hawthorn. [In its wild state, the scape is only half a foot in height or little more, and generally has only one flower, very seldom two. The capsule is obscurely and bluntly three-cornered. The three inner petals are narrower and a little shorter. The whole plant is very smooth.^a

The flowers, which at first sight resemble those of the common Snow-drop, are easily distinguished by the absence of the three-leaved nectary. They do not come out so soon by a month. This plant, being of a different genus from the true Snow-drop, ought certainly to have another English name; Mr. Curtis therefore calls it *Spring Snow-Flake*^b. Parkinson had

^a Jacquin.

^b Magaz.

named it *Great early bulbous Violet*, and Gerarde *Late-flowering bulbous Violet*.

Native of Italy, the South of France, Germany, Austria, Switzerland.—Cultivated in 1596 by Gerarde^c.

2. Bulb the size of a Chestnut, somewhat ovate, outwardly pale brown, inwardly white; coats numerous, thin and closely compacted.] Mr. Miller says, the bulb is nearly as large as that of the common Daffodil, and very like it in shape: that the leaves also are not unlike those of the Daffodil, more in number than in the preceding, and keeled at the bottom; where they fold over each other, and embrace the stalk. [Leaves about a foot and half in length, upright, nearly linear, almost an inch in breadth, obtuse; the lower ones shortest. Scape a little higher than the leaves, hollow, slightly flattened, two-edged, a little twisted, one side sometimes obtuse, the other acute. Peduncles for the most part five from the same sheath, each supporting a single flower, angular, and of unequal lengths. Flowers pendulous, growing all one way, having little scent. Petals white, finely grooved within, not at all uniting at bottom; the tips thickish, a little puckered, and marked with a green spot. Seeds large, black and glossy^d.] The flowers appear at the end of april or the beginning of may, and there is a succession of them during three weeks, or longer in cool weather.

[Native of Hungary, Austria, Carniola, Tuscany, Silesia. Mr. Curtis first observed it in England between Greenwich and Woolwich, about half a mile below the former place, close by the Thames side, just above high water mark, with Reed, Marsh Marigold, and other common water plants, and in a similar situation to that in which it is found wild in Austria. It has also been found wild in the Isle of Dogs, which is the opposite shore. It grows here even more luxuriantly than in gardens, where it seldom has a soil or situation sufficiently moist.—Mr. Gough found it in a small island, in the river, about three miles S. of Kendal, on the dam of the gunpowder mill.

Mr. Curtis, to distinguish it from *Galanthus*, names it *Summer Snow-Flake*. Parkinson calls it *Great late-flowering Bulbous Violet*: Gerarde, *Great many-flowered Bulbous Violet*. In the gardens it is known by the name of *Great Summer Snow-drop*; late or tall *Snow-drop*.

3. Bulb thick for the size of the plant, composed of many glutinous coats, bitter, covered with a whitish membrane. Scape slender, brownish, a hand in height, supporting two or three small white flowers (sometimes only one), hanging down, having no smell. It is distinguished by its four or five capillary leaves^e; which begin to spring up after the flower is past, when the seeds are ripening, and sometimes after the heads are ripe. They abide all the winter and spring following, and wither away in the beginning of summer; leaving the scape to appear naked. The flowers are a little reddish at the bottom next the stalk^f.

Native of Portugal, and Spain on the confines near Badajos.—Introduced in 1765, by Mr. Joshua Brooks. It flowers in september^g.

4. Bulb roundish, white, less than a hazel nut. Leaves two or three, inclosed at the base in a white sheath, filiform, dotted with white, keeled at bottom, flat, or a little convex on the back, weak and more or less lying on the ground. Scape flexuose-erect, slender, about half a foot high, roundish, terminated by a spreading umbel of from three to seven flowers. Valves of the spathe lanceolate, acute, membranaceous, opposite, sometimes equal sometimes not, pale. Peduncles filiform, one-flowered, unequal, from one to two inches in length. Flowers without scent, coming out successively. Petals white within, purplish without, oblong-lanceolate, three lines in length; the three inner bluntish: the three outer acute, with a blunt, greenish keel. Anthers purple. Germ three-cornered, green. Style white, swelled out at bottom into a body larger than the germ, plaited at bottom; thence awl-shaped, bluntly three-cornered, the length of the stamens.

^c Hort. kew.

^d Curtis.

^e Clusius.

^f Parkinson.

^g Hort. kew.

Stigma obscurely trifold. Capsule subglobular, three-cornered, or rather composed of three. The whole plant is smooth^b. See *Crinum tenellum*.

Native of the Cape of Good Hope, where it was discovered by Maffon. Introduced in 1774. It flowers in november¹.]

PROPAGATION AND CULTURE.

These bulbs are increased by offsets, which the two first sorts put out pretty plentifully, in a favourable situation, when they are not too often removed. They should have a soft loamy soil, and an exposure to the east. Plant the roots six inches asunder, and four or five inches deep. They should not be transplanted oftener than every third year.

[A north or north-east border is best for them; and the proper soil a mixture of loam and bog earth. In different aspects however their flowering may be forwarded or protracted, and thus a longer succession of these and other flowers produced^k.

The fourth sort must be housed with other Cape Bulbs, and treated as they are.

LEUCOUM. See *Alyssum*, *Arabis*, *Biscutella*, *Cheiranthus*, *Draba*, *Erysimum*, *Galanthus*, *Heliophila*, *Hesperis*, *Verbascum*.

LEUCOXYLON. See *Bignonia*.

LEVISANUS. (*Altered from Lewisanus, so called by Petiver and Sherard, from the Reverend Mr. Lewis, who sent some shells to Petiver from Fort St. George. See Gazoph. Petiv. 25. and Raii suppl. 130.*)

Lin. gen. Schreb. n. 377.

Brunia, Gært. t. 30. Brunia spec. edit. pr.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth common hemispheric, imbricated, many-flowered; leaflets linear.

Perianth proper one-leafed, superior, five-toothed, sharp, upright, permanent.

COR. Petals five. Claws slender. Borders oblong, shorter.

STAM. Filaments five, capillary, inserted into the bottom of the perianth. Anthers oblong.

PIST. Germ top-shaped, inferior. Styles two, conjoined into one, or else distinct and approximated, capillary. Stigmas simple.

PER. Berry corticated, ovate, incrustated by the calyx: with the tip free, two-celled.

SEEDS five or six, oblong, compressed. Receptacle of the seeds fungous, large, in the middle of the partition.

REC. common globose, villose, chaffy.

OBS. The fruit of all the species is not yet known.

ESSENTIAL CHARACTER.

Flowers aggregate. Cal. one-leafed, superior, five-cleft. Cor. five-petalled, superior. Filam. inserted into the base of the perianth. Styles two, conjoined. Berry two-celled. Seeds five or six, compressed.

SPECIES.

1. *Levisanus nodiflorus*.

Brunia nodiflora. Lin. spec. 288. syst. 240. Reich.

1. 559. mant. 343. hort. cliff. 70. Berg. cap. 54.

Gært. fruct. 1. 152.

Cupressio-pinulus capitis bonæ spei. Breyn. cent. 12. t. 12.

Erica capitata f. nodiflora cupressiformis africana.

Pluk. phyt. t. 346. f. 4.

Scabiosæ affinis arbuscula africana ericoides sphaerocephalos. Raii hist. 1444.

Leaves imbricate three-sided acute.

2. *Levisanus paleaceus*.

Brunia paleacea. Lin. syst. 240. Reich. 1. 560.

mant. 559. Berg. cap. 56.

Leaves in five rows imbricate pressed close, corymb terminating, chaffs of the heads standing out.

3. *Levisanus abrotanoides*.

Brunia abrotanoides. Lin. spec. 288. syst. 240.

Reich. 1. 560. Berg. cap. 59. Burm. afr. 266.

t. 100. f. 1.

Lewisanus africanus, ericæ folio, capitulo majori.

Raii dendr. 130.

L. capensis Serpylli folio. Pet. gaz. t. 5. f. 7.

^b Jacquin. and Hort. kew.

^k Hort. kew.

^k Curtis magaz.

Erica capitata f. nodiflora, corios foliis rectis, æthiopica. Pluk. mant. t. 346. f. 7.

Leaves linear-lanceolate spreading three-sided callous at the tip.

4. *Levisanus radiatus*.

Brunia radiata. Lin. syst. 240. Reich. 1. 561.

mant. 209. Berg. cap. 58.

Phylica radiata. Lin. spec. 283. amoen. 4. 268.

Staavia radiata. Dahl. obs. 15.

Chrysanthemum ericoides coronatum capitis bonæ

spei. Breyn. cent. 165. t. 82. Pluk. mant. t. 454.

f. 7. Mer. hist. 3. 21. f. 6. t. 3. f. 43.

Leaves linear three-sided, calyx rayed, the inner leaflets coloured.

5. *Levisanus glutinosus*.

Brunia glutinosa. Lin. syst. 240. Reich. 1. 561.

mant. 210. Berg. cap. 57.

Staavia glutinosa. Dahl. obs. 17.

Muscus clavatus æthiopicus arborescens, &c. Pluk.

mant. t. 431. f. 1.

Leaves linear three-sided, calyx rayed, all the leaflets coloured.

DESCRIPTIONS, &c.

1. Leaves imbricated in five, not four, rows. Calyx five-parted. Petals five, linear, having a chink on each side of the claw with a converging margin. Stamens filiform, long. Germ superior, two-celled. Styles two, approximating¹. Linneus himself remarks, that this species is sufficiently distinct from the other Brunias, by its having two styles, and a superior two-celled fruit. Gærtner indeed affirms, that the fruit is half inferior, but in this he is probably mistaken. He thinks it is rather a nut than a drupa. He describes it however as a juiceless drupa, corticated by the calyx growing very closely to it, small, ovate, woolly: rind membranaceous, thin: shell hard, somewhat bony, two-celled, valveless. Receptacle double: of the fruit globular, chaffy, villose: of the seed ovate-globular, fungose, very large, receiving on each side a very thin partition, fastened to it. Seeds five or six in each cell, small, ovate-oblong, narrower at top, compressed, pale, rufescent, pendulous; with a terminating sub-lateral umbilicus.

Introduced in 1786, by Mr. Francis Maffon^m.

2. This shrub resembles the preceding, but it has smaller leaves, covering the branches. Heads or flowers many, paniced. Chaffs between the florets standing out twice their length, pale, longer than the calyxine leaflets. Styles two. Receptacle hairyⁿ.

3. Leaves bluntish, with a brown callosity at the tip, flat above, keeled underneath, smooth, about two lines in length, petioled, scattered, approximating; on the young shoots hairy. Petioles broad, short, from upright pressed close. Heads of flowers globular, terminating, subumbelled; on round peduncles, covered with small, subimbricate, leafy scales, one-flowered, somewhat villose, gibbose and succulent at bottom. Corolla white^o. Germ superior. Style one, emarginate^p.

Introduced in 1787, by Mr. Francis Maffon^q.

4. Stem from a foot to two feet in height, the size of a swan's quill, upright, round, leafy, scarred, determinately branched, dichotomous or trichotomous; the branches rod-like, hairy. Leaves scattered, approximating, from upright spreading, petioled, acute, dark green with brown tips, having a few hairs, when more advanced naked; channelled, permanent. Petioles linear, very short, erect. Hairs simple. Common perianth the size of a Pepper-corn, with blunt leaflets, hairy at the base; the outer ones shorter, rude; the inner whitish, the length of the disk, spreading, resembling a ray. Common corolla dusky, not at all glutinous. Receptacle hairy^r.

Introduced in 1787, by Mr. Francis Maffon^s.

5. Stem from a foot to two feet in height, the size of a swan's quill, upright, round, grooved, scarred, very much branched; branches proliferous, upright, hairy. Leaves scattered, approximating, from upright

¹ Linn. mant.

^m Hort. kew.

ⁿ Linn. mant.

^o Bergius.

^p Linn.

^q Hort. kew.

^r Dahl.

^s Hort. kew.

spreading, petioled, blunt, dark green with a brown callous dot at the tip; the younger ones having frequently a few hairs; when farther advanced naked, channelled, permanent. Petioles linear, very short, upright. Hairs simple. Common perianth the size of a Pea, with the leaflets biglandular at the base, longer than the disk, whitish, spreading, resembling a ray. Common corolla dusky, very glutinous. Receptacle chaffy. This differs from the preceding, which it resembles very much, in a proliferous stem, the leaflets of the common perianth all coloured, and longer than the disk, the corolla glutinous, and the receptacle chaffy.

These are all shrubs, and natives of the Cape of Good Hope.

LEVISANUS. See *Protea*.

LEVISTICUM. See *Ligusticum*.

LEYSERA. (From *Fridr. Wilh. de Leyser*, author of *Flora Halensis*, 1761.)

Lin. gen. n. 965. *Reich. n.* 1045. *Schreb. n.* 1303.

Gært. t. 173. *Juss.* 179. *Asteropterus. Vaill.*

1720. *Gært. t.* 173.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ. Corymbiferae, Juss.*

GENERIC CHARACTER.

CAL. Common ovate, imbricate: scales obtuse, concave, harsh.

COR. Compound rayed: corollets hermaphrodite tubular, several, in the disk. Females strap-shaped, several, in the ray.

Proper of the Hermaphrodite funnel-form, five-toothed, rather upright.

Female strap-shaped, lanceolate, entire.

STAM. in the Hermaphrodites. Filaments five, capillary, very short. Anther cylindric, tubular.

PIST. in the Hermaphrodites. Germ small. Style filiform. Stigma bifid.

PER. none. Calyx unchanged.

SEED. In the Hermaphrodites solitary, oblong. Down five-bristled, feathery, long, within which is a very short chaffy crown.

In the Females very similar. Down with the chaffy crown alone, without feathers.

REC. naked. Chaffs of the ray alone separating the flowers.

ESSENTIAL CHARACTER.

Cal. scarious. Down chaffy; in the disk feathery also. Recept. subpaleaceous.

SPECIES.

1. *Leysera gnaphalodes. Woolly Leysera.*

Lin. spec. 1249. *fyst.* 770. *Reich.* 3. 841. *amoen.* 6. 104. *Jacqu. ic.* 3. 588. *collect.* 2. 343.

Asteropterus luteus, laricis foliis lanuginosis. Vaill. act. par. 1720. p. 313.

After *æthiopicus, stoechadis foliis, flore aureo. Herm. lugdb.* 68. t. 71. *Breyn. prodr.* 3. 26. t. 14. f. 3.

Leaves scattered, flowers peduncled.

2. *Leysera Callicornia.*

Lin. fyst. 771. *Reich.* 3. 841. *mant.* 286.

Callicornia gnaphalodes. Burm. prodr. 24. *Pluk. phyt. t.* 350. f. 4.

Asteropterus Callicornia. Gært. fruct. 2. 460. t. 173.

After *africanus, stoechadis folio, flore aureo. Seba mus.* 2. t. 66. f. 6.

Leaves in three rows, flowers subsessile.

3. *Leysera paleacea.*

Lin. fyst. 771. *Reich.* 3. 842. *Gært. fruct.* 2. 432. t. 173.

L. ericoides. Berg. cap. 294.

Relbania paleacea. L'Herit. fert. 24.

Leaves three-sided callous at the tip and curved back.

DESCRIPTIONS, &c.

1. This is an evergreen shrub, with a balsamic smell. The trunk and older branches leafless, brown; the younger ones very closely covered with leaves, and spreading out very wide. Leaves very much clustered, filiform, spreading, quite entire, hoary, woolly, flaccid, an inch long, with brown-headed hairs. Among these are bundles of very small leaves, like the rudiments of young branches, very few however of

Dahl.

which come to perfection. Peduncles filiform at the ends of the branchlets, solitary one-flowered. Calyxine scales pale, with the middle of the back green. Corolla yellow. Seeds brownish.

Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers from July to September.

2. Receptacle flat, with raised dots in the middle, naked, rugged, and having a single row of chaffs in the circumference: chaffs scarious, white, covering the germs of the females externally, and scarcely or but little longer. Seeds uniform, linear-oblong, compressed, somewhat rugged at the edges and ferruginous. Pappus or down difform; in the ray simple, chaffy, ten-leaved; leaflets linear-acuminate, white, one-fourth of the length of the seed: in the disk composed of five rays, which are chaffy, linear-acuminate, very short; and of five others which are feathery, longer than the seed, and alternate with the others. Sometimes a single feathered ray is added to the down of the females; and in the seeds of the androgynous flowers the chaffy rays are frequently augmented by a leaflet or two, so that from five-leaved they become from six to eight-leaved.

Native of the Cape of Good Hope.

3. Leaves with few hairs on them, with a tomentose groove on the inside. The whole receptacle covered with chaffs almost the length of the flowers. The whole crown of the seed membranaceous, and none downy. Hence it agrees in character with *Bupthallum*, but it resembles the preceding so much, as scarcely to be distinguished from it in appearance. L'Heritier removes it into a new genus to which he has given the name of *Relbania*.

Gærtner describes the receptacle as flattish, narrow, chaffy: chaffs the length of the florets, linear, very narrow, deciduous. Seeds uniform, oblong, narrowing downwards, obscurely angular or almost cylindrical, smooth, bay-coloured. Pappus or down one-leaved, tubular, scarious, white, little less than a third part of the seed in length: the aperture of the tube in the seeds of the ray quite entire; in the others obscurely and bluntly four-toothed. He refers the species with a naked receptacle and a compound down to Vaillant's genus of *Asteropterus*.

Native of the Cape of Good Hope.

LIATRIS.

Lin. gen. Schreb. n. 1263. *Gært. t.* 167. *Suprago. Gært. t.* 166.

Anonymos. Walt. carol. 196. *Cirsium. Dill. elth. t.* 71, 72. f. 82, 83. *Serratula. Dill. elth. t.* 263.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Capitatae. Cinarocephalæ, Juss.*

GENERIC CHARACTER.

CAL. Common oblong, imbricated with several subovate, unarmed, coloured scales.

COR. Compound tubular, uniform: corollets hermaphrodite, equal.

Proper one-petalled, funnel-form: tube inflex, border five-cleft, divisions recurved.

STAM. Filaments five, capillary, very short. Anther cylindric, tubular.

PIST. Germ oblong. Style filiform, very long, bifid to the very stamens, straight. Stigmas rather sharp.

PER. none. Calyx unchanged.

SEEDS solitary, cornered. Down feathery, coloured, sessile.

REC. naked, flat.

ESSENTIAL CHARACTER.

Cal. oblong, imbricate, awnless, coloured. Down feathered, coloured. Recept. naked, hollow-dotted.

SPECIES.

1. *Liatris noveboracensis. Long-leaved Liatris.*

Serratula noveboracensis. Lin. spec. 1146. *Reich.* 3. 671. *hort. cliff.* 392. *Pallas it.* 321. *Dill. elth.* 355. t. 263. f. 342. *Mor. hist.* 3. 133.

Raii suppl. 208. 1, 2. *Pluk. phyt. t.* 109. f. 3. (Centaurium).

Leaves lanceolate-oblong serrate pendulous.

Jacquin.

Hort. kew.

Gærtner.

Lin. fyst.

T

2. *Liatris*

2. *Liatris præalta*. *Tall Liatris*.]

Serratula præalta. *Lin. spec.* 1146. *Reich.* 3. 671.
Mill. dict. n. 8. *fig. t.* 234. *Dill. elth.* 356.
t. 264. *f.* 343. *Bocc. mus.* 2. 45. *t.* 32. *Pluk.*
phyt. t. 280. *f.* 6. (*Eupatoria*).

Leaves lanceolate-oblong serrate spreading hirsute underneath.

3. *Liatris glauca*. *Glaucous Liatris*.

Suprago glauca. *Gært. fruct.* 2. 403.
Serratula glauca. *Lin. spec.* 1146. *Reich.* 3. 671.
Mill. dict. n. 3. *Gron. virg.* 116. *Dill. elth.*
 354. *t.* 262. *f.* 341. *Pluk. mant.* 42. (*Centaureum*).

Leaves ovate-oblong acuminate serrate, flowers corymbed, calyxes roundish.

4. *Liatris squarrosa*. *Rough-headed Liatris*.

Serratula squarrosa. *Lin. spec.* 1146. *Reich.* 3. 671.
hort. cliff. 392. *Mill. dict. n.* 4. *Gron. virg.*
 116.

Cirsium tuberosum, capitulis squarrosis. *Dill. elth.*
 83. *t.* 71. *f.* 82.

Stoebe virginiana, &c. *Mor. hist.* 3. 137. *f.* 7.
t. 27. *f.* 10.

Leaves linear, calyxes squarrose subsessile acuminate lateral.

[5. *Liatris scariofa*. *Ragged-cupped Liatris*.

Serratula scariofa. *Lin. spec.* 1147. *Reich.* 3. 672.
Gron. virg. 116. *ed.* 1. 92. (*Cirsium*). *Banist.*
virg. 1027. *Pluk. mant.* 105. (*Jacea*). *Pluk.*
phyt. t. 177. *f.* 4. (*Eupatorio affinis*).

Leaves lanceolate quite entire, calyxes squarrose peduncled blunt.

6. *Liatris pilosa*. *Hairy-leaved Liatris*.

Serratula pilosa. *Ait. hort. kew.* 3. 138.

Anonymos pilosus. *Walt. carol.* 197.

Leaves linear hairy, flowers axillary on long peduncles.

7. *Liatris speciosa*. *Hairy-cupped Liatris*.

Serratula speciosa. *Ait. hort. kew.* 3. 138.

Stæhelina elegans. *Walt. carol.* 202.

Leaves linear-sickled, flowers sessile in spikes, calycine leaflets rough-haired acute, inner elongated coloured at the tip.

8. *Liatris spicata*. *Spiked Liatris*.

Serratula spicata. *Lin. spec.* 1147. *Reich.* 3. 672.
Gron. virg. 116.

Suprago spicata. *Gært. fruct.* 2. 402.—*Liatris*,
t. 167.—*Anonymos ciliatus*. *Walt. carol.* 197.

Cirsium tuberosum, lactucæ capitulis spicatis. *Dill.*
elth. 85. *t.* 72. *f.* 83.

Jacea non ramosa, tuberosa radice, &c. *Banist.*
virg. 1927.

J. angustifolia, tub. rad. virginiana. *Pluk. phyt.*
t. 424. *f.* 6.

Stoebe virg. tub. angustif. capitulis sessilibus. *Mor.*
hist. 3. 137.

Leaves linear ciliate at the base, flowers in spikes sessile lateral, stem simple.

DESCRIPTIONS, &c.

This genus consists of species separated from *Serratula*, on account of the down being feathered and the receptacle naked. Jussieu saw the necessity of this, and was of opinion that these plants are nearer to *Eupatorium* or *Cacalia*. Gærtner seeing that they are distinct both from *Serratula* and *Eupatorium* gave them the name of *Suprago*. Walter saw that they were distinct, but did not give them a generic name.

1. Stems several, ten or twelve feet high, smooth, deeply striated, pale green, stout, rigid, straight, not branching except at top for the flowers. Leaves alternate, very long, narrow in proportion to their length, veined, wrinkled, roughish but without hairs, dark green above, somewhat hoary underneath. Flowers in a sort of umbel (or corymb) at top, consisting of fewer heads than in *L. glauca*, less scattered, and small in proportion to the plant. Heads more strigose, the florets not turned so much outwards: calycine scales, especially the lower narrower, and ending in slender oblong horns. It seldom flowers till the end of October. The florets are of a deep purple colour, and the calyx is tinged with purple. Seeds oblong, columnar, whitish; crowned with a hairy, stiffish, brownish down. Receptacle naked.

Native not only of New York, but of Virginia, Carolina, and other parts of North America^a. Cultivated in 1732, by James Sherard, M.D.^b

2. Root perennial, large, striking deep into the ground. Stems branching only at top, seven or eight feet high, purplish, straight, deeply striated. Leaves seven inches long, and an inch and half broad in the middle, ending in acute points, entire, deep green above, hoary on their under side, sessile. Flowers in loose erect bunches at the ends of the branches. Calyxes oval, composed of few scales terminating in bristles. Florets pale purple.

[Dillenius observes, that the leaves are shorter and less wrinkled, wider in the middle, not pendulous, as in the preceding, but either horizontal or pointing obliquely upwards; they are also less serrate and more minutely, yellowish green above, and more hoary beneath. In figure and toothing they are like Peach leaves, but differ from them in being wrinkled above and hoary beneath. The heads of flowers are somewhat rounder, and the cusps or horns at the end of the calycine scales are shorter. Receptacle naked.

Native of Virginia and Carolina^c, and other parts of North America. Cultivated in 1732, by James Sherard, M.D. It flowers from September to November^d.]

3. Root perennial. Stems six or seven feet high, purple and channelled. Leaves three inches long, and an inch and half broad in the middle, stiff, and light green on both sides.

[Stems straight, smooth, unbranched except at top, where the flowering branches are a foot or eighteen inches in length, divided and subdivided into many others. Calyxes very dark purple. Down very prominent, of a pale or whitish brown. Florets dark purple, inclining to violet. The leaves are smooth, dark glaucous green above, paler glaucous beneath, woolly along the veins and nerves^e. Receptacle flat, naked, obscurely excavated, smooth. Seeds oblong, quadrangularly columnar, striated, smooth, rufescent-bay-coloured. Down setaceous, stiffish, somewhat brittle, dirty white, tooth-ciliate; the outmost rays very short, the rest longer than the seed^f.

Native of Maryland, Virginia, and Carolina. Cultivated in 1732, by James Sherard, M.D. at Eltham.

4. Root tuberous. Root-leaves a foot long, and half an inch wide, rigid and nerved. Stems several, simple, from two to three feet in height, the thickness of the little finger, covered with a fine pubescence, and having many alternate leaves, reflex, rigid, nerved, with straight veins, subhirsute, like those of *Tragopogon* but not ending in so acute a point, nor embracing the stem, all shorter than the root-leaves, gradually smaller and narrower towards the top of the stem, smooth above, hairy beneath and along the edges. Peduncles an inch long, alternate from the upper axils. Heads of flowers squarrose, with leafy scales standing out and bent back, keeled, subhirsute; with the florets turned outwards, from the middle of which very long two-parted styles hang out, making them appear as it were bearded. Each floret is long, horn-shaped, and curved inwards; segments narrow, villose within, smooth without, purple. Seeds oblong, striated, crowned with a feathered down. Receptacle naked.

Native of most of the provinces in North America^g.] Mr. Miller says that he received the seeds from Carolina. [The Kew catalogue assigns it to Virginia. In 1732 it was cultivated in the Eltham garden. It flowers in July and August.

5. This differs very much from the preceding. The calyxes are squarrose and blunt; the peduncles lateral, elongated, one-flowered, with a few leaflets; the leaves broad-lanceolate, not at all nerved, sessile but not decurrent^h.]

Root large, tuberous. Stem one, strong, channelled, three or four feet high. Leaves three inches long, and half an inch broad. Flowers purple, in a

^a Dillenius.^b Hort. kew.^c Dillen. elth.^d Hort. kew.^e Dillenius.^f Gærtner.^g Dillenius.^h Linn. spec.

long, loose spike, at the upper part of the stem, on pretty long blunt peduncles, they have large rough calyxes, composed of wedge-shaped scales. The flowers at the top of the spike open first. It flowers in august, but the seeds do not ripen here.

[Native of Virginia. Cultivated by Mr. Miller in 1759¹.

6. Stem hairy, from three to five feet in height. Flowers purple, sessile, subimbricate, in spikes. Calyxes many-flowered with the scales pressed close. Stems simple. If this be *Anonymos pilosus* of Walter.

Native of North America. Introduced in 1783 by Mr. William Young. It flowers in september and october^k.

7. Stem upright, two feet high, tomentose. Calyxes five-flowered, red at the tip^l.

Native of Carolina and Georgia. Introduced in 1787, by Messrs. Watsons. It flowers in october^m.

8. Root tuberous. Stem smooth, three feet high. Flowers purple, subimbricate, on short peduncles. Calyxes many-flowered, with the scales less obtuse and less convergingⁿ.

Calyx subcylindric, imbricate, with oblong blunt scales, pressed close, glutinous as is the whole plant. Receptacle narrow, scrobiculate, smooth. Florets red, with the styles deeply bifid, and the stigmas filiform and very long. Seeds oblong, acuminate downwards, triangular or rhomb-compressed, striated, smooth, lead-bay-colour. Down the length of the seed, whitish, with numerous, equal, setaceous, tooth-ciliate rays^o.

Native of North America; where it is called *Throatwort*, the root being discutient^p. Cultivated in 1732, by James Sherard, M.D. It flowers from august to october^q.

Walter has five species besides the two mentioned above.

1. *Anonymos graminifolius*, n. 3. with a simple smooth stem, six feet high. Leaves long, like those of grass, subvillose within. Flowers purple, sessile, in spikes. Calyxes many-flowered, with blunt subconverging scales.

2. *Anonymos ramosus*, n. 4. Stem somewhat branched, four feet high, pubescent. Leaves lanceolate. Flowers subsessile, purple, in spikes. Calyxes many-flowered, with blunt subconverging scales.

3. *Anonymos paniculatus*, n. 5. Stem hairy, viscid, a foot high, simple. Leaves lanceolate, ascending, hairy. Panicle terminating. Calyxes simple, five-leaved, five-flowered. It varies with purple and with white flowers.

4. *Anonymos uniflorus*, n. 6. Stem short, branched. Leaves lanceolate. Flowers terminating. Peduncles one-flowered. Calyxes many-flowered with converging scales.

5. *Anonymos odoratissimus*, n. 7. Stem three or four feet high. Root-leaves obovate-oblong. Stem-leaves oblong-lanceolate, even. Flowers in corymbs, purple.

Gmelin has inserted these species among the *Chryfocomas*, as it should seem without any foundation.

LIBANOTIS. See *Athamanta*, *Cachrys*, *Ferula*, *Laserpitium*, *Ligusticum*, *Seseli*, *Siler*, *Thapsia*.]

LICHEN, [(of Pliny. Λειχην of Dioscorides.)]

Lin. gen. n. 1202. *Reich. n.* 1319. *Schreb. n.* 1668.

Tournef. 325. *Mich. gen.* 36-53. *Hedw. theor.*

120. *t.* 30, 31. *Lichenoides. Dill. musc.* 124.

Coralloides. Dill. musc. 75. *Usnea. Dill. musc.*

56.

Class. 24. 5. Cryptogamia Algæ.

Nat. order of Algæ.

GENERIC CHARACTER.

* Male flowers?

Vesicles conglomerated, extremely small, crowded or scattered on the disk, margin, or tips of the fronds.

* Female flowers? on the same, or on a distinct plant.

Receptacle roundish, flattish, convex (*Tubercle*), concave (*Scutella*), subrevolute affixed to the margin

(*Pelta*), often differing from the frond in colour, within containing the seeds disposed in rows.

Obs. The powder adhering to some Lichens seems rather to be of the nature of buds than of male fructifications.

The extremely numerous species of this genus may be conveniently divided into the following sections, some of which by some authors are made distinct genera.

Leprea. Hall. a dusty crust, fructifications hardly any.

Tubercularia. Herpes. Hall. Verrucaria. Wigg. Hoffm. a leafless crust. The fructifications Tubercles.

Scutellularia. Patellaria. Hoffm. a leafless crust. Fr. Scutellæ or shields.

Collema. Hill. Nostoch. Hall. Fronds foliaceous, gelatinous. Frs. Scutellæ or shields.

Imbricaria. Squamaria. Hoffm. Fronds subfoliaceous, membranaceous, imbricated, depressed, flexile Fr^s. Scutellæ.

Physcia. Fronds foliaceous, membranaceous, depressed, or ascendent, tubular within. Fr^s. Scutellæ, sessile or pedunculated.

Lobaria. Pulmonarius. Hall. Fronds foliaceous, membranaceous, ascending, flexile. Fr^s. Scutellæ, sessile or pedunculated.

Cornicularia. Corniculatus. Hall. Fronds foliaceous, membranaceous, or cartilaginous, somewhat upright, narrowed, stiff, with somewhat sharp extremities. Fr^s. Scutellæ, sometimes terminal, transverse.

Sticta. Fronds foliaceous, subcoriaceous, scattered over beneath with white excavated points. Fr^s. Scutellæ, or Peltæ.

Peltigera. Wild. Antilyssus. Hall. Fronds foliaceous, coriaceous, ascending, soft. Fr^s. Peltæ.

Umbilicaria. Hoffm. Fronds foliaceous, upright, stiff, shielded. Fr. Scutellæ.

Pyxidium. Hill. Stems upright, funnel-form, hollow within. Tubercles fungiform, unequal, marginal.

Cladonia. Hill. Coralloides. Dillen. Stems upright, somewhat columnar, branchy, hollow within, with the appearance of a shrub; the axillæ often perforated. Fr^s. fungiform Tubercles.

Stereocaulon. Stems erect, rather columnar, simple or branchy, solid. Fr^s. Tubercles.

Usnea, Dill. Stems erect, or pendulous, filamentous, simple or branched. Fr^s. Scutellæ.

Of this very numerous genus Dr. Withering, in the third edition of his arrangements, has enumerated no fewer than 216 species, besides a great number of varieties. Most of these Mosses or rather Algæ are figured by Dillenius, Micheli, Hoffmann, Jacquin, Dickson, Withering, in *Flora Danica*, *English Botany*, or the *Linnæan Transactions*, &c.

Many of them are of considerable use, particularly in dyeing.

Lichen calcareus, so called because it is peculiar to Limestone rocks, when dried, powdered, and steeped in urine, is used to dye scarlet, by the Welch and the inhabitants of the Orkneys. The colour is said to be very fine.

L. Parellus. Litmus is prepared from this species. For this purpose it is gathered from the rocks in the north of England, and sent to London in casks^r.

L. tartareus. Common on limestone rocks, in the north of England and in Scotland. It may be known by its peculiar pungent alkaline smell when moistened. It is gathered for the dyers by peasants, who can collect from twenty to thirty pounds a day, and sell it for a penny a pound. They choose such specimens as are of a firm dense texture, and never scrape the same rock oftener than once in five years. It is prepared for use with volatile alkali and alum, but the exact process is kept a secret by the manufacturers at Glasgow. When sold to the dyers, it appears in the form of a purple powder, called *Cudbear*, a corruption of Cuthbert, the name of the inventor. This powder being boiled with woollen yarn, communicates a purple colour to it; but not to vegetable substances. The colour is far from permanent.

¹ Hort. kew.

^k Ibid.

^l Walter.

^m Hort. kew.

ⁿ Walter.

^o Gærtn.

^p Gron. virg.

Hort. kew.

^r Withering.

L. Roccella or *Orchall* as an article of commerce is of very great importance, being extremely valuable for dyeing wool or silk any shade of purple or crimson. For this purpose it is steeped in volatile alkali, commonly distilled from urine. In times of scarcity, it has been sold at a thousand pounds sterling the ton. It comes chiefly from the Levant; and has lately been discovered to grow in the British dominions^a.

L. omphalodes dyes wool of a brown reddish colour, or a dull but durable crimson, paler but more lasting than that of *Orchall*. It is prepared by the country people in Ireland by steeping it in stale urine, adding a little salt to it, and making it up into balls with lime. Wool dyed with it, and then dipped in the blue vat, becomes of a beautiful purple. With rotten oak it makes a good dark brown frizè. Wool dyed with red wood or sanders, and afterwards in this, which is called *Cork*, *Corker* or *Arcell*, becomes of a dark reddish brown. It has been used as a styptic^c: as has also *L. plicatus*; but these have long since given way to more active medicines^d.

L. rangiferinus, is well known to be the chief food of the Rein Deer, which will grow fat upon it; and this animal supplies every necessary of life for the contented Laplander: as is set forth at large by Linneus, in his elegant *Flora Lapponica*.

L. vulpinus. In Norway they mix this species with powdered glass, and strew it upon dead carcases to poison wolves. It dyes wool yellow.

L. prunastri has a remarkable property of imbibing and retaining odours, and is therefore the basis of many perfumed powders.

L. islandicus. The Icelanders boil this in broth, or dry it and make it into bread. They likewise make gruel with it to mix with milk; but the first decoction is always thrown away, for it is apt to purge. It has lately got a reputation for curing consumptive complaints. For which *L. pulmonarius* has been long in reputation; with more reason, I should hope, than *L. caninus* for the cure of *Hydrophobia*.

L. pulmonarius dyes woollen cloth of a durable orange. In Herefordshire they dye stockings with it of a durable brown.

L. caperatus. In the north of Ireland and in the Isle of Man they dye wool with this of an orange colour. Serge dyed with it became of a lemon colour, but if previously infused and boiled in urine, of a russet brown. It is probably what the people in the north of Ireland call *Stone-crottles*. It is also called *Arcell*, from its being put to the same use with *Orchall*.

L. pustulatus. Linneus says that a beautiful red colour may be prepared from this. It may be converted into an exceedingly black paint.

L. apthosus. The country people make an infusion of it in milk, and give it to children who have the thrush. In large doses it operates by purging and vomiting, and destroys worms^e.

Doubtless if more accurate and extensive trials were made on these neglected plants, many other economical uses for them might be detected; or at least many more of the species might be applied to the same purposes.

LICHEN. See *Anthoceros*, *Byssus*, *Jungermannia*, *Marchantia*, *Mucor*, *Riccia*, *Targionia*, *Tremella*.

LICHEN-AGARICUS. See *Clavaria*.

LICHENASTRUM. See *Jungermannia*, *Mnium*, *Riccia*.

LICHENOIDES. See *Lichen*, *Lycoperdon*, *Tremella*.

LICUALA. (The vernacular name of this Palm in Macassar.)

Lin. gen. Schreb. n. 1691. Thunb. nov. gen. 70. Gært. t. 139. Juss. 39.

Class. 25. 1. Appendix Palmæ. (Hexandria Monogynia, Thunb.)

Nat. order of Palms.

GENERIC CHARACTER.

CAL. Perianth three-parted, outwardly hairy, permanent.
COR. three-parted almost to the base: divisions ovate, acute, concave, deciduous.

Nectary fertiform, truncated, as short again as the corolla.

^a Engl. bot. ^c Withering. ^d Engl. bot. ^e Withering.

STAM. Filaments six, inserted into the nectary, upright, very short. Anthers oblong, twin.

PIST. Germ superior, convex, three-parted, sulcated, smooth. Style simple. Stigmas two.

PER. Drupe globose, the size of a pea, one-celled.

SEED a hard Nut.

ESSENTIAL CHARACTER.

Flowers all hermaphrodite. Cal. and Cor. three-parted. Nect. fertiform. Drupe.

SPECIES.

1. *Licuala spinosa*.

Thunb. aff. holm. 1782. p. 284. nov. gen. 70. Aft. batav. 2. 469. Gært. fruct. 2. 268.

Licuala arbor. Rumph. amb. 1. 44. t. 9.

Corypha foliis palmatis. Burm. ad Rumph.

DESCRIPTION, &c.

Trunk an ell in height, scarcely so thick as the human arm, jointed, dividing at top into about six branches, each six ells long, hardly a finger in thickness, triangular, grooved above, flat beneath, the lower half sharply serrate at the angles, and the teeth or spinules closely joined. Each of these has a leaf at top, spreading like a fan, and divided into rays, all separated to the base: the lateral ones (fourteen) are narrow, blunt and jagged at the end, with four strong nerves meeting at bottom: the middle ray is twenty-four or even twenty-seven inches long, and a foot wide at top; it has thirteen or fourteen ribs, alternately prominent on the upper and lower side, so that it may be folded up, like a fan. When the plant is mature, the flower-stalk emerges from the middle, as long as the branches or leaf-stalks, involved in sheaths at the bottom, dividing into five smaller flower-stalks at top, about a hand in length, bearing green heads in three rows expanding into flowers^y.

There is no common spathe, and the partial spathes are wandering. Spadix branched. The fruit is a fleshy, small, oval drupe, retaining the calyx at some little distance: rind membranaceous, very thin, blackish brown: flesh very little, pulpy, fugacious: shell bony, thin, brittle, whitish, elliptic-globular, finishing at top in a very sharp short dagger-point: it is also pointed at bottom, and striated with a few bony nerves somewhat branching; within it is very smooth and one-celled. Rumphius compares the fruit with those of the Bay for size and figure, except that it is rounder; he adds, that it continues long green, but finally turns brown or blackish. Seed elliptic, ash-coloured, moderately convex on one side, and towards the base keeled with a very blunt angle in which the umbilical chord is immerged; on the other side gibbous, and marked in the middle with a large teat covering the embryo, which is placed in the middle of the back^z.

Rumphius says, that the nut is oblong, very hard, and striated longitudinally.

Native of Macassar and Celebes: where they make much use of the narrow leaves for tobacco pipes, and of the middle broad one for wrapping up fruit, &c. The wood is of little use, being not durable.

LIDBECKIA. See *Cotula*. *Lancisia*. Gært. &c. *Cenia*. Juss.

LIGHTFOOTIA. (So named by Swartz in honour of the Reverend John Lightfoot, M.A. author of *Flora Scotica*.)

Lin. gen. n. 1609. Swartz prodr. 83.

Class. 23. 2. Polygamia Dioecia.

GENERIC CHARACTER.

* Hermaphrodite.

CAL. Perianth four-leaved: leaflets ovate, concave, expanding.

COR. none.

STAM. Filaments numerous, filiform, seated on the receptacle, permanent. Anthers roundish.

PIST. Germ roundish. Style none. Stigma sessile, somewhat headed, furrowed.

PER. Berry ovate, umbilicated, one-celled.

SEEDS from three to six, oblong, compressed, cornered, glossy.

^y Rumphius.

^z Gærtner.

* Males

L I G

* *Males* on different individuals.

CAL. *Perianth* four-leaved: leaflets oblong, concave, equal, coloured.

COR. none.

STAM. *Filaments* numerous, (twenty-four), filiform, longer than the calyx, inserted into the receptacle. *Antthers* roundish.

PIST. none.

Females on different individuals.

CAL. as in the male, but larger.

COR. none.

PIST. *Germ* oblong. *Style* none. *Stigma* elevated, quadrangular-headed, furrowed, with convoluted margins; permanent.

PER. *Berry* oblong, seated on a very small receptacle, umbilicated, one-celled.

SEEDS three, five, to six, as above.

OBS. *This genus is allied to Prockia.* Sw.

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. none. FEM. and HERM. *Stigma* sessile. *Berry* umbilicated, one-celled, with from three to six seeds.

SPECIES.

1. *Lightfootia ferrata*.

Swartz prodr. 83. Vahl symb. 3. 69.

Leaves oblong-ovate serrate acuminate, peduncles lateral aggregate one-flowered.

2. *Lightfootia theæformis*.

Vahl symb. 3. 69.

Leaves lanceolate-elliptic serrate bluntish, peduncles axillary subsolitary one-flowered.

3. *Lightfootia integrifolia*.

Vahl symb. 3. 70.

Leaves subcoriaceous oblong and obovate emarginate almost quite entire, peduncles lateral subaggregate, one-flowered.

DESCRIPTIONS, &c.

1. Native of Montserrat.

2. This has the habit of the Tea shrub. Branches, and all the other parts smooth. Leaves petioled, alternate, two inches long and more, nerved and veined, sometimes emarginate, a little bent at the base to the petiole; which is very short, and a little edged by the leaf running down it. Peduncles one or two, placed on a tubercle, an inch and half long, with a small scale towards the base. Calyx thin, membranaceous. Germ conical. *Stigma* sessile, flattish. *Berry* oblong, one-celled. Seeds three or four, smooth, shining. Native of the isle of Bourbon.

3. This is also a shrub, with round smooth branches, covered with an ash-coloured bark. Leaves petioled, an inch and more in length, alternate, sometimes but rarely obovate, scarce simply veined, acute at the base, subcoriaceous, obscurely crenulate, even. Peduncles three to six, from the axils or at the sides of the branches, short, with a few scales on them. Flowers larger than in the other sorts. Calycine leaflets blunt. *Stigma* as in the preceding.

These agree with *Prockia* in calyx, stamens and habit, but differ in the stigma. Hermaphrodite flowers only having hitherto been observed, we are not certain that these two species are polygamous.

Gmelin has erred in referring *Lightfootia oxycoccoides* and *subulata* of L'Heritier to this genus; for they have nothing in common with *Lightfootia* of Swartz^a.

Ligno Brasiliiano simile. See *Cæsalpinia*.

Lignum Campechianum. See *Hæmatoxylum*.

Colubrinum. See *Strychnos*.

corneum. See *Garcinia*.

læve. See *Glabraria*.

moluccense. See *Croton*.

Sappan. See *Cæsalpinia*.

scholare. See *Echites*.

vitæ. See *Guaiaicum*.

LIGTA. See *Alstroemeria*.

LIGULARIA. See *Euphorbia*.]

^a Vahl.

L I G

LIGUSTICUM, (of Pliny, *Λιγυστικόν* of Dioscorides, from Liguria in Italy.)

Lin. gen. n. 346. Reich. n. 376. Schreb. n. 478.

Gartn. t. 85. Tournef. t. 171. Juss. 222.

Cicutaria. Tournef. t. 171.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatæ or Umbellifera.

GENERIC CHARACTER.

CAL. *Umbel* universal manifold; *Partial* manifold.

Involucre universal membranaceous, seven-leaved, unequal: *Partial* scarcely four-leaved, membranaceous.

Perianth proper five-toothed, obscure.

COR. universal uniform: *Florets* all fertile.

Proper of five petals, which are equal, involute, flat, entire, inwardly keeled.

STAM. *Filaments* five, capillary, shorter than the corolla. *Antthers* simple.

PIST. *Germ* inferior. *Styles* two, approximated. *Stigmas* simple.

PER. none. *Fruit* oblong; cornered, five-furrowed, bipartite on each side.

SEEDS two, oblong, smooth, marked on one side with five elevated striæ, flat on the other side.

OBS. *There are also male flowers observed.* R.

ESSENTIAL CHARACTER.

Fruit oblong, five-grooved on both sides. Cor. equal, with involute entire petals.

SPECIES.

1. *Ligusticum Levisticum*. Common Lovage.

Lin. spec. 359. Reich. 1. 688. hort. cliff. 97. 2.

upf. 62. mat. med. 80. Woodv. med. bot. 519.

t. 190. Gartn. fruct. 2. 28. Sauv. monsp. 261.

Villars dauph. 2. 608. Krock. files. n. 428.

Blackw. t. 275. Zorn. ic. 233.

Angelica Levisticum. Allion. pedem. n. 1309.

Ligusticum vulgare. Baub. pin. 157. — foliis apii.

Baub. hist. 3. 122.

Levisticum. Riv. pent. 60. — vulgare. Mor. hist. 3.

275. f. 9. t. 3. f. 1. Ger. 855. emac. 1008. Park.

theat. 936. Raii hist. 437.

Leaves manifold, leaflets gashed at top.

2. *Ligusticum scoticum*. Scotch Lovage.

Lin. spec. 359. syst. 283. Reich. 1. 689. mant. 354.

hort. cliff. 97. 3. fl. succ. n. 244. Hudf. angl. 117.

Lightf. scot. 159. Wither. arr. ed. 3. 296. Penn.

tour. 2. 24. p. 205. Fl. dan. t. 207. Gunn.

norv. n. 254. Gron. virg. 31. Pluk. phyt. t. 96.

f. 2.

Apium maritimum. Lin. lapp. n. 107.

Seseli scoticum. Riv. pent. t. 59.

S. maritimum scoticum. Herm. par. t. 227.

L. scot. apii folio. Tournef. inst. 324. Raii syn. 214.

Petiv. brit. t. 26. f. 11.

Leaves biternate.

3. *Ligusticum peloponnense*. Hemlock-leaved Lovage.

Lin. spec. 360. syst. 283. Reich. 1. 689. hort.

cliff. 97. 1. Gartn. fruct. 2. 29. Hall. helv.

n. 758. Scop. carn. n. 338. Sauv. monsp. 250.

Gmel. sib. 1. t. 45. Jacqu. austr. 5. 33. app. t. 13.

Gron. orient. 84. Allion. pedem. n. 1322. Krock.

files. n. 429. Villars dauph. 2. 612.

Seseli peloponnense. Camer. epit. 514. Matth. 753.

Tabern. 285. Park. theat. 907. 13.

Cicutaria latifolia foetida. Baub. pin. 161. Raii hist.

451. Mor. umb. t. 6. & t. 1. f. X. x.

Cicuta latif. foetidissima. Ger. emac. 1062.

Leaves manifold-pinnate, leaflets pinnately-gashed.

4. *Ligusticum austriacum*. Austrian Lovage.

Lin. spec. 360. syst. 283. Reich. 1. 689. Jacqu.

vind. 221. austr. 2. 32. t. 151. Segu. ver. 3.

226. Krock. files. n. 430. Allion. pedem. n. 1323.

t. 43.

L. alterum Lobelii. Dalech. hist. 744.

Seseli montanum cicutæ folio glabrum. Baub. pin. 161.

Park. theat. 906. f. 11. Raii hist. 452.

S. mont. 1. Clus. hist. 2. 193. Ger. emac. 1050.

n. 3. 1051. f. 3.

Leaves bipinnate, leaflets confluent gashed quite entire.

5. *Ligusticum cornubiense*. *Cornish Lovage*.
Lin. spec. 359. *Reich.* 1. 689. *amoen.* 4. 310.
Huds. angl. 118. *Witber. arr. ed.* 3. 297. *Smith*
ic. rar. t. 11.
Smyrnum tenuifolium nostras. *Raii hist.* 3. 254,
syn. 209. *t.* 8.
Saxifraga Cornubiæ. *Petiv. brit. t.* 26. *f.* 9.
Root-leaves decomposed gashed; stem-leaves ternate lan-
ceolate entire.
6. *Ligusticum peregrinum*. *Parsley-leaved Lovage*.
Lin. spec. 360. *syn.* 283. *Reich.* 1. 690, *Jacqu.*
hort. 3. 13. *t.* 18.
Petroselinum hortense latifolium. *Baub. pin.* 153.
Apium hortense maximum. *Baub. prodr.* 81. *Tourn.*
inst. 305.
A. hort. magnum Petroselini sapore. *Baub. hist.* 3. 99.
Gouan illustr. 14.
A. verum. *Camer. hort.* 18.
Involucre of the primary umbel scarcely any, of the late-
ral ones membranaceous at the base, rays somewhat
branched.
7. *Ligusticum balearicum*.
Lin. syst. 283. *Reich.* 1. 690. *mant.* 218.
Leaves pinnate, lowest leaflets augmented with a leaflet.
8. *Ligusticum candicans*. *Pale Lovage*.
Ait. hort. kew. 1. 348.
Leaves superdecompound, leaflets wedge-form gashed
smooth, universal involucre two-leaved subsiliaceous,
ribs of the seeds membranaceous smooth.

DESCRIPTIONS, &c.

1. Root strong, fleshy, perennial, striking deep into the ground, and composed of many strong fleshy fibres covered with a brown skin, and having a strong hot aromatic smell and taste. Leaves large, composed of many leaflets shaped like those of Smallage, but larger and of a deeper green. Stems six or seven feet high, large and channelled, dividing into several branches, each terminated by a large umbel of yellow flowers.

[General involucre seven-leaved, with the leaflets frequently confluent and bent back. Partial involucre one-leaved, cloven into seven or more parts, bent back, the segments augmented by a white membrane. Petals very small, yellowish green with a yellow receptacle^a. Fruit ovate-oblong, crowned with an obscure rudiment of the calyx, emarginate at top and bottom, winged. Seeds of the same form, convex on one side, with three narrow approximating wings, and surrounded with a broader ridged not flexile margin, flat on the other side and marked with a raised longitudinal line, whitish bay-coloured^b.

Native of the Alps of Italy, the South of France, Silesia, &c. Cultivated in 1596, by Gerarde^c.] It flowers in June and July, and the seeds ripen in autumn.

[The odour of this plant is very strong and peculiarly ungrateful; its taste is warm and aromatic. It abounds with a yellowish gummy-resinous juice, very much resembling Opoponax. Its qualities are supposed to be similar to those of Angelica and Masterwort in expelling flatulencies, exciting sweat, and opening obstructions: therefore chiefly used in hysterical disorders, and in uterine obstructions. A tea cup full of the juice with rhenish wine, or a decoction of the seeds with wine or mugwort water was by Forestus said to be a secret remedy of extraordinary efficacy in slow or laborious parturition. The leaves, eaten as salad are accounted as emmenagogue. The root, which is less ungrateful than the leaves, is said to possess similar virtues, and may be employed in powder^d.]

2. This has a biennial root, (all other authors say, perennial) of much less size than the preceding; the leaflets are broader and shorter; each leaf having two or three ternate leaflets, indented on their edges. The stalk rises about a foot high, and sustains a small umbel of yellow flowers, shaped like those of the preceding.

[Linneus remarks that the leaves are lucid or glossy underneath. The leaflets are oblong-wedge-shaped, entire below, above irregularly serrate, and sometimes deeply cut^e.

Native of North America, Sweden, Denmark, Scotland, on rocks near the coast. It is much valued in the isle of Sky. The root is reckoned a good carminative; and an infusion of the leaves in whey, a good purge for calves. It is also used for food, either as a salad, or boiled as greens^f.]

3. Root thick, fleshy, like that of Parsnep, striking deep into the ground. Leaves large, deep green, when bruised emitting a fetid odour; the leaflets are cut into acute points. Stems three or four feet high, large and hollow, sustaining large umbels of yellowish flowers.

[Terminating umbel fertile, lateral ones male^g. Seeds, when ripe, curved inwards, yellow-rust-colour, on one side deeply grooved, and having three rigid ribs or wings, on the other having a longitudinal groove and two very narrow reflex wings. Albumen oblong, strong-smelling, with two depressed grooves on the back, and one on the belly. Embryo very short, ovate-globular, milky^h.

Native of Switzerland, Austria, Dauphiné, Silesia, Italy, Peloponnesus, Siberia. Cultivated in 1516, by Gerardeⁱ.

4. Root half a foot long or more, the thickness of the human thumb, often branched, yellowish brown on the outside, pale within and spongy. Stem upright, from two to three feet in height, grooved, hollow without any partitions at the joints, the whole leafy, as thick as the thumb or finger, simply branched at top only. Root-leaves very large; stem-leaves above the middle sessile. Leaflets of the general involucre lanceolate, acute, pale green with a whitish membranaceous edge, about half the length of the umbel, reflex, entire or variously gashed; of the partial involucre about six, all commonly quite entire, the outer equalling the umbellets, and not bent back. Terminating umbel of about forty rays, from four to seven inches in diameter. The rest much smaller; all close. These, which are at the tops of the branches, flower later, and gradually exceed the primary umbel in height, surrounding it when in fruit. Flowers strong-smelling, large, all fertile. Petals white, subovate, bluntish, a little concave, spreading very much, not inflex-cordate. Fruit ovate, acute. Seeds ovate, brownish or pale, flat on one side, on the other convex and deeply four-grooved. The whole plant is smooth^k.

Native of Austria, Silesia, Italy. Cultivated in 1759 by Mr. Miller^l. It flowers from June to August.

5. Root perennial, spindle-shaped. Stem from two to three feet in height, erect, branched, many-flowered, round, striated, roughish, purple at the base, annual. Root-leaves spreading upwards, twice ternate, broader than long: leaflets opposite, petioled, variously and deeply cut, ribbed, full of net-like veins; their divisions generally alternate, acute, decurrent, entire, rough at the margin as well as at the ribs on both sides. Petioles roundish, striated, rough, channelled above, dilated and somewhat membranous at the base. Stem-leaves solitary at each division of the stem, small, ternate: leaflets sessile, lanceolate, acute, scarcely ever lobed: petiole dilated, a little membranous, concave, striated, half embracing. Uppermost leaves obsolete, and consisting of the membranous petiole only. Umbels erect. General involucre of six or eight lanceolate, acute, undivided, ribbed, spreading leaves, much shorter than the umbel, permanent. Partial like the general, but somewhat less. Rays slender, round, striated, smooth. Flowers white, equal, all hermaphrodite. Calyx of five small roundish blunt concave leaves. Petals five times as large as the calyx, oblong, acute, turned in, deeply channelled on the back, equal. Stamens the length of the petals, spreading. Filaments awl-shaped. Anthers roundish, twin, yellowish. Germ roundish, compressed, smooth, with five ribs on each side, and intermediate furrows of nearly the same breadth. Styles half as long as the stamens, joined together and thick at the base, spreading in the upper part. Seeds ovate,

^a Krockner. ^b Gärtner. ^c Hort. kew. ^d Woodville.
^e Woodward.

^f Penn. tour. Lightf. ^g Linn. ^h Gärtner.
ⁱ Hort. kew. ^k Jacquin. ^l Hort. kew.

smooth, flat on the inside, marked on the outside with five slightly elevated lines^m.

Native only of Cornwall, where it was observed by Buddle. It grows in thickets, among bushes, and in hedges. This plant eluded the searches of modern botanists till Mr. Pennington found it in 1788 in great plenty near Bodmin. Sir Thomas Gery Cullum, Bart. gathered it there the year following. In 1793 not a single plant was to be found in the field where Mr. Pennington had discovered it, but Dr. Withering found it in another place farther from Bodmin; among furze. Cattle are so fond of it that they eat it down wherever they can get at itⁿ. The root contains a yellow resinous juice^o.

6. Root biennial. Stem two feet high, rigid, angular, even. Leaves superdecompound, the upper ones ternate: leaflets three-parted: segments wedge-shaped, gashed, smooth, like those of Parsley, but larger. Petioles with a white membrane at the sides. General involucre one-third of the length of the umbel: rays linear, with a white membrane at the base on both sides, scarcely branched. The first umbel has usually no involucre. Involucels linear, the length of the umbellet. Petals yellowish, inflex-emarginate. Filaments longer than the corolla, with white anthers. Germs even, scarcely striated.

It resembles Parsley, even in smell and taste, but all the parts are thicker and more rigid^p.

Native of Portugal. Introduced in 1766, by Monf. Thouin. It flowers in June and July^q.

7. Root biennial. Stem round, somewhat striated, small in comparison with the umbel, a foot high. Root-leaves a span long: leaflets five or seven, subcordate, sessile, serrate, blunt, smooth, more shining underneath; the end one broader, scarcely lobed. Common petiole round, but between the leaflets channelled. Stem-leaves two or three, small, petioled, three-parted, lacinated, linear. Umbel large, stiffish. Umbellets about thirteen. Involucre many-leaved, linear, awl-shaped, reflex, the same number with the umbel. Involucels similar, with seven rays, but one or two interior. Flowers in an umbellet eight or ten, yellow, all fertile. Petals small, turned in. Seeds oblong, subcylindric, striated^r.

The genus is doubtful, the seeds not having been observed in a state of perfection^s.

Native of Majorca and Minorca, and about Rome.

8. The native place of this is not known. It was introduced here about 1780. It flowers in July and August^t.

Several other species of *Ligusticum* are known, but not sufficiently ascertained. Allione has *L. pyrenæum*, n. 1320. which Villars calls *L. Seguerii*, 2. 615.—*L. simplex*, n. 1324. Villars dauph. 2. 618. *Laserpitium simplex* of Linneus—and *Danaa aquilegifolia*, n. 1392. t. 63. *Ligusticum alterum* Belgarum. Lob. obs. 447. ic. 786. Lugd. 744.

Villars has ten *Ligusticums*: having besides some new species, as *L. nodiflorum*, which is *Smyrnum nodiflorum* of Allione, n. 1347. t. 72.—*L. Gmelini*, which has much affinity to *L. austriacum*—and *L. cicutæfolium*—inserted in this genus *Peucedanum Silaus*, *Athamanta Meum*, and *Phellandrium Mutellina* of Linneus. In this natural class these changes may be for ever made without much advantage.]

PROPAGATION AND CULTURE.

Sow the seeds in autumn soon after they are ripe, for when they are kept out of the ground till spring, they seldom grow the first year. When the plants are fit to remove, transplant them into a moist rich border, at three feet distance. The roots of Common Lovage will abide many years, and where the seeds are permitted to scatter, the plants will come up without care. Several of the other sorts are only biennial, and die when they have perfected their seeds. They all love a moist soil and shady situation.

[*LIGUSTICUM*. See *Ægopodium*, *Æthusa*, *Athamanta*, *Laserpitium*, *Phellandrium*, *Selinum*, *Sium*.

LIGUSTROIDES. See *Volkameria*.]

^m Smith.

ⁿ Wither. arr.

^o Smith.

^p Linn.

^q Hort. kew.

^r Linn. mant.

^s Linn. syst.

^t Hor. kew.

LIGUSTRUM, (of Pliny and other Latin authors.)

Lin. gen. n. 18. Reich. n. 18. Schreb. n. 23.

Gærtn. t. 92. Tournef. t. 367. Juss. 106.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Sepiariae*. *Jasmineæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, very small: mouth four-toothed, erect, obtuse.

COR. one-petalled, funnel-form. Tube cylindric, longer than the calyx. Border four-parted, spreading: divisions ovate.

STAM. Filaments two, opposite, simple. Anthers upright, almost the length of the corolla.

PIST. Germ roundish. Style very short. Stigma two-cleft, obtuse, thickish.

PER. Berry globose, smooth, one-celled.

SEEDS four, convex on one side, cornered on the other.

OBS. The berry is two-celled: the cells coated with a thin membrane. The seeds are two in each cell. Gærtn.

ESSENTIAL CHARACTER.

Cor. four-cleft. Berry four-seeded.

SPECIES.

1. *Ligustrum vulgare*. Common Privet.

Lin. spec. 10. syst. 56. Reich. 1. 18. hort. cliff. 6.

fl. suec. n. 5. Gærtn. fruct. 2. 72. Hudf. angl. 3.

Wither. arr. ed. 3. 10. Curt. lond. 5. 1. 309.

Relh. cant. n. 4. Hall. helv. n. 530. Scop. carn.

n. 4. Pollich pal. n. 4. Neck. gallob. 4. Pallas

ross. 1. 2. 32. Allion. pedem. n. 453. Villars

dauph. 2. 6. Krock. siles. n. 6. Thunb. jap. 17.

Du Roi. herb. 1. 364. Mill. fig. t. 162. Blackw.

t. 142. Zorn. ic. 112. Best. eyf. vern. frut.

t. 13. f. 2.

L. germanicum. Baub. pin. 475.

L. Baub. hist. 1. 528. 2. Ger. 1208. emac. 1394.

Matth. 170. Fuchs. 480. Raii hist. 1603.

L. vulgare. Trag. 1005. Park. theat. 1446. 1.

Phillyrea. Dod. pempt. 775.

β. *L. italicum*. Italian Evergreen Privet.

Mill. dict. n. 2.

L. myrtifolium italicum. Baub. pin. 475. prodr.

158. Park. theat. 1447. 2. Raii hist. 1603.

Leaves ovate obtuse, panicle simply trichotomous.

[2. *Ligustrum japonicum*. Broad-leaved Privet:

Thunb. jap. 17.

L. latifolium. Lin. syst. 56.

Leaves ovate acuminate, panicle decomposedly trichotomous.

3. *Ligustrum sinense*:

Lour. cochinch. 19.

Leaves lanceolate, racemes oblong lateral and terminating.

DESCRIPTIONS, &c.

1. Common Privet is a shrub, usually about six feet in height, branched, the bark of a greenish ash colour, irregularly sprinkled with numerous prominent points: branches opposite, the young ones flexible and purplish. Leaves opposite, on very short petioles, smooth on both sides, perfectly entire, the lower ones at the bottoms of the small branches least. Panicle about two inches in length, close and somewhat pyramidal; branches and pedicels appearing villose when magnified. Corolla white, but soon changing to a reddish brown. The flowers are sweet-scented.

Berry superior, fleshy, subglobular, shining, of so dark a purple as to seem black. Pulp succulent, purplish red. Seeds two, rarely one, in each cell, oblong, convex on one side, angular on the other, smooth, shining, dark purple, with a whitish umbilicus at top^x.

Privet is found wild in most parts of Europe, and in Japan; in woods and hedges: and flourishes best in a moist soil. It flowers in July, and the berries ripen in autumn.

Privet, in old English authors is also called Prim, Print, and Primprint. I presume from its regular appearance, when clipped, as it was formerly. In German it is *Liguster*. The same name obtains in Dutch, Danish and Swedish. In French it is *Troëne*. In Ita-

^y Curtis.

^x Gærtner.

lian, *Ligustro*. In Spanish, *Albena*. In Portuguese, *Alfena*. In Russian, *Schoft*.

In point of utility and ornament few shrubs exceed the common Privet. Its chief use is to form such hedges as are required in dividing gardens for shelter or ornament; and for this the Italian or Evergreen Privet is usually preferred. It bears clipping well, is not liable to be disfigured by insects, and having only fibrous roots, it robs the ground less than almost any other shrub.] It is one of the few plants that will thrive in the smoke of London, though it seldom produces any flowers in the closer parts after the first year. It also grows well under the drip of trees.

[Privet is not apt to be eaten by cattle: according to Linneus, kine, sheep and goats eat it, but horses refuse it. Sphinx Ligustri or Privet Hawk Moth, and Phalæna Syringaria, feed on it in the caterpillar state; and Meloe vesicatorius, Cantharides or Blister Beetle is found on it^y. The leaves are bitter and slightly astringent. The wood is very hard, and fit for the turner. From the pulp of the berries a rose-coloured pigment may be prepared. With the addition of alum, they dye wool and silk of a good durable green: for this purpose they must be gathered as soon as they are ripe^z. They continue on the shrub till spring, and in times of scarcity are eaten by different sorts of birds, particularly the Bulfinch^a.

Privet varies in many respects. The leaves sometimes grow by threes, and sometimes are enlarged at the base;] they are variegated with white and also with yellow; they frequently continue green great part of the winter, like the Italian Privet. [The regular number of stamens is two, but sometimes there are three or four in a flower. And it has been found with white berries. Thunberg says that in Japan the leaves are somewhat broader and more blunt than in the European shrub.

β. The Italian or Evergreen variety is made a distinct species by Miller.] It rises with a stronger stem; the branches are less pliable, and grow more erect; their bark is of a lighter colour; the leaves are much larger, end in acute points, are of a brighter green, and continue till they are thrust off by the young leaves in the spring: the flowers are rather larger, and are not often succeeded by berries in England.

[2. Stem arboreous, very much branched, a fathom and half in height. Branches opposite, roundish, wrinkled, ash-coloured, from upright spreading: twigs rod-like, resembling the branches. Leaves opposite, entire, from spreading upright, grooved along the middle above, paler underneath, with a raised line, smooth, an inch wide, an inch and half long. Petioles round, grooved above. Panicle spreading. Under each division, two opposite smooth bractes; the lower lanceolate, the upper bristle-shaped. Berry the size of a pea.

Native of Japan, where it flowers in June and July^b.

3. This is a small tree, about eight feet in height, with diffused straight branches. Leaves lanceolate, quite entire, tomentose, petioled, opposite, dark green. Flowers white, small. Calyx cup-shaped, white. Corolla bell-shaped, spreading; with lanceolate segments. Berry very small, brown, containing four seeds.

Native of China, about Canton^c.]

PROPAGATION AND CULTURE.

1. This shrub is easily propagated by laying down the tender shoots in autumn. In one year's time they may be removed where they are to remain, or planted in a nursery for two or three years, where they may be trained for the purposes designed.

Also by suckers, which it sends forth in great plenty. But these are not easily kept within bounds, nor do they rise so high as those which are increased by layers.

Thirdly by cuttings, planted in the autumn on a shady border, and in a loamy soil.

But the strongest and best plants are raised from seeds. Gather the berries when ripe, put them into a pot with sand, and bury them in the ground, as is

^y Curtis.

^z Withering.

^a Curtis.

^b Thunberg.

^c Loureiro.

practised with Holly berries and Haws. After they have laid a year in the ground, take them up and sow them in the autumn on a border exposed to the east, where the plants will come up the following spring.

The varieties with striped leaves may be increased by budding or inarching upon the plain sort; or by laying down the branches, but they seldom shoot so fast as to produce branches proper for this purpose. Being more tender, they should have a dry soil and a warm situation. In a rich soil, they soon lose their variegation, and become plain.

The Italian or Evergreen Privet, is now generally found in the nurseries instead of the common one. It is equally hardy, and will thrive in almost any situation. It is increased in the same manner; but as it seldom produces berries here, they must be procured from Italy.

[LIGUSTRUM. See *Olea*, *Ophioxylum*, *Syringa*, *Volkameria*.]

LILAC. See *Syringa*.

[LILIAGO. See *Anthericum*.

LILIASTRUM. See *Anthericum*.]

LILIO-ASPHODELUS. See *Crinum* and *Hemerocallis*.

LILIO-HYACINTHUS. See *Scilla*.

LILIO-NARCISSUS. See *Amaryllis* and *Pancratium*.

LILIUM, (of Pliny and other Latin authors. Gr. Λειριον.)

Lin. gen. n. 410. Reich. n. 443. Schreb. n. 558.

Grætn. t. 16. Tournef. t. 195. Juss. 49. Li-

rium. Roy. 30.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariæ*. *Lilia*, Juss. Roy, &c.

Lilææ, Salisb.

GENERIC CHARACTER.

CAL. none.

COR. six-petalled, bell-shaped, narrowed beneath. *Petals* upright, incumbent, obtusely carinated on the back, gradually more expanding, wider; with thick, reflex, obtuse tips.

Nectary: a longitudinal, tubular line, engraven on each petal from the base to the middle.

STAM. *Filaments* six, awl-shaped, upright, shorter than the corolla. *Anthers* oblong, incumbent.

PIST. *Germ* oblong, cylindric, striated with six furrows. *Style* cylindric, length of the corolla. *Stigma* thickish, triangular.

PER. *Capsule* oblong, six-furrowed, with a three-cornered, hollow, obtuse tip; three-celled, three-valved: the *valves* connected by hairs disposed in a cancellated manner.

SEEDS numerous, incumbent in a twin order; flat, outwardly semi-orbicular.

OBS. *The Nectary in some is bearded, in others beardless. Petals in some totally revolute, in others not so.*

ESSENTIAL CHARACTER.

Cor. six-petalled, bell-shaped; with a longitudinal nectareous line. *Caps.* the valves connected by cancellated hairs.

SPECIES.

1. *Lilium candidum*. Common White Lily.

Lin. spec. 433. Reich. 2. 43. hort. cliff. 120. 1.

ups. 80. mat. med. 93. Woodv. med. bot. 279.

t. 101. Hall. herb. n. 1231. Gron. orient. 105.

Thunb. jap. 133. Ludw. ed. t. 190. Kniph.

cent. 7. n. 4. Knorr. del. 1. t. L. Blackw. t. 11.

Rob. ic. 201. Curt. magaz. 278. Dod. pempt.

197. Camer. epit. 570.

L. album. Fuchs. 364. Ger. 146. 1. emac. 190. 1.

Bess. eyf. vern. 5. 9. 1. 3. Raii hist. 1109.—

vulgare. Baub. hist. 2. 685. Park. parad. t. 37.

f. 4.—flore erecto & vulgare. Baub. pin. 76. Mor.

hist. f. 4. t. 21. f. 13.

β. L. peregrinum. Nodding-flowered White Lily.

Mill. dict. n. 2.

L. album, floribus dependentibus f. peregrinum.

Baub. pin. 76.

L. alb. byzantinum. Clus. Park. parad. 39. Ger.

146. 2. emac. 190. 2.

Sultan Zambach & Martagon Constantinopolitanum.

Clus. hist. Bess. eyf. vern. 5. 10. 1, 3.

L. alb. syriacum Rauwolfii. Baub. hist. 2. 687.

γ. L. caule

- γ. *L. caule plano compresso. Gron. orient. 106.*
Lilii albi pulchri & ignoti species. Baub. pin. 76.
Leaves scattered, corollas bell-shaped smooth within.
- [2. *Lilium japonicum. Japan White Lily.*
Thunb. jap. 133. Kämpf. amoen. 5. 87. 1.
Leaves scattered lanceolate, corollas drooping subcampanulate.
3. *Lilium Catefbæi. Catefbæ's Lily.*
Curt. magaz. 259. Lin. syst. ed. 13. Gmel. 545.
Walt. carol. 123.
L. spectabile. Salisb. ic. rar. t. 5. prodr. 238.
L. carolinianum flore croceo, &c. Catefb. carol. 2. t. 58.
Leaves scattered lanceolate, corolla upright bell-shaped, petals with claws.]
4. *Lilium bulbiferum. Bulb-bearing or Orange Lily.*
Lin. spec. 433. syst. 324. Reich. 2. 43. hort. cliff. 120. 2. upf. 80. Gmel. fib. 1. 41. Gron. orient. 104. Jacqu. austr. 3. 14. t. 226. Scop. carn. n. 404. Hall. belv. n. 1232. Villars dauph. 2. 275. Krock. files. n. 519. Knorr. del. 1. t. L. 4. Curt. magaz. 36.
 α. *L. purpureo-croceum majus. Baub. pin. 76. Mor. 4. 21. 17. Best. eyf. vern. 5. 6, & 8.*
L. rubens vel croc. majus. Baub. hist. 2. 688. Raii hist. 1110.
L. aureum. Ger. 148. emac. 192. Park. parad. 38. t. 37. f. 3.
 β. *L. purpureo-croceum, flore pleno.*
L. cruentum fl. pleno. Best. eyf. vern. 5. 5. 1.
 γ. *L. purpureo-croceum minus. Baub. pin. 77.*
L. rubens vel croc. minus. Baub. hist. 2. 689. Raii hist. 1110.
L. pumilum cruentum. Park. parad. 36.
L. purpureum minus. Ger. emac. 194. 6.
 δ. *L. phoeniceum. Baub. pin. 77. Raii hist. 1110.—dilutum. Baub. hist. 2. 690.*
L. rubrum. Ger. 148. 2. emac. 192. 2.
 ε. *L. bulbiferum latifolium, majus. Baub. pin. 77. Raii hist. 1110.*
L. bulb. majus. Baub. hist. 2. 690. Park. parad. 38. 3.
L. cruentum bulb. Ger. emac. 193. Best. eyf. vern. 5. 7. 1.
 ζ. *L. bulbif. angustifolium. Baub. pin. 77.*
 η. *L. bulbif. minus. Baub. pin. 77. Park. parad. 38. 1. Raii hist. 1111.*
L. bulb. repens. Baub. hist. 2. 691.
L. cruentum secundum caulem bulbilis donatum. Ger. emac. 194. 5.
L. humile. Mill. dict. n. 4.
 θ. *L. bulbif. incanum. Baub. pin. 77. Baub. hist. 2. 691.*
L. cruentum latifolium. Ger. 149. emac. 193.
Leaves scattered, corollas bell-shaped erect, rugged within.
5. *Lilium pomponium. Pomponian Lily.*
Lin. spec. 434. Reich. 2. 44. hort. cliff. 120. 4. upf. 81. Mill. fig. t. 165. f. 2. Kniph. cent. 2. n. 40. Knorr. del. 1. T. 4. Gmel. fib. 1. 42. n. 9. Amm. ruth. n. 139. Thunb. jap. 134. Lour. cochinch. 207. Villars dauph. 2. 276.
 α. *L. rubrum angustifolium. Baub. pin. 78. Ger. emac. 199. 1.*
L. rubrum præcox. Clus. hist. 1. 133. Raii hist. 1113. Best. eyf. 3. 4. 1.
L. præcox nutante flore rubro. Baub. hist. 2. 696.
 β. *L. miniatum odoratum angustifolium. Baub. pin. 79. Rudb. elys. 2. 176. f. 3. Raii hist. 1114.*
Martagon Pomponium. Best. eyf. æst. 3. 8. 1.—f. L. rubrum præcox vel L. macedonicum. Park. parad. 34. t. 32. f. 3.
 γ. *L. brevi & gramineo folio. Baub. pin. 79.*
L. rubrum præcox 3. angustifolium. Clus. hist. Raii hist. 1113.
L. præc. nutante fl. rubro tenuifolium. Baub. hist. 2. 696.
L. angustifolium. Mill. dict. n. 6.
Leaves scattered awl-shaped, flowers turned back, corollas rolled back.
6. *Lilium chalcedonicum. Scarlet Martagon Lily.*
Lin. spec. 434. syst. 324. Reich. 2. 44. hort. cliff. 120. 4. upf. 81. Scop. carn. n. 403. Jacqu.

- austr. app. t. 20. Kniph. cent. 3. n. 54. Curt. magaz. 30.*
 α. *L. byzantinum miniatum. Baub. pin. 78. Raii hist. 1113.—rubrum f. min. byzantinum. Clus. hist. 1. 131.*
L. fl. min. nutante. Baub. hist. 2. 695.
L. rubrum byzant. f. Martagon constantinopolitanum. Park. parad. 34.
L. bizantinum. Ger. 151. emac. 197. 1.
 β. *L. byzant. min. polyanthos. Baub. pin. 78. Ger. emac. 198. f. 4.*
 γ. *L. purpureo-fanguineum, flore reflexo. Baub. pin. 78. Raii hist. 1113. Ger. emac. 197. f. 2.*
Hemerocallis chalcedonica. Lob. ic. 169. Best. eyf. æst. 3. 5. 1, 2.
Leaves scattered lanceolate, flowers turned back, corollas rolled back.
7. *Lilium superbum. Great yellow Martagon Lily.*
Lin. spec. 434. Reich. 2. 45. Trew. Ebret. 2. t. 11. Catefb. car. 2. t. 56. Thunb. jap. 134.
Leaves scattered lanceolate, flowers in a branched pyramid turned back, corollas rolled back.
8. *Lilium Martagon. Purple Martagon Lily.*
Lin. spec. 435. syst. 324. Reich. 2. 45. hort. cliff. 120. 3. upf. 81. Gmel. fib. 1. 44. Jacqu. austr. 4. 27. t. 351. Scop. carn. n. 402. Pollich pal. n. 331. D'Affo arrag. n. 301. Krock. files. n. 518. Villars dauph. 2. 276. Hall. belv. n. 1233.
 α. *Martagon. Camer. epit. 617.*
L. flor. reflexis, montanum. Baub. pin. 77. Raii hist. 1112.
L. fylvestre. Dod. pempt. 201.
L. fl. nutante ferrugineo. Baub. hist. 2. 692.
L. montanum minus. Ger. 150. 8. emac. 196. 2.
 β. *L. flor. reflex. alterum hirsutum. Baub. pin. 78.*
L. mont. majus. Ger. 150. 7. emac. 196. 1.
L. hirsutum. Mill. dict. n. 10.
Leaves in whorls, flowers turned back, corollas rolled back.
9. *Lilium canadense. Canada Martagon Lily.*
Lin. syst. 324. Reich. 2. 45. mant. 364. Thunb. jap. 135.
L. angustifolium, flore flavo maculis nigris distincto. Tournef. inst. 371. Barr. rar. 778. t. 125.
L. Martagon canadense maculatum. Mor. hist. 2. 408. f. 4. t. 20. f. 9. Rudb. elys. 2. 177. f. 5.
L. f. Martag. canad. flor. magnis flavis non reflexis. Catefb. car. 3. t. 11. Rob. ic. 206.
Martagon f. Lilium canadense maculatum. Park. parad. 33. t. 32. f. 2.
Leaves in whorls, flowers turned back, corollas revolute-bell-shaped.
10. *Lilium camtschatcense. Kamtschatka Lily.*
Lin. spec. 435. Reich. 2. 45. Lour. cochinch. 207. amoen. 2. 348.
Leaves in whorls, flower erect, corolla bell-shaped, petals sessile.
11. *Lilium philadelphicum. Philadelphian Martagon Lily.*
Lin. spec. 435. Reich. 2. 46. Mill. fig. 110. t. 165. f. 1. Thunb. jap. 135.
Leaves in whorls, flowers erect, corolla bell-shaped, petals with claws.

DESCRIPTIONS, &c.

Bulb scaly, or as Jussieu describes it, tuberous imbricated with the bases of the leaves. Stem leafy, simple. Leaves simple, entire, alternate or in whorls. Flowers spathaceous, in a spike or a sort of panicle, hanging down in most of the species^a.

1. The common White Lily has a large bulb, from which proceed several succulent fibres. Stem stout, round, upright, usually about three feet in height. Leaves numerous, long, narrow pointed, smooth, sessile. Flowers large, white, terminating the stem in a cluster on short peduncles. Petals within of a beautiful shining white; on the outside ridged and less luminous^b.

Native of the Levant. Linneus assigns it to Syria. Thunberg gives it as a native of Japan, and observes that the corolla is there near a span in length, and

^a Jussieu.^b Woodville.

that it varies with a villose stem. Haller inserts it in the Swiss Flora: it is not indigenous there, but must have escaped from a garden. It flowers in June and July, and has been cultivated in England time immemorial. In Gerarde's time (1597) it was in most gardens.

The flowers of the Lily were formerly considered as antiepileptic and anodyne; a distilled water of them was employed as a cosmetic; and oil of Lilies was supposed to possess anodyne and nervine powers; but their odorous matter, though very powerful, is totally dissipated in drying, and entirely carried off in distillation either with spirit or water, and no essential oil can be obtained from them. The roots only are now in use: they are extremely mucilaginous, and are chiefly employed in emollient and suppurating cataplasms, boiled with milk or water. Physicians however are generally of opinion that bread or meal poultices possess every advantage of those prepared from the Lily root^c.]

The principal varieties of the White Lily are,

1. With the flowers striped or blotched with purple.
2. With variegated or striped leaves, or with the leaves edged with yellow.
3. With double flowers.
4. With pendulous flowers, which Miller and others consider as a distinct species.

The first variety has not been in England much longer than the year 1729. It is now become common, but the purple stain giving the flower a dull colour, the common white is generally preferred.

The second variety is chiefly valued for its appearance in winter and spring: for the leaves coming out early in the autumn, spreading themselves flat on the ground, and being finely edged with a broad yellow band, make a pretty appearance during the winter and spring months. It flowers earlier than the plain sort.

The third variety is of little value, because the flowers never open well, unless they are covered with glasses; nor have they any of the rich odour of the common sort.

The fourth variety (β) came originally from Constantinople. The stalk is much more slender; the leaves are narrower and fewer in number; the flowers not quite so large, and the petals more contracted at the base; they always hang downwards.

The stalks are sometimes very broad and flat (γ), appearing as if two or three were joined together: when this happens, they sustain from sixty to one hundred flowers, and sometimes more. This however is merely accidental, for the same root scarcely ever produces the same two years.

[2. Stem round, smooth and even, two feet high. Leaves alternate, petioled, acuminate, margined, smooth, a hand and half in length, paler underneath, three-nerved or five-nerved. Flower terminating, reflex and hanging down. Corolla white, a hand in diameter. It differs from the preceding, to which it is allied, in having a weaker stem, sustaining only one flower; and fewer leaves on the stem, remote, very long, petioled and nerved.

Native of Japan^d.

3. Of the Lilies cultivated in this country this is one of the least, the whole plant when in bloom being frequently little more than a foot high. In its native soil it is described as growing to the height of two feet^e. The stalk is terminated by one upright flower. It is purple, slender, upright, round, smooth with a slight glaucous bloom on it, solid, stiffish. Root-leaves few, often only on the barren plant, on long petioles. Stem-leaves numerous, alternately scattered, sessile, curved back, narrow-lanceolate, the upper ones gradually more ovate-lanceolate, quite entire, blunt with a purple tip, even on both sides, slenderly nerved, flat, a little fleshy, shrivelling. The flower has no scent. Peduncle an inch or an inch and half in length, thicker at top. Claws of the petals pale green, curved in, alternately broader and narrower; borders dusky yellow on the outside with saffron edges, within at the

middle of the base yellow with dark-rust-coloured broad spots, the rest bright saffron, thrice the length of the claws, alternately broader and narrower, revolute, ovate-acuminate, quite entire, blunt, even on the outside with a very fine bloom, within smooth. Filaments dusky red, approximating at bottom, recurved a little at top, compressed, gradually attenuated, smooth. Anthers red, narrow-elliptic, two-celled. Pollen orange-coloured. Germ pale green, narrow, obscurely three-cornered, even. Style red, about the same length with the filaments, three-cornered, smooth, a little thickened below the tip. Stigma deep red, club-shaped with three obsolete perforations at the corners, very minutely pubescent^f.

This Lily was first observed by Catesby on open moist savannas in many parts of Carolina. He says that the bulb is about the size of a walnut; that the petals turn back in a graceful manner, and are tapering, terminating in points, and edged with small indentures, and that the whole flower is variously shaded with red, orange, and lemon colours.

Mr. Curtis, to whom roots were sent from South-Carolina by Mr. Robert Squibb, at the close of the year 1787, informs us, that it varies considerably in the breadth of its petals, in their colour and spots; and that it flowers usually in July, and August.

4. Bulb subovate, consisting of thick white loosely imbricate scales, putting out a few thick fibres from the bottom. Stem upright, a foot and half high, striated-angular, smooth or slightly hairy, with numerous scattered leaves, the upper ones spreading out horizontally, acute, quite entire, obsoletely hirsute, a little rough to the touch, dark green, slightly nerved, sessile, lanceolate-linear, three or four inches long: each, excepting the lower, frequently producing a roundish shining pale-green bulb or two in the axil. Peduncle terminating, round, thick, somewhat villose; either solitary, or two, three or four together, forming a sort of umbel; some naked, others having a bracte or two. Flower without scent, red-orange within, pale-orange on the outside: all the petals from the base to beyond the middle are rugged with little scales and apophyses, with a few black dots; the border is spreading, but not rolled back: three alternate ones are a little more exterior, lanceolate, narrower, almost equally drawn to a point at both ends, the nectareous tubular floccose line occupying the whole lower part: the other three, from a channelled claw unfold into a broad-ovate lamina, and have the groove of the nectary continued to the very top. Filaments red. Anthers dark purple. Style red. Capsule ovate, with brownish seeds^g.

Such is the description of the Orange Lily, as it is found wild in Austria. It grows in Italy and other southern regions of Europe; in Siberia also and Japan. It varies much in size, leaves and flowers. Mr. Miller mentions the following varieties.]

1. Orange Lily with double flowers. β .
2. Orange Lily with variegated leaves.
3. Smaller Orange Lily. γ .
4. Bulb-bearing fiery Lily. ϵ , ζ .

Seldom rising more than half the height of the others; the leaves narrower; the flowers smaller, and of a brighter flame-colour, few in number and more erect. They come out a month before those of the common sort, and the stalks put out bulbs at most of the axils, which, if taken off when the stalks decay, and planted, will produce plants. There are several subordinate varieties of this: as

1. The great broad-leaved. ϵ .
2. The many-flowered.
3. The small. η . Mill. n. 4.
4. The hoary bulb-bearing Lily. θ .

5. [This has a pretty large yellow scaly root, from which arises an upright stalk near three feet high, with long narrow leaves, almost triangular, having a longitudinal ridge on their under side; they are deep green and terminate in acute points. The upper part of the stalk divides into four or five peduncles, each sustaining a single flower of a fine carmine colour, with

^c Woodville.

^d Thunberg.

^e Curtis.

^f Salisbury.

^g Jacquin.

a few dark spots scattered over it. They appear in july, and when the season is not hot, they continue a considerable time in beauty^b.

Mr. Miller makes two species of this. The common Red Martagon just described, and what he calls the Martagon of Pompony]: the stalks of which rise higher, the leaves shorter, and set closer upon the stalks; each stalk sustaining from fifteen to thirty flowers, of a very bright red, approaching to scarlet. The peduncles are very long, so that the flowers spread out very wide. [Parkinson says that he has reckoned sixty and one hundred flowers on a plant, and that they are of a pale or yellowish red. He mentions several varieties.

Linneus distinguishes this species by its linear, sharp, three-sided, channelled leaves, and the chink of the nectary being very much toothed. But Thunberg remarks, that in Japan the leaves are awl-shaped, linear and lanceolate on different individuals, and that the corollas in his specimens were scarcely revolute.

Native of the Pyrenees, Siberia, Japan and China. It was cultivated in 1629, as appears from Parkinson¹.]

6. Scarlet Martagon is from three to four feet in height; the leaves are much broader than those of the preceding, and appear as if they were edged with white; they are placed very closely upon the stalks. The flowers are of a bright scarlet, and seldom more than five or six in number. It flowers late in july, and in cool seasons continues in beauty great part of august.

[Linneus remarks, that the raceme, before the flowers open, is scarcely curved in, as in the preceding and next following species, and that the stem is clothed with clustered leaves to the very top.

Mr. Curtis observes, that it varies in the number of flowers, from one to six, and that the colour in some is of a blood red. Jacquin describes the smell as disagreeable; whilst Scopoli compares it to that of an orange. This species, not being the Martagon of Linneus, Mr. Curtis, to avoid confusion, calls it Chalcædonian Lily.

Native of the Levant, and of the mountains between Carniola and Carinthia; if Jacquin's plant be the same with that from the East.

Clusius informs us, that it was brought from Constantinople to Vienna, before his arrival in that city.—It was cultivated here in 1596, by Gerarde^k.

There are some varieties of this in the size and colour of the flowers, which are sometimes of a blood red.

7. Stem round, very smooth and even, paniced at top, two feet high and more. Branches alternate, divaricating, upright, like the stem, reflex at top, flower-bearing. Stem-leaves alternate, subpetioled, folded together at the base, ovate-oblong, acute, quite entire, smooth, five-nerved beneath, spreading. One flower at the end of each branch. Corollas large and handsome. Petals oblong, acute, white with large purple spots and smaller black ones from the middle to the base: nectareous keel bearded^l.

Gouan asserts, that the leaves are constantly three-nerved.

Catesby says, that the flowers grow alternately on long footstalks, and that they are of an orange and lemon colour, thick spotted with dark brown.]

According to Miller, it rises with a strong stalk from four to five feet high. The flowers are produced in form of a pyramid, and when the roots are strong, there are forty or fifty flowers on a stalk; they are large, yellow with dark spots, and make a fine appearance, but smell so disagreeably, that few persons can endure to be near them. They appear at the end of june.

[Native of North America. Introduced into England from Pennsylvania by Peter Collinson, Esq.^m in 1738ⁿ.]

8. This rises with a strong stalk from three to four feet high. Leaves broad. Flowers dark purple, with

some spots of black; they are produced in loose spikes, appear in june, and have a disagreeable odour when near, but not so offensive as the preceding.

[Bulb composed of lanceolate, yellow, loose scales, with thick, long, whitish fibres at bottom. Stem straight, round, shining, from a foot and half to four feet in height, at the top of the bulb furnished with rooting fibres in whorls, pale green at bottom, the rest having black spots scattered over it; above and below the leaves are scattered, but in the middle they are in whorls; lanceolate, acute, somewhat nerved, quite entire, subpetioled: the stem terminates in a loose raceme, many-flowered, few-flowered, or sometimes one-flowered only. Peduncles purple, dotted with black, with lanceolate sharp bractes, two to the lower, and one to the upper flowers. Petals purple or pale, more or less spotted with black on both sides, the three outer hirsute with a raised line along the middle. Filaments and style pale. Anthers bay with an orange-coloured pollen. Germ green. Capsule brown^o.

Native of the South of Europe, and Siberia.—Cultivated in 1596, by Gerarde^p.]

β. The leaves of this are narrower; the whorls stand farther asunder; the leaves and stalks are somewhat hairy, and the buds of the flowers are covered with a soft down; the flowers are of a brighter colour, with few spots, and come out earlier, though the stalks appear much later above ground. It flowers early in june. Mr. Miller makes a distinct species of it under the name of *L. hirsutum* or Red Martagon. These flowers in old gardens are known by the name of Turk's Caps.

9. Bulbs oblong and large. Stems from four to five feet high. Leaves oblong, pointed. Flowers large, yellow spotted with black, shaped like those of the Orange Lily, and the petals not turned back so much as in the other Martagons. They come out in the beginning of august, and when the roots are large, in great numbers, making a fine appearance. There is a variety of this with larger deeper-coloured flowers.

[Linneus observes that the leaves are marked with three lines, and that the corollas are rolled back, yellow at the base with black dots.

On the summit of the stem, according to Catesby, are about twelve pendulous flowers on long arched peduncles; the petals are reflected very little, not more than those of the common White Lily.

Thunberg says that the leaves are lanceolate, nerved beneath, upright, an inch in length: corolla bell-shaped, bent back at the tips only, purple spotted.

This, says Parkinson, was brought into France from Canada by the French colony, and thence unto us, in 1629. It flowers in july and august^q. It is found in other parts of North America; for Catesby says it was sent to Mr. Collinson from Pennsylvania, and flowered several years in his garden. Thunberg also observed it in Japan.

10. Bulb roundish, small. Stem quite simple round, even, a foot high. Leaves lanceolate or lanceolate-linear, sessile, four or six, striated, rather blunt, even, upright; two or three of the upper ones usually alternate, narrower. Flowers terminating, few, an inch and half in diameter, on very short, naked, almost upright peduncles. Petals ovate, blunt, even, striated, purple, not rolled back, attenuated at the base. Filaments shorter by half than the corolla. Anthers upright. Germ triangular, oblong. Style none. Stigmas three, oblong, curved back, almost the length of the germ. Leaves as in the Martagons: but the flowers small, the size and form of *Lilium persicum*, or *Fritillaria persica*. The oblong stigmas without a style are singular in this genus^r.

Native of Kamtschatka, and also of China and Cochinchina, if Loureiro's plant be the same.]

11. Root smaller than in the other sorts, scaly and white. Stem single, upright, near a foot and half high. Leaves in four or five whorls, short, pretty broad, obtuse. Stem terminated by two flowers which stand

^k Mill. fig. ^l Hort. kew. ^m Ibid. ⁿ Thunberg.

^o Catesby.

^p Hort. kew.

^q Jacquin.

^r Hort. kew.

^s Ibid.

^t Linn. amoen. and Loureiro.

erect, upon short separate peduncles; they are shaped like those of the bulb-bearing fiery Lily, but the petals are narrower at their base, so that there is a considerable space between them, but upwards they enlarge and approximate, forming a sort of open bell-shaped corolla, but they terminate in acute points: they are of a bright purple colour, marked with several dark purple spots towards the base. It flowers in July, and the seeds ripen at the end of September.

[Linneus observes that it resembles the preceding very much, but the petals of that are ovate and sessile, whereas in this they are on oblong distinct claws.

Thunberg says, that the lower leaves are alternate, the upper ones three or four together, oblong, nerved underneath, an inch and half long.

Native of North America, and also, according to Thunberg of Japan. Linneus marks it as growing in Canada.] Mr. Miller says, that it was sent to him from Pennsylvania, by Mr. John Bartram. [Mr. Miller cultivated it in 1757, as appears from his figures*.

The species may be distinguished by the following table.

Leaves scattered, alternate.	1 to 7.	Flowers upright.
		1, 3, 4.
	{	1. Flowers several. White.
		3. Flower one. Orange-yellow spotted.
		4. Flowers commonly several. Orange-coloured, rugged within.
		Flowers reflex.
	{	2, 5, 6, 7.
		Solitary, White. 2.
		Several.
		Red. 5.
		Scarlet. 6.
		Yellow. 7.
Leaves in whorls.	8 to 11.	Flowers reflex. 8, 9.
		{ Petals revolute. Purple. 8.
	{	Petals reflex at the top only.
		Yellow-spotted. 9.
	{	Flowers upright. 10, 11.
		Few. Stigmas oblong without a style. 10.
		Two. Petals with distinct claws. 11.]

PROPAGATION AND CULTURE.

1. The common White Lily, with all its varieties, (and indeed all the sorts) may easily be increased from offsets, which the bulbs of this send out in so great plenty, as to make it necessary to take them off every other, or at most every third year, to prevent their weakening the principal bulb. The time for removing them is the end of August, soon after the stalks decay. They will thrive in almost any soil and situation, and as they grow tall and spread, they must be allowed room, and in large borders they are very ornamental. They are so hardy that no frost injures them; and increasing very fast by offsets, are become so common as to be little regarded, notwithstanding the great beauty of the flowers, and their rich odour, which indeed is too powerful for many persons.

4. The common Orange Lily is so common, and increases so readily by offsets, that it is almost rejected; however in large gardens it should not be wanting, since it makes a handsome appearance when in flower, if properly disposed.

The stalks decaying in September, the roots may be then transplanted, and the offsets taken off; but as it does not put out new leaves till towards spring, this may be done till near Christmas. It should be repeated once in three years. This sort will thrive in any soil or situation, but will be strongest in a soft gentle loam, not too moist.

The bulb-bearing varieties may also be increased without taking up the plants, by means of the little bulbs

that are put forth in plenty from the axils of the leaves.

Both these sorts, with their varieties, will thrive under the shade of trees, and are therefore proper to be introduced in plantations, and on the borders of woods.

5, 6, 7, 8, 9. All these may be propagated by offsets, which some produce in great plenty, but others send out very few, and are therefore more scarce. The roots may be taken up when the stalks decay; and if there be a necessity for keeping them out of the ground, to transport them to a distant place, they should be wrapped in dry moss; and they will keep thus for two months. The best time to replant them is the beginning of October, but if the ground be not ready to receive them, they should be covered with dry sand or wrapped in moss, to prevent the scales from shrinking, which weakens the bulbs, and often occasions them to be mouldy and to rot.

The roots should be planted five or six inches deep in the ground, especially if the soil be light and dry; but where it is moist, raise the borders five or six inches; for if the water come near the roots in winter, it will rot them; and where the soil is stiff and binding, mix a good quantity of sea-coal ashes or rough sand with it.

As the Canada, Pomponian and Philadelphian Martagons, (9, 5, 11) are somewhat more tender, in very severe winters, the surface should be covered with old tanner's bark or sea-coal ashes, to secure them from frost; and in the spring the covering may be removed, before the stalks shoot up.

The tall-growing sorts are only proper for large gardens, and may be intermixed with white and orange Lilies, tall-growing Irises, and other flowers of the same growth; where, if they be not too much crowded, and are properly disposed, they will make a good appearance. Some of the common Martagons thrive under the shade of trees, and may therefore be disposed to advantage in plantations.

None of the bulbs should ever be transplanted after they have made shoots, for it weakens them so as not to recover in less than two or three years.

In Holland they raise a great variety of Martagons. Those which are most generally found in the English gardens are,

The common Martagon with double flowers.

The White.

The Double White.

The White Spotted.

The Imperial.

The Early Scarlet.

The Constantinople Vermillion Martagon.

The way of obtaining these and other varieties, is by sowing the seeds of the best flowers, in square boxes, six inches deep, with holes bored in their bottoms, and filled with fresh light sandy earth. The beginning of October, soon after the seeds are ripe, is the proper season. Sow them pretty thick, covering them about half an inch with light sifted earth. Place the boxes where they may have the morning sun only, and refresh them often with water, if the season prove dry. In November remove them where they may have as much sun as possible, and be screened from wind. About the beginning of April remove them into their former position; for now the young plants, which are impatient of heat, will appear; and the earth will dry too fast, if exposed to the full sun at noon. Keep them entirely clear from weeds, and refresh them gently and cautiously with water, when the season is dry. Let the boxes remain till the beginning of August. Then prepare some beds of fresh light earth, and these being levelled, take the earth out of the boxes, with the small bulbs, and strew it equally over the beds, covering it half an inch thick with fine sifted earth. If the season prove hot and dry, shade the beds in the middle of the day, and refresh them with water.

If the following winter should prove severe, cover the beds with peas-haulm or other light covering, to keep out the frost; but this will be injurious to the bulbs in mild weather.

At the end of February, or the beginning of March, when hard frosts are over, gently clear off the earth

upon

upon the surface of the beds, and sift a little fresh earth over them; but in doing this do not disturb or injure the bulbs. Keep them clear from weeds; water them gently in dry weather; and in very hot days shade them from the sun. When their leaves are quite decayed, stir the surface of the beds again; and in september sift more fresh earth over the beds. During winter and spring manage them as before directed.

In september following transplant the bulbs to a greater distance, on beds prepared as above. Place them about eight inches asunder, with the buds uppermost, and four inches deep. This should be done in moist weather.

In severe frost cover the beds with peas-haulm or decayed tan, taking it off in spring, and refreshing the beds as before with new light earth.

The second year after being planted in these beds, the strongest bulbs will begin to flower. Then place a stick wherever you observe any peculiar varieties, and when the leaves are decayed, remove these bulbs into other beds at a greater distance, or into the borders of the flower-garden. But never reject any till they have flowered two years; for frequently some will make a mean appearance the first year, and afterwards become fair handsome flowers when they have obtained strength. When such have been selected as are worth preserving, the rest may be planted in shady outer walks, or in the borders of plantations.

[3. Catesby's Lily may be raised from seeds, or offsets, which however are not very plentifully produced; nor will it grow in perfection without great care: the roots in particular are to be guarded against frost. The soil and situation may be the same as recommended for *Cyclamen coum*.]

11. This sort growing in a small compass, and the flowers having no ill smell, is proper for the borders of small gardens. The stalks decay soon after the seeds are ripe. This is the proper time to remove the roots, which do not put out new fibres till after Christmas. The bulbs do not put out many offsets.

[LILIUM. See *Amaryllis*, *Crinum*, *Fritillaria*, *Gloriosa*, *Hæmanthus*, *Hemerocallis*, *Medeola*, *Pancratium*.

—— convallium. See *Convallaria*.

—— persicum. See *Fritillaria*.

—— superbum. See *Gloriosa*.

[LILY. See *Agapanthus*, *Amaryllis*, *Fritillaria*, *Gloriosa*, *Lilium*.

—— Day. See *Hemerocallis*.

—— Guernsey. See *Amaryllis*.

—— May. See *Convallaria*.

—— of the Valley. See *Convallaria*.

—— Persian. See *Fritillaria*.

—— Water. See *Nymphaea*.

—— Thorn. See *Catebæa*.

LIMA. See *Cynosurus*.]

LIME TREE. See *Citrus* and *Tilia*.

[LIMEUM. (The name of an herb in Pliny.)

Lin. gen. n. 463. Reich. n. 499. Schreb. n. 631.

Gærtn. t. 76. Juss. 314.

Class. 7. 2. Heptandria Digynia.

Nat. order of *Holoraceæ*. *Portulacææ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, acuminate, keeled, membranaceous on the margin: two exterior; permanent.

COR. Petals five, equal, ovate, somewhat clawed, obtuse, shorter than the calyx.

Nectary: a margin surrounding the germ, bearing the stamens.

STAM. Filaments seven or fewer, awl-shaped, shorter than the corolla. Anthers ovate.

PIST. Germ globose. Style two-parted, cylindric, shorter than the stamens. Stigmas rather obtuse.

PER. none. Fruit bipartile into

SEEDS two, hemispheric, hollow, naked, shaped like a meniscus, G.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five, equal. Caps. globular, two-celled.

* Curt. magaz.

SPECIES.

1. *Limeum africanum*. *African Limeum*.

Lin. spec. 488. syst. 352. Reich. 2. 138. suppl. 214.

Gærtn. fruct. 367.

Leaves oblong petioled (ovate-lanceolate subpetioled, Th.)

2. *Limeum incanum*. *Hoary Limeum*.

L. aphyllum. Lin. syst. 488. suppl. 214.

L. capense. Thunb. prodr. cap. 68.

Leaves ovate with a strong midrib underneath tomentose.

3. *Limeum æthiopicum*.

Thunb. prodr. cap. 68.

Leaves linear-lanceolate.

DESCRIPTIONS, &c.

1. Stature of *Corrigiola* or *Telephium*. Stems prostrate, weak, a span long, angular, naked, perennial at the base. Leaves alternate, remote, linear-lanceolate, small. Corymbs terminating, solitary, compound, naked, on long peduncles.

The leaves, so differently described above, seem to vary much. In the specimens of the Banksian herbarium, we have linear, oblong, ovate, roundish, and spatulate leaves, if the specimens be all of one species.

According to Gærtner, pericarp none. Seeds naked, united into a spherical fruit, spontaneously splitting when ripe. Seeds erect, dirty straw-coloured, on one side convex, excavated and rugged, and having a wide cavity on the other: outer coat coriaceous, of a middling thickness: inner very thin, pale: embryo of the same shape with the seed, or meniscus-form, farinaceous, very white: embryo roundish, semicircular, milky: cotyledons semicylindric; radicle long, bowed, inferior.

Introduced in 1774, by Mr. Francis Masson*.

2. This seems to be a small plant, as far as we can judge from Masson's specimen in the Banksian herbarium. It is extremely woody at bottom. The leaves are all ovate, subpetioled, and as lanuginose as those of *Mullein*. I am at a loss to account for the younger Linneus giving it the name of *aphyllum*, and saying that it seems to be leafless, when he has described them as ovate and sessile, and there are abundance of root-leaves, and no want of stem-leaves.

3. Of this we have no description; but it is only mentioned by Thunberg in his prodromus. We have here a deplorable instance of the insufficiency of trivial names, in *africanum*, *capense*, *æthiopicum*, which distinguish nothing; all these plants being natives of the Cape of Good Hope.

There is a fourth species in the Banksian herbarium, sent from the same country by Masson, which is truly a shrub, and may be called *Limeum fruticans*.

LIMEUM. See *Ranunculus Thora*.

LIMNANTHEMUM. See *Menyanthes*.

LIMNIA. See *Claytonia*.

LIMNOPEUCE. See *Hippuris*.

LIMO. See *Citrus*.]

LIMODÖRUM. (*Λειμωδωρον* of Clusius. Probably *λειμωνος* δωρον, the gift of the meadows.)

Lin. gen. n. 1013. Reich. n. 1098. Schreb. n. 1372.

Gron. virg. 110. Roy. lugdb. 16. Juss. 65.

Class. 20. 1. Gynandria Diandria.

Nat. order of *Orchideæ*.

GENERIC CHARACTER.

CAL. Spathes vague. Spadix simple.

Perianth none.

COR. Petals five, ovate-oblong, about equal, spreading: the superior ones converging.

Nectary one-leaved, concave, footstalked, within the lowest petal: the length of the petals.

STAM. two. Filament an oblong, ascending body, the length of the corolla. Anthers two, ovate, looking forwards.

PIST. Germ columnar, the length of the corolla; inferior. Style filiform, growing to the body of the filaments. Stigma funnel-form.

PER. Capsule columnar, three-valved, one-celled, gaping at the corners.

SEEDS numerous saw-dust-like.

OBS. Scarcely different from *Serapias*, except in the inflorescence or scape. Sw.

* Ling.

* Hort. kew.

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ESSENTIAL CHARACTER.

Nectary one-leafed, concave, pedicelled, within the lowest petal.

SPECIES.

- [1. *Limodorum tuberosum*. *Tuberous-rooted Limodorum*.
Lin. spec. 1345. *syft.* 816. *Reich.* 4. 32. *Gron. virg.* 138. *Ait. upf.* 1740. p. 21. *Swartz obs.* 322. *L'Herit. fert. angl.* 28. *Curt. magaz.* 116.
Flowers subspiked bearded.]
2. *Limodorum altum*. *Tall Limodorum*.
Lin. syft. 816. *Reich.* 4. 32. *Swartz obs.* 323. *L'Herit. fert. angl.* 28. *Brown. jam.* 325. 10. (Satyrium). *Mill. fig. t.* 145. *Mart. cent. t.* 50. (Helleborine). *Plum. ic.* 189.
Flowers beardless, spikes subpanicled.
- [3. *Limodorum Tankervilleæ*. *Chinese Limodorum*.
L'Herit. fert. angl. 28. *Ait. hort. kew.* 3. 302. t. 12.
Flowers beardless, in racemes.
4. *Limodorum utriculatum*.
Swartz prodr. 119.
Root tuberous, root-leaves twin-sheathed, radical sheath inflated, scape sheathed, flowers sessile.
5. *Limodorum gentianoides*.
Swartz prodr. 119.
Root tuberous: leafless, stem sheathed, flowers peduncled.
6. *Limodorum striatum*.
Thunb. jap. 28.
Epidendrum striatum. *Thunb. in transf. Linn. soc.* 2. 327. *Diët. nostr. n.* 121.
Scape angular smooth, leaves ensiform nerved, petals lanceolate, with an oblong flat lip.
7. *Limodorum ensifolium*.
Thunb. jap. 29. *Kämpf. ic. sel. t.* 3.
Epidendrum ensifolium. *Thunb. in transf. Linn. soc.* 2. 327. *Diët. nostr. n.* 27.
Scape round even, leaves ensiform striated, petals lanceolate, lip recurved broader.
8. *Limodorum falcatum*.
Thunb. in transf. Linn. soc. 2. 326.
Orchis falcata. *Thunb. jap.* 26.
Horn filiform very long, leaves ensiform-channelled sickled.
9. *Limodorum monile*.
Thunb. in transf. Linn. soc. 2. 327.
Epidendrum monile. *Thunb. jap.* 30.
E. moniliforme. *Diët. nostr. n.* 28.
Scape round striated jointed like a necklace simple, leaves linear acute.
10. *Limodorum virens*.
Roxb. corom. 2. 32. t. 38.
Root scaly, scape branched spotted, bractes acute, flowers remote greenish yellow.
11. *Limodorum recurvum*.
Roxb. corom. 2. 33. t. 39.
Root tuberous, scape bending nodding, shorter than the leaves, leaves broad-lanceolate five-nerved, spike globular nodding.
12. *Limodorum nutans*.
Roxb. corom. 2. 33. t. 40.
Root tuberous, scape arched longer than the leaves ovate five-nerved, spike oblong pendulous.
13. *Limodorum aphyllum*.
Roxb. corom. 2. 34. t. 41.
Root fibrous: leafless, flowers solitary naked, sessile.

DESCRIPTIONS, &c.

1. Root tuberous. Stem a foot and half high. The number of flowers not exceeding five, dark purple. In a more luxuriant state, it is probably a larger plant, and produces more flowers^a.

Native of North America; as Virginia and South Carolina.—Introduced in 1788 by Mr. Curtis, from bog earth brought over with plants of *Dionæa Muscipula*^b.

This species was long confounded with the next.]

2. Root shaped like that of the true Saffron, but the outer cover of a darker brown colour; from this come out two or three leaves, nine or ten inches long, and near three quarters of an inch broad in the middle, being contracted towards both ends, terminating

^a Curtis.

^b Ibid.

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with long acute points, folding over each other at their base; they have five longitudinal furrows, like the first leaves of young Palms. The flower-stalk arises immediately from the root, on one side of the leaves; it is naked, smooth, and of a purplish colour towards the top. It is near a foot and half high, and terminated by a loose spike of purplish red flowers on short peduncles.

[Bulb tubercled, roundish, of a fleshy and fibrose substance, covered with a coriaceous shining skin, and having some tomentose white fibres underneath. Leaves from the bulb, vernal, two feet long, broad-lanceolate, longitudinally folded at the nerves, even, very like those of a young plant of the Coco Palm. Scape simple, upright, sometimes subdivided at top, two feet high, even, round. It has little sheaths on it, which are remote, præmorse, embracing, netted, pale. Flowers terminating, scattered, alternate, large, purple, sometimes varying to white. The three outer petals are upright, spreading; the two inner bent in, forming a helmet with the middle upper one; all equal, converging a little, the inner ones paler. Nectary ventricose, cordate, embracing the column with its base; lip recurved two-lobed whitish, with longitudinal blood-red grooves, and others sulphur-coloured; the middle appendicled with an ovate emarginate blood-red little jag. Column elongated, gibbous, boat-shaped, dilated at top, cordate, having the two anthers on very short pedicels in a case, stigma tubular in front. Germ oblong, attenuated. Capsule large, oblong, pedicelled, attenuated at the base^c.

According to Swartz, this is the tenth Satyrium of Browne, who calls it *Jamaica Salep*, and recommends the root, properly cured, as a stomachic.

Native of the West Indies, particularly Jamaica, in the cooler parts of the mountains. It was sent to Mr. Miller by Dr. Houftoun, and therefore was cultivated by him at Chelsea before 1733, in which year Dr. Houftoun died.] Mr. Miller says he also received the roots from the Bahama islands, and from Pennsylvania. Probably this might be the first species. He also mentions that he received a species from Maryland with oval obtuse leaves, of a thicker consistence.

L. altum sometimes flowers here in april and may, sometimes not till september or october, but the most usual time of flowering is june and july. [In Jamaica it flowers in summer.

3. Monf. L'Heritier observes, that although the lip of the nectary in this splendid plant ends behind in a very short spur, it ought not however to be separated from this genus.

Native of China. Introduced about 1778 by John Fothergill, M. D. It flowers in march and april^d.

4. Native of Jamaica and St. Domingo.

5. Native of Jamaica^e.

6. See the description under *Epidendrum striatum*.

7. See the description under *E. ensifolium*. It is a native of China and Japan, and was cultivated here in 1780, by John Fothergill, M. D.^f

The scape is not ancipital or two-edged, but round, and it has no horn to the nectary.

8. This is *Orchis falcata* of Thunberg's flora japonica. Leaves radical, several, equitant, convoluted, revolute-sickled, smooth, a finger's length, the lower ones shorter. Scape upright, smooth, shorter than the leaves. Flowers in spikes, terminating.

Native of Japan^g.

9. See the description under *Epidendrum moniliforme*. It is not parasitical, but grows on walls and in hedges. The sheaths of the leaves have several ribs^h.

10. Bulbs many, connected near the base, coisical, pointed, surrounded with the circular marks of the inflexions of the leaves, greenish; many fleshy fibres issuing from the base. Leaves all radical, several, linear, slightly nerved, nearly the length of the scape, about an inch broad, smooth. Scape axillary, erect, often branched, from one to two feet high, round,

^c Swartz.

^d Hort. kew.

^e Swartz.

^f Hort. kew.

^g Thunb. jap.

^h Ibid. and Linn. transf.

smooth,

smooth, coloured with purple spots; here and there a sheathed acute bracte. Flowers striated: petals nearly equal, erect or ascending. Under lip of the nectary projecting, broader but shorter than the petals, laterally lobed: lobes involute: middle division large, heart-shaped, fringed.

Native of Coromandel, on dry uncultivated ground, flowering during the cold season.

11. Bulbs striated, nearly round, surrounded with one or two rings, and having many thick fleshy fibres from their lower parts. Stem from the side or base of the bulb: it is no other than the sheathed petioles of the three or four leaves united, scarcely appearing above ground. Leaves slender in substance, a little waved round the margins, smooth, from six to twelve inches long, and three or four broad. Scape from the same part of the bulb with the stem, and even sometimes involved in the lowermost sheath or two of the scape, about six inches long, or rather less than half the length of the leaves; a few sheaths surrounding it here and there. Spike many-flowered, with the apex directed to the ground. Bractes sessile, straight, lanceolate, one to each flower. Flowers numerous crowded, white with a small tinge of yellow. Petals nearly equal. Under lip of the nectary broad; apex rounded, undivided, shovel-form, crenulated: horn scarcely any.

Native of Coromandel, in moist valleys among the hills, flowering at the beginning of the rainy season.

12. This differs from the preceding in having the bulbs smooth, the leaves oval, the scape longer than the leaves; the spike oblong and pendulous, with the flowers at some distance from one another, of a beautiful rose-colour, and the under lip of the nectary sharp-pointed.

Native of the same places, and flowering at the same time.

13. Stems perennial, several, most simple, spreading or pendulous as the situation admits, naked, round, jointed at every inch, and at each joint small membranaceous annular scales, without the least vestige of a leaf. Flowers generally issuing single from the joints of the stems. Nectary large, near the base, the sides incurved, so as to form as it were a tube, the exterior part expanded, margins curled, waved and ciliated: it is of a pale purple colour.

Native of Coromandel but very rare there, on dry rocky hills; flowering in the beginning of the hot season¹.

PROPAGATION AND CULTURE.

1. From the little experience we have had of the management of this species, it appears to be scarcely hardy enough for the open border, yet not tender enough to require a stove. The first plants were produced here by planting the roots in pots filled with bog earth, and plunging them into a tan-pit which had a gentle heat, for the purpose of raising plants or seeds, and for striking cuttings.]

2, &c. The other sorts are much too tender to thrive in the open air in England, and seldom flower in a greenhouse. They are kept therefore in the tan-bed in winter; and if in summer the pots be plunged in a tan-bed under a deep frame, the plants will thrive, and flower strongly.

They are propagated by offsets from the roots, which are sent out pretty freely (from the second sort) when the plants are in vigour. These should be taken off and transplanted, when the plants are most destitute of leaves. They should have a soft loamy soil, and little water, especially in winter.

LIMODORUM. See *Orchis* [and *Satyrium*].

LIMON. See *Citrus*.

LIMONIA. (*Limonia*, alterum genus *Anemones*, *Plin.* 21. 11. 38. *Λιμονία* *Theophr.* 9. *pratensis*.)

Lin. gen. n. 534. *Reich.* n. 582. *Schreb.* n. 720. *Juss.* 261.

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leafed, three or five-cleft, acute, very small, permanent.

¹ Roxburgh.

COR. Petals three to five, oblong, obtuse, upright, spreading at the tip.

STAM. Filaments six to ten, awl-shaped, upright, shorter than the corolla. Anthers linear, upright.

PIST. Germ oblong, superior. Style cylindric, length of the stamens. Stigma headed, flat.

PER. Berry ovate or subglobose, three-celled: partitions membranaceous.

SEEDS solitary, ovate.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five. Berry three-celled. Seeds solitary.

SPECIES.

1. *Limonia monophylla*. Simple-leaved *Limonia*.

Lin. syst. 402. *mant.* 237. *Reich.* 2. 279. *Roxb. corom.* 59. t. 83.

Limones pusilli zeylanici sylvestres. *Burm. zeyl.* 143. t. 65. f. 1.

Leaves simple, spines solitary.

2. *Limonia lucida*.

Forst. flor. austral. n. 191.

Unarmed, leaves simple, peduncles axillary.

3. *Limonia trifoliata*. Three-leaved *Limonia*.

Lin. syst. 402. *mant.* 237. *Reich.* 2. 279. *Jacqu. ic.* 3. 463. *collect.* 3. 176. *Burm. ind.* 103. t. 35. f. 1.

Triphasia Aurantiola. *Lour. cochinch.* 153.

Leaves ternate, spines in pairs.

4. *Limonia pentaphylla*. Five-leaved *Limonia*.

Retz. obs. 5. 24. n. 59. *Roxb. corom.* 60. t. 84.

Unarmed, leaves commonly quinate, leaflets oblong, entire.

5. *Limonia acidissima*.

Lin. syst. 402. *mant.* 380. *Reich.* 2. 279. *Burm. ind.* 102. *Lin. zeyl.* n. 175. (*Schinus*). *Rumph. amb.* 2. 133. t. 43. (*Anisifolium*.)

Leaves pinnate, spines solitary.

6. *Limonia arborea*.

Roxb. corom. 4. 60. t. 85.

Stem arboreous, unarmed, leaves quinate, leaflets linear, ferrate.

7. *Limonia crenulata*.

Roxb. corom. 4. 60. t. 86.

Tsjeru-Catu-Naregam. *Rheed. mal.* 4. 31. t. 14.

Leaves alternate or fascicled: leaflets two or three pairs with broad-winged petioles, spines solitary.

DESCRIPTIONS, &c.

1. Leaves oblong-ovate. Spines axillary, solitary. Peduncles axillary, clustered, one-flowered^k. Petals four. Stamens eight, monadelphous^l.

Trunk irregular, with a smooth greenish-ash-coloured bark. Branches numerous very irregular. Spines very strong and sharp, but in many plants entirely wanting. Leaves alternate on short petioles, emarginate, smooth, firm, from two to three inches long, an inch or an inch and half broad. Stipules awl-shaped. Racemes short. Bractes awl-shaped, small. Calyx four or five-parted. Corolla four or five-petalled: petals oval, equal, spreading. Nectary cylindric, with a ten-toothed mouth; teeth alternately longer; the anthers rest on these teeth, without any filaments. Germ globular: style the length of the nectary: stigma four or five-lobed. Berry size of a nutmeg, very like a Lime, whence comes the Hindoo name *Adavie-nima*, or wild Lime. It is commonly four-celled, and the seeds are generally solitary.

Native of Coromandel, in the large forests on the coast, where it grows to a small tree, though oftener found in the state of a large shrub^m.—Introduced in 1777, by Dan. Charles Solander, L.L.D.ⁿ

2. Native of the island of Mallicollo in the South Seas^o.

3. This tree has the appearance of an Orange, with flexuose branches. Leaves alternate, petioled, quite entire, have pores scattered over them, the same size with those in *Jasminum fruticosum*: lateral leaflets sessile, the middle one larger, emarginate. Spines stipular, longer than the petiole. Berry peduncled, globular, smooth, red, the size of those of *Vaccinium*^p.

^k Linn. mant. ^l Jussieu.

^m Forster.

ⁿ Roxburgh.

^o Linn. mant.

^p Host. kew.

Jussieu informs us that he has seen this species with three petals and five stamens. Jacquin describes it with three petals and six stamens, and remarks that in a few flowers he observed four petals and eight stamens.

According to him, the whole tree is smooth, the height of a man (in the stove), with a trunk the thickness of the human arm, covered with a brownish ash-coloured bark, very much branched, the branchlets alternate, spreading. Spines awl-shaped, straight, spreading, on each side at the leaves and branchlets, the older ones near half an inch long. Leaves sub-bifarious, on very short petioles, shining: leaflets blunt, retuse, very obscurely crenate, with pellucid dots on both sides; the lateral ones ovate, half an inch long; the middle one lanceolate, an inch and more in length. Flowers sweet-smelling, on very short peduncles, axillary, in pairs or three together, succeeding each other slowly. Calyx somewhat villose, green. Corolla and filaments white. Anthers pale yellow. Stigma yellow. Fruit red-bay, soft, the size of a hazel nut. Pulp colourless, very sweet, with a slight taste of turpentine; before it is ripe glutinous and tasting strong of turpentine. Seeds pale coloured with green and purple, large, smooth, containing a green, two-lobed kernel, of an unpleasant acrid taste. One or two seeds only usually ripen; and then the partitions are so pressed together, that the number of cells cannot easily be discerned.

The calyx is bell-shaped, blunt, with a trifid mouth. The anthers are oblong and incumbent. Germ oval, obscurely three-cornered. Style filiform, upright, longer than the stamens. Stigma three-lobed-headed. Berry roundish, five-celled. Seeds solitary, oval, compressed a little.

Loureiro describes his *Triphasia*, which, supposing it to be of a new genus, he named from the prevalence of the number three in the leaves, corolla and calyx, as a tree of five feet in height, with abundance of spreading, twisted, subdivided branches: the leaflets ovate, emarginate, flat, smooth, small, odoriferous, of a brownish green colour. Prickles axillary, straight, very sharp, shorter than the leaves. Flowers white, axillary, solitary, with thickish petals. Berries red, ovate, like those of Coffee, but only half the size, covered with a thin pellicle, and containing a clammy, sweet, inodorous, eatable pulp, and a single ovate seed.

It is a native both of China, and CochinChina, where it is much cultivated both for the beauty and smell, and the pliancy of its branches. Jacquin's plant also came originally from China, though immediately from the island of Mauritius. He says that it flowers very well in the open air from may to july, and bears abundance of fruit in september^a. According to Burman it is a native of Java.

4. Leaves alternate, ovate, acute, entire, the size of Citron leaves. Partial petioles short, winged, but the wings bent in. Racemes short, compound. Flowers minute. Calyx five-toothed^r.

Trunk scarcely any, with an ash-coloured bark. Branches numerous, nearly erect. Leaves in threes, four or fives, but generally in fives, feather-form: leaflets alternate, oblong, smooth, shining, from two to three inches long, and about an inch and half broad. Petiole round, smooth. Racemes terminating and axillary, often compound, covered with a rust-coloured down. Bractes small concave, one under each subdivision of the raceme. Flowers white, very fragrant. Nectary a notched ring surrounding the base of the germ. Filaments swelled at the middle, alternately shorter. Berry round, red, smooth, size of a small cherry, pulpy. One or two seeds only come to maturity, though the germ has always the rudiments of five.

It is an elegant fragrant shrub, very common in most uncultivated lands in Coromandel, but chiefly under large trees, where birds have dropped the seeds. It flowers all the year there. The whole plant, when drying in the shade, diffuses a pleasant permanent

^a Jacqu. collect.

^r Retz.

scent; the flowers are exquisitely fragrant; birds eat the berries greedily.

5. This tree is said to attain the height of thirty feet, with a trunk ten inches in diameter. The leaves have the smell of Anise, and so has the fruit, whence Rumphius calls it *Anisum moluccanum*. Spines straight, acute, in the axils between the branch and the petiole. Common petiole or rachis membranaceous, jointed. Leaflets obovate, opposite with an odd one, smooth, emarginate. There are no spines on the petioles. Perianth very small, five-cleft. Petals five, spreading. Filaments eight or ten, with thick anthers. Germ roundish. Style thick, short.

Native of the East Indies^r.

6. Leaves alternate, in fives: leaflets alternate smooth, five inches long, and about two broad. Panicles terminating, and from the exterior axils. The rest as in *L. pentaphylla*.

The berries are also eaten by birds, and the flowers are equally fragrant with those of the fourth sort. In their habit these two agree, and the ferrate leaves are the chief distinction.

Native of the mountainous parts of the Circars, where it grows to a middle-sized tree, with a large branching head.

7. Leaves on the young shoots alternate, on the woody branchlets fascicled, feathered with an odd one, three to four inches long. Leaflets two or three pairs, opposite, sessile, oblong, nearly equal, slightly notched, obtuse, smooth, of a slight texture, covered with numberless small diaphanous points; one inch long and half an inch broad. Petiole broad-winged, leaf-like, jointed. Flowers white, small, fragrant, collected in small umbels or racemes over various parts of the branchlets. Calyx four-toothed. Petals four, lanceolate, spreading. Nectary a ring surrounding the base of the germ. Filaments eight, rather shorter than the petals, broad towards the base, spreading. Anthers incumbent, oval. Germ sessile. Style thick, shorter than the stamens. Stigma oblong. Berry the size of a large pea, smooth, juicy, when ripe black, four-celled. Seeds four, but it seldom happens that all come to maturity.

Native of Coromandel, on the low lands near the coast. It is there a shrub, but in the mountains it grows to a middle-sized tree. It flowers in the hot season^r.

LIMONIASTRUM. See *Statice*.

LIMONIUM. See *Sarracenia* and *Statice*.

LIMOSELLA. (*Dimin. from limus, mud; in which it delights to grow.*)

Lin. gen. n. 776. Reich. n. 837. Schreb. n. 1039.

Gertn. t. 50. Juss. 96. Plantaginella. Dill. gen. 6.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Precie. Lyfimachia*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, upright, sharp, permanent.

COR. one-petalled, bell-shaped, upright, equal, five-cleft, acute, small: *divisions* spreading.

STAM. Filaments four, upright, of which two are approximated to the same side, shorter than the corolla. Anthers simple.

PIST. Germ oblong, obtuse, two-celled. Style simple, length of the stamens, declinate. Stigma globose.

PER. Capsule ovate, half involved by the calyx, one-celled, divided below by the partition, two-valved.

SEEDS very many, oval. Receptacle ovate, large.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. five-cleft, equal. Stam. approximating by pairs. Caps. one-celled, two-valved, many-seeded.

SPECIES.

1. *Limosella aquatica*. Common Mudwort or Bastard Plantain.

Lin. spec. 881. syst. 572. Reich. 3. 181. fl. lapp. n. 249. fl. suec. n. 565. Hudf. angl. 276. Wither. arr. ed. 3. 537. Engl. bot. 357. Lightf. scot. 331. Relb. cant. n. 469. Gertn. fruct. 1. 228. Hall.

^r Linn. zeyl.

^r Roxburgh.

helv. n. 300. Gmel. fib. 4. 72. n. 5. Fl. dan. t. 69. Crantz. austr. 353. Villars dauph. 2. 443. Krock. files. n. 1005. t. 27.

L. annua. Lind. alfat. 156. t. 5. f. 1.

Plantaginella. Hall. jen. 23. t. 6. f. 2. — palustris. Baub. pin. 190. Raii hist. 1077. syn. 278. Mor. hist. 3. 605. f. 15. t. 2. row. 2. Petiv. brit. t. 65. f. 12.

Plantago aquatica minima. Clus. Park. theat. 1244. n. 4.

Spergula perpusilla, lanceolatis foliis, Loef. pruss. 261. t. 81.

Alfine palustris repens, fol. lanceolatis. Pluk. phyt. t. 74. f. 4. — exigua, foliolis lanc. Mentz. pug. 2. t. 7. f. 6.

Leaves lanceolate.

2. *Limosella diandra.*

Lin. syst. 572. Reich. 3. 181. mant. 252. Krock. files. n. 1006.

Leaves sublinear.

DESCRIPTIONS, &c.

1. Root annual, throwing out naked cylindrical prostrate runners, which take root at their extremities, and form new plants. Leaves radical, on long foot-stalks, spatulate, smooth, entire. Flowers small, radical, on simple flower-stalks, which become inflexed as the fruit ripens. Segments of the the calyx sharp, the two uppermost least deeply divided. Corolla with a swelling tube; the limb in five equal segments, whitish without, red on the inside, the two uppermost of which are a little inflexed. Stamens ascending, divaricated in pairs towards each side of the flower. Style declining, with a blunt rough stigma. Capsule globular, with a groove along its upper side. Seeds very numerous^a.

Linneus remarks, that the leaves are involute. Dr. Smith says he has not found them so.

Native of many parts of Europe, in muddy and gravelly places liable to be flooded, and where water has stood during the winter. Flowering from july to september.

2. This has entirely the habit of the preceding, but it is only one-fourth of the size, so that it is one of the least plants we are acquainted with. It increases like the last by runners, and these are very short. Leaves radical, linear, scarcely widening in the middle, blunt at the end. Scapes capillary, one-flowered, the length of the leaves. Stamens no more than two.

Found by Koenig at the Cape of Good Hope, on the coast^b.

LINAGROSTIS. See *Eriophorum*.

LINARIA. See *Antirrhinum*, *Chenopodium*, *Chrysocoma*, *Stellera*, *Thesium*, *Utricularia*.

LINARIÆ AFFINIS. See *Senecio*.

LINCONIA.

Lin. gen. Reich. n. 335. Schreb. n. 433. Mant. 147. Juss. 442.

Class. 5. 2. Pentandria Digynia.

GENERIC CHARACTER.

CAL. Perianth inferior, four-leaved: leaflets ovate, permanent: the inferior opposite pair shorter.

COR. Petals five, lanceolate, sessile, upright.

Nectary, a dell impressed on the bottom of the petal, girt beneath by the margin.

STAM. Filaments five, awl-shaped, margined, upright, middling. Anthers obtuse, sagittated with nutant, gaping auricles.

PIST. Germ half-inferior with respect to the corolla; with respect to the calyx, superior. Styles two, filiform, striated. Stigmas simple.

PER. Capsule two-celled.

SEEDS two?

OBS. The Perianth perhaps might be taken for Bractes; and then the flower would be entirely superior.

ESSENTIAL CHARACTER.

Petals five, with a nectareous excavation at the base. Caps. two-celled.

^a Engl. bot.

^b Linn. mant.

SPECIES.

1. *Linconia alopecuroidea.*

Lin. syst. 261. Reich. 1. 615.

Coridis folio & spica africana frutex alopecuroides, flore albo. *Herm. afric. 7.*

DESCRIPTION, &c.

This is a shrub with wandlike branches, irregular from the base of the falling leaves, as in the Fir-tree. Branches few, determinate. Leaves scattered, in a sort of whorl, five or six together, subpetioled, linear, three-sided, stiffish, shining, an inch long; rugged at the angles; the uppermost ciliate. Flowers at the ends of the branches, not however in bundles but separate, lateral, sessile, the length of the leaves. Leaflets of the calyx not disposed in a ring, but by pairs alternately opposite, villose at the edge. Corollas tenacious, flesh-coloured or white.

Native of the Cape of Good Hope, in watery places among the mountains.

There is another species from the same country in the Banksian herbarium, with the flowers in bundles and heads.

LINDERA. (So named by Thunberg, from J. Linder, a Swede, who published *De Hesperidum pomis*, Aboæ 1702. *Liber de Venenis*, Leid. 1708. 12°. Lips. 1739. 8°. *Swenska fargakonst, &c.* Stockh. 1720. 8°. *Flora Wiksbergensis*, Stockh. 1728. 8°.

Thunb. jap. 9. nov. gen. 64. Lin. gen. Schreb. n. 597. Juss. 429.

Class. 6. 1. Hexandria Monogynia.

GENERIC CHARACTER.

CAL. none.

COR. Petals six, ovate, obtuse.

STAM. Filaments six, many times shorter than the corolla. Anthers minute.

PIST. Germ ovate, smooth, superior. Style upright, rather shorter than the corolla. Stigmas two, reflex.

PER. Capsule two-celled:

SEEDS

ESSENTIAL CHARACTER.

Cor. six-petalled. Capsule.

SPECIES.

1. *Lindera umbellata.*

Lin. syst. 339. Thunb. jap. 145. t. 21.

Kuro Nosji. *Kempf. amoen. 5. 908.*

DESCRIPTION, &c.

Stem shrubby, loose. Branches and branchlets alternate, flexuose, smooth, spreading very much. Leaves aggregate at the ends of the branchlets, petioled, oblong, acute, entire, above green and smooth; underneath pale and villose, an inch long. Petioles scarcely a line in length, villose above. Flowers terminating, in a simple many-flowered umbel. Peduncles a little hairy, unguicular. Pedicels tomentose, about half the length.

The Japonese use the wood for making soft brushes to clean their teeth with^c.

LINDERNIA. (So named by Allione, from Franc. Balthas. à Lindern, physician at Strasburgh. author of *Hortus Alsaticus* 1747.)

Lin. gen. Reich. n. 828. Schreb. n. 1031. Mant. 154. Juss. 122, 450.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Scrophularia*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: divisions linear, sharp, permanent.

COR. one-petalled, ringent, two-lipped. Upper lip very short, concave, emarginated; lower lip upright, three-cleft: the middle one rather larger.

STAM. Filaments four, twin: the two superior ones simple: the two inferior ascending: with a terminal, upright tooth. Anthers twin: the inferior ones sublateral.

PIST. Germ ovate. Style filiform. Stigma emarginated.

PER. Capsule oval, one-celled, two-valved.

SEEDS numerous. Receptacle cylindric.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. ringent, with the upper lip very short. Stam. the two lower with a terminating tooth and a sublateral anther. Caps. one-celled.

^c Thunb. jap.

SPECIES.

1. *Lindernia pyxidaria*.
Lin. syst. 567. *Reich.* 3. 170. *mant.* 252. *Allion.*
pedem. n. 203. *misc. taur.* 3. 178. t. 5.
Capraria gratioloides. *Lin. spec.* 876.
Pyxidaria repens annua, flosculis monopetalis unilabiatis. *Lind. alfat.* 1. 156. t. 5. & 2. 269. f. g.
Gratiola flor. pedunculatis, fol. ovatis crenatis. *Gron. virg.* 3.
Ruellia pedunc. solitariis unifloris longitudine foliorum.
Gron. virg. 73.
Antirrhinum palustre minus Centaurii minoris foliis.
Hall. jen. 237.
Leaves sessile quite entire, peduncles solitary.
2. *Lindernia dianthera*.
Swartz prodr. 92.]
Erinus procumbens. *Mill. dist.* n. 6.
Ageratum americanum procumbens glabrum, floribus luteis longis pediculis infidentibus. *Houft. MSS.*
Leaves petioled ovate-roundish subserrate, stem creeping.
- [3. *Lindernia japonica*.
Lin. syst. 567. *Thunb. jap.* 253.
Leaves obovate toothed, the lowest petioled.

DESCRIPTIONS, &c.

1. Root annual. Stem smooth, square, brittle, sometimes branched and putting forth runners. Leaves small, slightly crenate, like those of *Anagallis*, opposite. Flowers axillary, solitary, on a long slender peduncle. Calyx cut into five acute segments almost to the bottom. Corolla pale blue^d.

Native of Virginia, in watery and boggy places, flowering in July and August. Hence it has migrated into Europe, and is now found in like situations in Alsace and Piedmont.

2. This also is an annual plant, a native of Hispaniola^e. Mr. Miller's description has been already given under *Erinus procumbens*. It must have been cultivated by him before 1733, the year of Dr. Houtton's death.

3. Root annual. Stem herbaceous, branched, weak: branches alternate, somewhat villose, from an inch to a span in length. Root-leaves very many, petioled; stem-leaves few, sessile; all obovate, blunt scarce apparently villose, unguicular. Petioles the length of the leaves. Flowers at the ends of the branches, in racemes. A very minute bracte under the peduncles. Corolla rufescent. Capsule ovate, blunt, twin, smooth. Native of Japan^f.

LINGOUM. See *Pterocarpus*.

LINGUA. See *Ranunculus* and *Serapias*.

— cervina. See *Acrostichum*, *Asplenium*, *Hemionitis*, *Polypodium*, *Pteris*.

— passerina. See *Stellera*.

LINKIA. See *Tremella*.

LINNÆA. (So named by Gronovius, in honour of the celebrated Linnaeus or Carl v. Linné.)

Lin. gen. n. 774. *Reich.* n. 835. *Schreb.* n. 1037. *Juss.* 211.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Aggregatæ*. *Caprifoliæ*, *Juss.*

GENERIC CHARACTER.

CAL. Perianth double.

Perianth of the Fruit inferior, four-leaved: the two opposite leaflets very small, acute; the remaining two elliptic, concave, upright, hispid, embracing the germ, converging, permanent.

Perianth of the Flower superior, one-leaved, five-parted, upright, narrow, sharp, equal.

COR. one-petalled, bell-shaped, half-five-cleft, obtuse, subequal, twice as large as the calyx of the flower.

STAM. Filaments four, awl-shaped, inserted into the bottom of the corolla: of which two are very small; the two nearest longer, shorter than the corolla. Anthers compressed, versatile.

PIST. Germ roundish, inferior. Style filiform, straight, length of the corolla, declinate. Stigma globose.

PER. Berry juiceless, ovate, three-celled, covered by the hispid glutinous perianth of the fruit, deciduous.

SEEDS two, roundish.

^d Clayton in *Gron. virg.*

^e Swartz.

^f Thunberg.

ESSENTIAL CHARACTER.

Cal. double, of the fruit two-leaved, of the flower five-parted, superior. Cor. bell-shaped. Berry dry, three-celled.

SPECIES.

1. *Linnaea borealis*. Two-flowered *Linnaea*.
Lin. spec. 880. *syst.* 572. *Reich.* 3. 180. *fl. lapp.*
n. 250. t. 12. f. 4. *fl. suec.* n. 562. t. 1. *hort.*
cliff. 320. *mat. med.* 57. *Wither. arr. ed.* 3. 556.
Hall. helv. n. 299. *Segu. veron.* 1. 183. *Sauv.*
meth. 137. *Kalm. itin.* 2. 263. *Gort. ingr.* 100.
Oed. dan. t. 3. *Aët. nidros.* 4. t. 4. f. 6. *Gmel.*
fib. 3. 128. n. 4. *Ebrh. phyt.* 5. *Zorn. ic.* t. 79.
Blackw. t. 597. *Ludw. etl.* t. 142. *Krock. fles.*
n. 1004.
Valerianella nemorosa repens. *Amm. ruth.* n. 27.
Obolaria. *Siegesb. prim.* 79.
Serpillifolia. *Buxb. in comm. petrop.* 2. 346.
Campanula serpillifolia. *Bauh. pin.* 93. *prodr.* 35.
Aët. upf. 1720. p. 96. t. 1. *Scheuch. alp.* 131.
Tourn. inst. 112. *Rudb. lapp.* 96. f. 1. *Bauh.*
bist. 2. 816. *Mor. bist.* 5. 2. 19. *Raii bist.* 741.
Nummularia norvegica, flore purpureo. *Kyll. aët.*
hafn. 2. 346. f. C.—repens, fol. dentato, flor. geminis. *Petiv. cent.* 76.
N. major, rigidioribus & rarius crenatis foliis. flore purpureo gemello. *Pluk. alm.* 264.

DESCRIPTION, &c.

1. Root perennial, fibrous. Stems filiform, from three to six feet long, loose, creeping, round, perennial, ferruginous, with a few white hairs scattered over them. Leaves opposite, roundish-ovate, spreading, attenuated into the petioles, with two or three serratures on each side, having a few upright hairs on the upper surface, and only on the midrib in the lower. Branches alternate, simple, upright, with six or eight leaves on them. Peduncles terminating the older branches, solitary, a finger's length, upright, having different hairs scattered over them; some very minute, reflex, pellucid, others spreading, secreting a glutinous juice. Universal umbel bifid, with distant rays: partial one-flowered, horizontal. Universal involucre two-leaved, upright, awl-shaped very short: partial the same. Perianth of the fruit ovate, a little less than the germ, ciliate, the cilia pellucid, bent outwards; it has short hairs scattered all over it, terminated by a yellow globular gland. Germ ovate, with glandular hairs. Perianth of the flower five-parted, upright, ciliate with pale hairs, and having glandular hairs. Perianth of the flower five-parted, upright, ciliate with pale hairs, and having glandular hairs scattered about it; the calycine segments lanceolate-awl-shaped. Corolla turbinate, three times as long as the calyx, smooth and white on the outside, having a few hairs scattered over it within, with blood-red veins within the cavity, which are yellow on the lower side. Stigma hispid.

The smell of the flowers approaches to that of *Ulmaria* or Meadow-sweet, and is so strong during the night as to discover this little plant at a considerable distance.

In Sweden, where the plant is common, an infusion of the leaves in milk is employed in the rheumatism. In Norway, they cure the itch with a decoction of it. And in Ostrobothnia they apply it in a cataplasm or by fomentation to disorders of the feet in sheep^g.

Native of Sweden, Norway, Switzerland, Silesia, Italy, Russia, Siberia, Canada, in large forests and woods, especially where moss abounds; and flowers in June. It was introduced here in 1762, by Mr. Andrew Kallstroem^h. I suggested so long since as the year 1763, that it was probably a native of Ireland, but I do not know that the suggestion has been verified; it has however been at length detected in Scotland, in an old fir wood at Mearns near Aberdeen, by Professor James Beattie, junior, of the Mareschal College thereⁱ.

LINOCARPUM. See *Linum*.

LINOCIËRA. So named by Swartz from Geofroy Lino-cier, Physician at Tournon in the Vivarais: author of *L'Histoire des Plantes*. Par. 1584. 12°.)

^g Linn. suec.

^h Hort. kew.

ⁱ Linn. transf. v. 3. 333.

Lin. gen. Schreb. n. 1709. p. 784.

Thouinia. Swartz prodr. 14.

Class. 2. 1. Diandria-Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* very small, four-toothed, obtuse, permanent.

COR. *Petals* four, equal, linear, channelled, upright, spreading at top, many times longer than the calyx.

STAM. *Filaments* two; very short, rather broad. *Anthers* linear, two-furrowed, length of the corolla, upright, each adhering slightly to the other side of the two petals.

PIST. *Germ* superior, ovate, four-cornered. *Style* short. *Stigma* oblong, two-cleft.

PER. *Berry* ovate, sharp-pointed, two-celled.

SEEDS solitary, oblong.

ESSENTIAL CHARACTER.

Cal. four-toothed. Cor. four-petalled. *Anthers* connecting two opposite petals at the base. *Berry* two-celled.

Dr. Smith suggests, that by examining the fruit in an early state, it will be found that *Linociera* of Schreber is not distinct from *Chionanthus*.*

Thouinia nutans of the Supplement is *Chionanthus zeylanica*. *Lin. spec. &c.*

Swartz has *Thouinia ligustrina*, a West Indian plant, belonging to this genus: and therefore probably a *Chionanthus*.

Dr. Smith has given the name of *Thouinia* to a very different plant.

LINOPHYLLUM. See *Thesium*.

LINOSYRIS. See *Chrysocoma*.]

LINUM. (*Arbor of Dioscorides, Theophrastus, &c.*)

Lin. gen. n. 389. Reich. n. 419. Schreb. n. 528.

Gartn. t. 112. Tournef. t. 176. Juss. 303.

Radiola. Dill. gen. 7. Chamælinum. Vaill.

par. 4. f. 6. Linocarpon. Mich. 21.

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Gruinales. Caryophyllea, Juss.*

Gerania, Smith.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, lanceolate, upright, small, permanent.

COR. funnel-form. *Petals* five, oblong, gradually wider above, obtuse, more spreading, large.

STAM. *Filaments* five, awl-shaped, upright, length of the calyx; (also five rudiments, alternating.) *Anthers* simple, arrowed.

PIST. *Germ* ovate. *Styles* five, filiform, upright, length of the stamens. *Stigmas* simple, reflex.

PER. *Capsule* globose, rudely pentagonal, ten-valved, gaping at the tip. *Partitions* membranaceous, very thin, connecting the valves.

SEEDS solitary, ovate-flattish, acuminate, smooth.

OBS. In many species (whether in all?) the filaments are united at the base. In *L. Radiola* a fifth part is excluded.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Caps. ten-valved, ten-celled. Seeds solitary.

SPECIES.

* With alternate leaves.

1. *Linum usitatissimum. Common Flax.*

Lin. spec. 397. syst. 302. Reich. 1. 758. mat. med.

90. Woodv. med. bot. 303. t. 111. hort. cliff. 113.

upf. 71. Hudf. angl. 133. Wither. arr. ed. 3. 321.

Curt. lond. 5. 22. 326. Lightf. scot. 173. Relb.

cant. n. 252. Hall. helv. n. 836. Gmel. fib. 4.

115. Scop. carn. n. 381. Reyg. ged. 2. 69.

Kniph. cent. 9. n. 57. Knorr. del. 2. t. L. 9.

Ludw. est. t. 144. Zorn. ic. 251. Krock. files.

n. 485.

α. *L. sylvestre. Matth. 416.—sativum plane referens. Baub. hist. 3. 492.—vulgatius. Park. theat. 1334.*

L. arvense. Baub. pin. 214. Raii hist. 1073.

β. *L. Fuchs. 471.—sativum. Baub. pin. 214. Dod. pempt. 533. Ger. 444. emac. 556. Raii. syn. 362. Blackw. t. 160. Mor. hist. f. 5. t. 26. f. 1.*

γ. *L. humile. Mill. dict. n. 2.*

* Linn. trans. 3. 257.

L. fat. hum. fl. majore. Boerb. lugdb. 1. 284.

δ. *L. fat. latifolium africanum, fructu majore. Tourn. inst. 339.*

Calyxes and capsules mucronate, petals crenate, leaves lanceolate, stem generally solitary.

2. *Linum perenne. Perennial Flax.*

Lin. spec. 397. syst. 302. Reich. 1. 759. hort. upf.

22. cliff. 14. Gartn. fruct. 2. 147. Hudf. angl.

133. Wither. arr. ed. 3. 321. Engl. bot. 40.

Relb. cant. n. 253. Sauv. monsp. 53. Gmel.

fib. 4. 115. Kniph. cent. 2. 41. Mill. fig. t. 166.

f. 2. Mor. hist. 2. 573. 3. 4. Raii syn. 362.

n. 3, 4. hist. 1074. 10. Villars dauph. 2. 550.

α. *decumbens: with a prostrate stem, L. anglicum. Mill. dict. n. 5.*

β. *erectum: with an upright stem. L. perenne. Mill. dict. n. 6.*

Calyxes and capsules blunt, leaves lanceolate quite entire.

[3. *Linum monogynum. One-styled Flax.*

Forst. flor. austral. n. 145.

Calyxes acute, leaves linear-lanceolate even, stem round, shrubby and branched at the base, flowers one-styled.

4. *Linum viscosum. Clammy Flax.*

Lin. spec. 398. syst. 302. Reich. 1. 759.

L. sylvestre latifolium, caule viscoso, flore rubro.

Baub. pin. 214. Raii hist. 1075.

Leaves lanceolate hairy five-nerved.]

5. *Linum hirsutum. Hairy Flax.*

Lin. spec. 398. syst. 302. Reich. 1. 759. Jacqu.

austr. 1. t. 31. Scop. carn. n. 382.

L. sylvestre 1. latifolium. Clus. hist. 1. 317.—hirsu-

tum caeruleum. Baub. pin. 214. Mor. hist. 2. 573.

f. 5. t. 26. f. 5. Raii hist. 1072.

Calyxes hirsute acuminate sessile alternate, branch-leaves opposite.

6. *Linum narbonense. Narbonne Flax.*

Lin. spec. 398. syst. 302. Reich. 1. 760. Hall. helv.

n. 837. Zanon. 177. 147. Magn. monsp. 161.

Sauv. monsp. 54. Ger. prov. 420. n. 6. Villars

dauph. 2. 550.

Calyxes acuminate, leaves lanceolate stiff rugged acuminate, stem round branched at the base, filaments connate.

[7. *Linum reflexum. Reflex-leaved Flax.*

Ait. hort. kew. 1. 387.

L. sylvestre caeruleum folio acuto. Baub. pin. 214. prodr. 107. Raii hist. 1074. 8.

Calyxes acuminate, leaves ovate-lanceolate acuminate reflex even, filaments connate.]

8. *Linum tenuifolium. Fine-leaved Flax.*

Lin. spec. 398. syst. 302. Reich. 1. 760. Hall. helv.

n. 838. Scop. carn. n. 386. Pollich pal. n. 318.

Jacqu. austr. 3. 9. t. 215. D'Asso arrag. n. 287.

Villars dauph. 2. 550. Krock. files. n. 486.

L. sylvestre angustifolium flore magno. Baub. pin. 214. Raii hist. 1073. 11.

L. sylv. 5. angust. Clus. hist. 1. 318.

β. *L. sylv. angust. flore magno intense caeruleo. Tournef. inst. 340.*

γ. *L. sylv. angust. fl. magno violaceo. Tourn. inst. 340.*

δ. *L. sylv. angust. fl. magno albo lineis purpureis distincto. Tourn. inst. 340.*

Calyxes acuminate, leaves linear-setaceous rugged backwards.

[9. *Linum angustifolium. Narrow-leaved Flax.*

Hudf. angl. 134. Engl. bot. 381.

L. tenuifolium. Wither. arr. ed. 3. 322.—ζ. Lin. spec. 399. Reich. 761.

L. sylv. angust. flor. dilute purpurascens vel carneis.

Raii hist. 1074. syn. 362.

Calyx obsolete three-nerved, leaflets and capsule acuminate, leaves linear-lanceolate three-nerved, stems numerous a little inclined.

10. *Linum gallicum. Annual yellow Flax.*

Lin. spec. 401. syst. 302. Reich. 1. 761. Ger.

prov. 421. 9. t. 16. f. 1. Sauv. monsp. 53.

L. sylvestre minus, flore luteo. Baub. pin. 214. Calyxes awl-shaped acute, leaves linear-lanceolate, peduncles of the panicle two-flowered, flowers subsessile.]

11. *Linum maritimum. Sea Flax.*

Lin. spec. 400. syst. 302. Reich. 1. 761. hort. cliff.

114. Jacqu. hort. 2. 72. t. 154. Kniph. cent. 9.

n. 56.

- n. 56. *Sauv. monsp.* 147. *Guett. stamp.* 2. 439.
Ger. prov. 419. 3. *Villars dauph.* 2. 551.
L. maritimum luteum. *Baub. pin.* 214.
L. lut. narbonense. *Baub. hist.* 3. 454. *Raii hist.* 1074.
L. sylvestre. *Dod. pempt.* 534. *Camer. epit.* 201.
L. marimum lut. *Ger. emac.* 560. f. 7.
L. fylv. angustifolium lut. *Park. theat.* 1336. f. 7.
Calyxes ovate acute awnless, leaves lanceolate, the lower ones opposite.
[12. *Linum alpinum.* *Alpine Flax.*
Lin. spec. 1672. *syft.* 302. *Reich.* 1. 762. *Jacqu. vind.* 229. *aust.* 4. 11. t. 321. *Allion. pedem.* n. 1688. *Villars dauph.* 2. 551. *Krock. files.* n. 487.
L. fylv. f. angustifolii aliud genus. *Clus. hist.* 318.
Calyxes rounded blunt, leaves linear sharpish, stems declinate.
13. *Linum austriacum.* *Austrian Flax.*
Lin. spec. 399. *syft.* 302. *Reich.* 1. 762. *mant.* 359. *Scop. carn. n.* 388. *Pollich pal. n.* 319. *Jacqu. austr.* 5. 8. t. 418. *Krock. files. n.* 488.
L. fylv. angust. foliis rarioribus. *Baub. pin.* 214.
L. fylv. 2. *Tabern. ic.* 822.
Calyxes rounded blunt, leaves linear sharp straightish.
14. *Linum virginianum.* *Virginian Flax.*
Lin. spec. 399. *syft.* 303. *Reich.* 1. 762. *Gron. virg.* 35. 48.
Calyxes acute alternate, capsules awnless, panicle filiform, leaves lanceolate, root-leaves ovate.
15. *Linum flavum.* *Perennial Yellow Flax.*
Lin. spec. 399. *syft.* 303. *Reich.* 1. 763. *mant.* 360. *Scop. carn. n.* 384. *Jacqu. austr.* 3. t. 214. *Curt. magaz.* 312.
L. fylv. latifolium luteum. *Baub. pin.* 214. *Park. theat.* 1335. n. 4.
L. latif. luteum. *Baub. hist.* 3. 454. f. 1. *Raii hist.* 1074.
L. fylv. 3. latif. *Clus. hist.* 1. 317. *Ger. emac.* 560. f. 6.
Calyxes subserrate-rugged lanceolate subsessile, panicle with dichotomous branches.]
16. *Linum strictum.* *Upright Flax.*
Lin. spec. 400. *syft.* 303. *Reich.* 1. 763.
L. fol. asperis umbellatum luteum. *Raii hist.* 1076.
Lithospermum linariæ folio monspeliensium. *Baub. pin.* 259. *Park. theat.* 433. n. 8. *Magn. monsp.* 164.
Passerina Lobelai. *Baub. hist.* 3. 455.
Calyxes awl-shaped, leaves lanceolate stiff mucronate rugged at the edge.
[17. *Linum suffruticosum.* *Shrubby Flax.*
Lin. spec. 400. *syft.* 303. *Reich.* 1. 763.
L. angust. fruticosum valentinum, fol. rigidis & aculeatis. *Tournef. inst.* 340.
Leaves linear acute rugged, stems suffruticose.
18. *Linum arboreum.* *Tree Flax.*
Lin. spec. 400. *syft.* 303. *Reich.* 1. 763. *Schreb. in nov. æt. nat. cur.* 3. 478. *Alp. exot.* 19. t. 13. *Curt. magaz.* 234.
Leaves wedge-shaped, stems arborecent.
19. *Linum campanulatum.*
Lin. spec. 400. *syft.* 303. *Reich.* 1. 763. *Sauv. monsp.* 76. *Villars dauph.* 2. 552. *Allion. pedem.* n. 1690.
L. fylv. luteum fol. subrotundis. *Baub. pin.* 212. *Tournef. inst.* 340. *Garid.* 290.
Rapunculus nemorosus angustifolius parvo flore. *Baub. pin.* 93.
Campanula lutea linifolia, &c. *Lob. ic.* 414. *Baub. hist.* 2. 817. *Ger. emac.* 452. f. 4. *Park. theat.* 651. f. 14. *Raii hist.* 737. 2.
The base of the leaves dotted-glandular on both sides.

* *With opposite leaves.*

20. *Linum africanum.* *African Flax.*
Lin. spec. 401. *syft.* 303. *Reich.* 1. 764. *mant.* 360. *L'Herit. stirp. nov.* 2. t. 3.
L. afric. luteum fol. conjugatis. *Boerb. lugdb.* 1. 284.
Leaves linear-lanceolate, flowers terminating peduncled.]
21. *Linum nodiflorum.* *Knotted Flax.*
Lin. spec. 401. *syft.* 303. *Reich.* 1. 764. *hort. cliff.* 114.

- L. luteum ad singula genicula floridum.* *Baub. pin.* 214. *Mor. hist.* 2. 574. f. 5. t. 26. f. 11. *Raii hist.* 1076.
L. lut. sylvestre latifolium. *Col. ecphr.* 2. 79. t. 80.
Floriferous leaves opposite lanceolate, flowers alternate sessile, calyxes the length of the leaves.
22. *Linum catharticum.* *Purging Flax.*
Lin. spec. 401. *syft.* 303. *Reich.* 1. 765. *hort. cliff.* 372. *fl. suec. n.* 271. *mat. med.* 91. *Huds. angl.* 134. *Wither. arr. ed.* 323. *Curt. lond.* 151. *Engl. bot.* 382. *Lightf. scot.* 174. *Relh. cart.* n. 254. *Hall. belv. n.* 839. *Scop. carn. n.* 389. *Neck. gallob.* 158. *Weig. obs.* 26. *Pollich pal. n.* 230. *Leers herb. n.* 235. *Fl. dan.* 851. *Villars dauph.* 2. 552. *Allion. pedem. n.* 1693. *Krock. files. n.* 489. *Blackw. t.* 368. *Kniph. cent.* 3. n. 58. *Ludw. est. t.* 143. *Zorn. ic.* 210.
L. sylvestre catharticum. *Ger. emac.* 560. f. 5. *Raii hist.* 1076. *syn.* 362. *Petiv. brit. t.* 55. f. 12.
L. pratense flosculis exiguis. *Baub. pin.* 214.
Chamælinum Clusii flore albo, f. L. fylv. cathart. *Park. theat.* 1336. 10.
C. subrotundo folio. *Barrel. ic.* 1165. 1.
Spergula bifolia lini capitulis. *Loef. pruss.* 261. t. 86.
Alsine verna glabra flosc. albis, vel potius L. minimum. *Baub. hist.* 3. 455. 2.
Leaves ovate-lanceolate, stem dichotomous, corollas acute.
[23. *Linum Radiola.* *Least Flax, or All-seed.*
Lin. spec. 402. *syft.* 303. *Reich.* 1. 765. *hort. cliff.* 114. *fl. suec. n.* 272. *Huds. angl.* 134. *Wither. arr. ed.* 3. 323. *Lightf. scot.* 174. *Hall. belv. n.* 840. *Kniph. cent.* 8. n. 59. *Fl. dan.* 178. *Pollich pal. n.* 321. *Neck. gallob.* 159. *Krock. files. n.* 490.
Radiola. *Dill. giff. app.* 127. t. 7. *Ephem. nat. cur. cent.* 5, 6. *app. t.* 9.—*vulgaris serpillifolia.* *Raii syn.* 345. t. 15. f. 3. *Petiv. brit. t.* 59. f. 12.
Chamælinum vulgare. *Vaill. par.* 33. t. 4. f. 6.
Linocarpon serpilli folio multicaule & multiflorum. *Mich. gen.* 23. t. 21.
Polygonum minimum f. Millegrana minima. *Baub. pin.* 282.
Millegrana min. *Ger. emac.* 569. 2. *Raii hist.* 1026. —*f. Herniaria minor.* *Park. theat.* 447. n. 11.
Stem dichotomous, flowers four-stamened four-styled.
24. *Linum quadrifolium.* *Four-leaved Flax.*
Lin. spec. 402. *syft.* 303. *Reich.* 1. 765.
L. africanum, rubiæ foliis quaternis stellatis. *Raii suppl.* 525.
Leaves in fours.
25. *Linum verticillatum.* *Whorl-leaved Flax.*
Lin. spec. 402. *syft.* 303. *Reich.* 1. 766.
L. sylvestre flore cæsis foliis verticillatis. *Bocc. mus.* 2. 49. t. 42. *Raii suppl.* 524. *Barr. rar.* 685. t. 1226.
Leaves in whorls.

DESCRIPTIONS, &c.

The numerous species of Flax are chiefly herbaceous, some however are suffruticose or woody at bottom, one or two are shrubby, and one arboreous. In most the leaves are alternate (one to nineteen), in fewer opposite (twenty to twenty-five), generally lanceolate or linear. Flowers solitary, axillary or sometimes but seldom opposite to the leaves^a. Corolla commonly blue, fading sometimes to white, but in some species yellow (10 and 15, &c.) red in n. 4, 8.

The genus belongs rather to the natural order of *Gerania*, than of *Caryophyllæ*, where Jussieu has placed it; and the accurate and learned author himself confesses that it is distinct from the latter order.

1. Root annual, simple, fibrous, pale brown. Stem upright, eighteen inches, two feet and even more in height, round, smooth, leafy, branched only at top. Leaves sessile, growing close together, almost upright, perfectly entire. Flowers large, growing in a panicle, on round smooth peduncles. Calycine leaflets ovate-keeled, with a membranous edge, when magnified appearing to be fringed with hairs. Petals wedge-shaped, deciduous, sky-blue, streaked with deeper-coloured lines; white at the claws, and somewhat gnawed at the

^a Jussieu.

tip. Filaments dilated at the base, and slightly united there. Anthers at first oblong, but finally sagittate, incumbent, blue. Germ ovate, shining. Styles somewhat club-shaped or thicker towards the top, blue, slightly cohering at the base^b.

This valuable plant is supposed to have been derived originally from those parts of Egypt which are exposed to the inundations of the Nile^c. In the earliest record we have (Exodus ix. 31.) Flax is mentioned as a plant cultivated in that country; for which reason antiquaries have been surprised to find the vestments of mummies made of cotton. It is highly probable however that mankind made thread of cotton, before the use of Flax was discovered; the former being produced in a state ready for spinning, whereas the latter requires a long process before it can be brought to that state.

It is difficult, or perhaps impossible to determine when the culture of Flax was first introduced into this country. In the simplicity of former times, when families provided within themselves most of the necessities and conveniences of life, every garden supplied a proper quantity of hemp and flax. The macerating or steeping, necessary to separate the fibres by rotting the rest of the stalk, was found to render water so offensive, that by the 33d of Henry VIII. it was enacted, that no person should water any Hemp or Flax in any river or other stream, or in any common pond where beasts are used to be watered, under the penalty of twenty shillings. The growth of Hemp and Flax has lately been encouraged by a premium, under an act of parliament.

Flax is now found wild in many parts of Europe, in corn fields. In England it is doubtful perhaps whether it be aboriginal, though it is said to be very common in the western counties, not only in corn fields, but in pastures and on downs. It flowers in June and July^d.

The seeds of Flax (lin-seed) yield by expression only, a large proportion of oil, which is an excellent pectoral, as is likewise the mucilaginous infusion. They make an easy and useful poultice in cases of external inflammation, and they are the food of several small birds. After the oil is expressed, the remaining farinaceous part, called oil-cake, is given to oxen, who soon grow fat upon it. The oil itself differs in several respects from other expressed oils: it does not congeal in winter, nor does it form a solid soap with fixed alkaline salts, and it acts more powerfully as a menstruum upon sulphureous bodies. When heat is applied during the expression it gets a yellowish colour, and a peculiar smell. In this state it is used by painters and varnishers. It is well known that the fibres of the stem are manufactured into linnen, and that this linnen, when worn to rags, is made into paper^e.]

Mr. Miller remarks, that although the plants of Flax when crowded together in cultivation, rise only a foot and half in height, with a slender unbranched stalk; yet when they are allowed room will rise more than two feet high, and put out two or three side branches towards the top, especially in a good soil.

He makes a distinct species of the dwarf variety, because it has stronger and shorter stalks branching out more, the leaves broader, the flowers larger with the petals indented at the extremity, the seed-vessels much larger, and the peduncles longer.

[The wild differs no otherwise from the cultivated plant than most others do.

Flax in German is *Flacks* or *Lein*. In Dutch, *Vlasch*. In Danish, *Hör* or *Härr*. In Norwegian, *Linn*. In Swedish, *Lin*. In French, *Lin*. In Italian and Spanish, *Lino*. In Portuguese, *Linbo*. In Russian, Polish and all the languages from the Slavonian, *Len* or *Lan*. All the European languages, except the Danish, use *Lin*, when they speak of the seed.]

2. Mr. Miller thus describes the wild perennial Flax. From its perennial root arise three or four inclining stalks, having short narrow leaves towards their base, but scarcely any about the top. The flowers are produced at the ends of the stalks, sitting very close; they are blue, and about the size of the cultivated

sort, and are succeeded by pretty large round seed-vessels, ending in acute points. It flowers about the same time as the preceding, but the roots will continue four or five years.

[The calycine leaflets are oval, hollow, with a short bluntish point at the end, not fringed or hairy, marked with five lines^f. Its strong and knobbed root produces a multitude of slender stems, about a foot long, spreading in every direction, but more or less curved upwards. The flowers appear from June to August; they are of a delicate texture, and very elegant blue colour^g.

Ray mentions two varieties, one upright, with a larger flower and head: the other procumbent, with a smaller flower and head. He thought them to be only varieties, and Mr. Hudson asserts that he has gathered both from the same root; adding, that in the latter the stamens are shorter; in the former, longer than the styles.

Native of Cambridgeshire, Norfolk, Suffolk, Northamptonshire, on calcareous pastures.

3. Mr. Miller distinguishes the upright Siberian plant.] The stems of this are strong, in number according to the size of the root, in height from three to five feet according to the soil; they divide into several branches at top. Leaves narrow-lanceolate, not much more than an inch long, and an eighth of an inch broad, of a deep green, ending in acute points. The flowers form a kind of umbel at the ends of the branches; the stalks rising nearly of the same height. The flowers are large and of a fine blue; appear in June, and are succeeded by obtuse seed-vessels, ripening in September.

[These are thus described by the accurate Gartner. Capsule the size of a pea, spherical, striated, pale straw-colour, ten-celled, ten-valved. Valves crustaceous, with a groove on the back, opening at top, and connected by means of the partitions; which are membranaceous, folded or doubled, with their laminae parted on the outside, and so inserted into the margins of the valves, that when these open the others unfold like the leather of a pair of bellows. Receptacle none, but the seeds are fixed to the central margin of the partitions. Seed solitary, ovate, mucronate at top, compressed, dark-coloured, shining, with a minute oblong navel below the tip. The structure of the partition in the capsule of *Linum*, is distinct from all others as far as we know^h.]

Mr. Miller affirms that Siberian Flax always has more branching stalks, longer and broader leaves, larger flowers, and much larger blunter seed-vessels than our English perennial Flax. He also recommends the cultivating it for use; being perennial, earlier, more productive, and yielding a stronger, though not so fine a thread.

3. Native of New Zealand. In Queen Charlotte's Sound.

4. Root woody, perennial. Leaves with hairs as long as the leaves themselves, acuminate, five-nerved. Corolla flesh-coloured, with lines of a blood-red colourⁱ. Ray found it near Augsbourg. It has also been seen near Ingolstadt, in the mountains near Bologna, &c. The stalk is glutinous or clammy, whence its name. Allione asserts that it differs in nothing from the next species.

5. Root woody, perennial. Stems round, simple, hairy, from a foot to two feet in height, often smooth at bottom, leafy all over, upright, branching at top into flowering corymbs. Leaves lanceolate or ovate, acuminate, sessile, alternate except a few at the ends of the branches, which are opposite, hairy especially at the edge and on the dorsal nerves, but sometimes almost smooth. Flowers on very short peduncles, not from the axils, but a little higher, and also from the division of the branches. Calycine leaflets lanceolate, half the length of the corolla. Petals blue marked with lines, firmly embracing each other at the lower part, though not united at the base, representing even after they are fallen a monopetalous funnel-form flower.

^f Stokes in Withering.

^g Engl. bot. Raii hist.

^h Gartn. fruct.

ⁱ Curtis. ^c Withering. ^d Curtis. ^e Withering.

Anthers pale. No rudiments of barren stamens. Germ hirsute. Capsule roundish, smooth, ten-celled, five-valved. Scopoli attributes to his *L. hirsutum* four styles, and a four-celled capsule. Jacquin is of opinion that *L. sylvestre* of the same author is the same with *L. viscosum* of Linneus. This is distinguished from that by the hairs on the edge of the leaves, as well as the surface being quite simple, and not with glandular heads at top. The leaves of *L. hirsutum* are sometimes very plainly three-nerved, and sometimes the nerves scarcely appear. Clusius's second *L. sylvestre latifolium* does not seem to be different from this, notwithstanding the colour, which varies in this species, on one hand of a deeper blue, and on the other almost white^k.

Linneus observes, that this bears a great resemblance to *L. nodiflorum*, but that the stem is round, the leaves ciliate or hirsute, and broader, the stem-leaves alternate, but the branch-leaves opposite, the flowers sessile, alternate, the calyxes leafy and long, the branch or floral leaves and the calyxes ciliate with very short glandular bristles, especially towards the top.

Native of Austria, and Hungary.]

6. Stem from a foot to eighteen inches high, branching out almost to the bottom into many long slender branches. Flowers at the ends of the branches, in a sort of umbel, smaller than those of the first sort, and of a pale blue colour. The seed-vessels are much smaller, and not so round.

[The root is perennial. Calyxes large, lanceolate, membranaceous at the sides, most exquisitely acuminate at top, and having a sort of awl-shaped dagger-point^l.

Native of the South of France, Switzerland, Italy. It flowers from may to july. Cultivated by Mr. Miller in 1759^m.

7. Stem a foot high, round, woody, branched from the base. Leaves dark green, ending in a very sharp dagger-point. Flowers in a sort of umbel, large, blueⁿ.

Native of the South of Europe. Introduced in 1778 by Casimir Gomez Ortega, M.D. It flowers in july^o.

8. Root perennial, woody, branching. Stems ascending at the base, and then erect, round, smooth, annual, from six inches to a foot in height, branched at top, and there less closely set with leaves. Leaves narrow, acuminate, firm, shining, mostly shorter than an inch, sessile, ciliate with whitish spinules bowing upwards, when examined with a glass. Flowers in a sort of panicle, peduncled. Calyx ciliate at the edges. Petals rose-coloured, purple or white, nearly twice as long as the calyx. Filaments broader at bottom, and no rudiments of barren ones. Capsules roundish-acuminate, smooth^p.

Native of the South of Europe.

9. This is most nearly allied to *L. usitatissimum* in all its parts, except in having a woody perennial root producing many stems; it differs also at first sight in having smaller paler flowers. The leaves have three, sometimes five nerves, their edges entire and smooth. Calyx-leaves smooth, elliptical, with a sharp point; in the flowering state scarcely more than one nerve is visible, but as the fruit ripens the calyx becomes distinctly three-nerved. Petals entire or slightly notched. Valves of the capsules distinctly ten, cohering by their inflexed margins, which make the partitions of the ten cells.

The preceding, with which Linneus confounded this has a very long-pointed calyx, with glandular serratures, and leaves which have rough edges and only a central nerve. *L. perenne* is sufficiently distinguishable by its more obtuse five-nerved calyx, and more capitate stigmas^q.

Native of Cornwall and Devonshire, in dry sandy pastures, especially near the sea. Darsham in Suffolk. Minster in the isle of Shepey, Beacon-hill and Deal in Kent. By Pett near Hastings.

10. Root annual. Flowers yellow. Commonly five, but sometimes only three pistils. Native of the South

of France. Introduced in 1777, by Monf. Thouin. It flowers in july^r.

11. Root perennial. Stems herbaceous, round, almost upright, glaucous, branched at top, a foot high or more. Leaves covering the whole stem and branches, oval-oblong, sharpish, glaucous, sessile, upright, quite entire, half an inch long. Peduncles commonly opposite to a leaf, upright, one-flowered. Petals yellow. Germ smooth. Styles yellow, ending in hirsute stigmas. Capsules roundish, acute, the size of the calyx, smooth, five-toothed at top, five-grooved, ten-celled, five-valved. Seeds ovate, compressed, brownish-yellow^s. Linneus observes, that it is allied to the preceding. Native of the South of Europe and the Levant. Cultivated in 1596, by Gerarde. It flowers in july and august^t.

12. Root perennial, branched. Stems herbaceous, simple, half a foot or more in length, round, very leafy, procumbent or ascending, many-flowered and often divided. Leaves quite entire, sessile, the upper ones almost upright, the next spreading; the lower ones imbricately reflex. Flowers peduncled, large. Petals pale blue, three times as long as the calyx. Capsule roundish, smooth, containing ten, ovate, shining, compressed, blackish seeds^u. Native of Austria, Piedmont, Dauphiné, Silesia.—Introduced in 1775, by Monf. Thouin^x.

13. Root perennial, woody. Stems herbaceous, annual, from six to eighteen inches long, round, simple or divided only into short branches at top, sometimes for the most part procumbent, sometimes more upright. Leaves subsessile, quite entire, sub lanceolate-linear, smooth. Peduncles one-flowered, filiform, axillary, solitary, pendulous before the flowers open, and when in fruit. Petals wide, purplish blue or violet with darker lines and a yellow claw, quite entire, resembling those of the first sort. Filaments and styles blue. Anthers pale. Stigmas greenish yellow, headed. Pistils bent back beyond the stamens. Seeds brown. The whole plant is smooth. The leaves vary in width^y. Native of Austria and the Palatinate. Introduced in 1775, by Monf. Thouin. It flowers in june and july^z.

14. Stem filiform, a foot high, panicled. Flowers on very short peduncles. Corollas yellow. Capsules globular, awnless. Native of Virginia and Pennsylvania^a.

15. Root perennial, woody. Stems herbaceous, upright, from six to eighteen inches high, smooth, rendered angular by membranes which seem to arise from the sides and middle of the leaves. Leaves sessile, narrow-lanceolate, acute, quite entire, smooth, thickish, about an inch and half in length, having a dot or sessile gland of a bay colour on each side at the base, as in *L. campanulatum*. Flowers elegant, upright, on short peduncles, at the end of the branches, and at the divisions of them. Calycine leaflets acuminate, whitely ferrate-spiny when examined by a magnifier. Petals three times as long as the calyx, yellow, striate-veined, wide and very blunt. Filaments yellow, upright; five twice as long as the calyx with yellow anthers and five others very short and barren, standing alternate with the fertile ones. Styles yellow. Capsule roundish, sharp, brownish^b.

Native of Austria. Introduced by Mr. Curtis about the year 1794, from seeds sent him by Monf. Daval of Orbe in Switzerland. The flowers open most in a morning when the sun shines, and continue in succession during june, july, and part of august^c.]

16. This is an annual plant, with an upright stalk near a foot and half high. The leaves are about the same length with those of common Flax, but a little broader. The stalks divide towards the top into several branches, each sustaining two or three yellow flowers; which appear in july; but the seeds seldom ripen in England.

[Linneus remarks, that it is a stiff, corymbed plant; that the leaves are rugged about the edge, the calyxes awl-shaped, twice as long as the fruit. Native of the

^k Jacquin. ^l Linn. ^m Hort. kew. ⁿ Bauh. prodr.
^o Hort. kew. ^p Jacquin. ^q Engl. bot.

^r Hort. kew. ^s Jacquin. ^t Hort. kew. ^u Jacquin.
^x Hort. kew. ^y Jacquin & Linn. mant. ^z Hort. kew.
^a Linn. ^b Jacquin. ^c Curt. magaz.

South of France, Spain, and Sicily. Ray found it near Montpellier and in Sicily. Cultivated by Mr. Miller in 1759.]

17. This has a shrubby stalk a foot high, sending out several branches. Leaves very narrow, coming out in clusters, but on the flowering-branches broader and longer. Flowers at the ends of the branches, erect on long slender peduncles. Calyxes acute-pointed. Petals large, entire, white, but before the flowers open pale yellow. They appear in July; but the seeds seldom ripen in England. The flowering stalks decay in the autumn, but the lower shrubby part, continues with the other branches all the year.

[Native of Spain, about Aranjuez, but common in the kingdom of Valencia. Mr. Miller says he had the seeds of this *L. fruticosum* from Ortega at Madrid. It seems to be the same with the *suffruticosum* of Linneus, and therefore I have given his description, not a word of it being said by Linneus or Quer, though he had seen it.

According to the Kew Catalogue it was introduced in 1787, by Mons. Thouin. But if Mr. Miller's plant be the same, he cultivated it in 1759.

18. This beautiful species forms, if not a tree, as its name imports, a shrub of the height of several feet. It begins to flower in March, and continues flowering to the close of summer; but has not yet produced seeds in England^d. Native of the island of Candia. Introduced in 1788, by John Sibthorp, M.D.^e

19. Stems simple, a fingers length, angular, commonly terminated by three, large, peduncled flowers. Calyxes lanceolate, acuminate. Native of the South of France and Russia^f.

20. Stem suffruticose, stiff, a foot high, round, with simple branches. Leaves sessile, upright, even, generally shorter than the internodes. Flowers in a terminating umbel, which is four or five-cleft with dichotomous rays. Petals yellow with villose claws, and turning tawny. Calyx acuminate, rugged at the edge^g. Native of Africa. Introduced in 1771, by Mons. Richard. It flowers in June and July^h.

21. Stem angular, even, bifid or trifid. The leaves have an ovate brown gland at the base on each side: the stem-leaves are alternate lanceolate and even; the branch-leaves opposite and narrower. Calyx linear, leafy. Corolla yellow. Capsule globular, acuminateⁱ.] Root perennial. Stalks two or three, slender, stiff, dividing at top into two or three slender branches. The flowers came out singly at the joints, and sit close to the stalks. The calyxes are cut into five slender segments, longer than the petals.

[Native of Italy. Cultivated by Mr. Miller in 1759.

22. Root annual, very small. Stems several, from three to nine inches high, ascending at the base then upright, round, smooth, branching at top into a forked, leafy, slender-stalked panicle. Leaves sessile, upright, blunt with a slight point, entire, glaucous beneath. The whole herb is smooth. When the panicle begins to branch off, its lower branches, as well as the leaves that accompany them, are alternate. Flowers terminating, solitary, pendulous before they open, then erect, not unlike those of an *Arenaria*. Calyx-leaves ovate-lanceolate, pointed, ferrate, with a solitary nerve; the edges fringed with minute glands on foot-stalks. Petals white, obovate, pointed, twice the length of the calyx, spreading, slightly united at the base, having three ribs and yellow claws. Filaments united, forming a bag which incloses the lower half of the germ. Stigmas capitate. Capsule ten-valved, but before it is quite ripe, cohering in pairs by means of the permanent styles. Seeds yellow, shining^k.

It sometimes varies with four stamens, and four styles^l.

Native of most parts of Europe. This small delicate species of Flax, called also in some places Mill-mountain, is very common throughout England in dry and hilly pastures, and flowers from the end of May to August.

^d Curt. magaz.

^e Hort. kew.

^f Linn.

^g Ibid.

^h Hort. kew.

ⁱ Linn.

^k Engl. bot. & Curt. lond.

^l Wiggers.

Gerarde celebrates this little plant as a purge. His receipt is a handful of the herb infused in a pint of warm white wine all night, and taken in the morning. Lewis prescribes an infusion in water or whey, of a handful of the fresh leaves, or a dram in substance of them dried. Dr. Withering recommends an infusion of two drams or more of the dried herb, as an excellent purge in many obstinate rheumatisms: and adds that it frequently acts as a diuretic.

23. Root annual. Stem upright, an inch high or more, very much branched and dichotomous, round, filiform, smooth. Leaves sessile, ovate, acuminate, quite entire; bright green, smooth; a line and half long and a line broad. Flowers upright, solitary, in little bundles at the ends of the branches, the lower ones on peduncles more than two lines in length: they are small, and white. Calyx four-leaved, the length of the corolla. Petals four, upright, small, roundish, blunt. Stamens and styles four^m. Hence some have separated this species from the rest, and have made it a separate genus under its own name of *Radiola*.

Native of many parts of Europe. With us on moist sandy heaths, flowering in July and August. Its English names are *All-seed* and *least Rupture-wort*.

24. From a thick woody root this puts up several stems, six inches high or more, slender, upright, with leaves in fours at intervals, as in the stellate plants, dividing at top into branches, which support large blue flowersⁿ.

Native of the Cape of Good Hope.

25. This is an annual plant, and does not exceed a foot in height. Stems round; branched. Leaves in whorls, upright, acute, scarcely an inch in length. Flowers violet or blue-gray. Capsule round, pointed. Seeds olive-coloured^o. The calyxes and upper leaves are villose.

Native of Italy^p: near Rome.

The species may be distinguished at one view from the following table.

Leaves alternate.		
1 to 19.	Lanceolate. 1. 2. 4. 6. 11. 14. 15. 16.	
	Calyxes mucronate. Corolla blue.	1.
	— blunt. Corolla blue.	2.
	— acuminate. { Corolla red.	4.
	— blue.	6.
	— ovate acute. Corolla yellow.	11.
	— acute. Corolla yellow.	14.
	— suberrate-rugged. Corolla yellow.	15.
	— awl-shaped. Corolla yellow.	16.
	Linear-lanceolate. 3. 9. 10.	
	Calyxes acute. One Style. Corolla blue.	3.
	— obsoletely three-nerved. Corolla	
	flesh-coloured.	9.
	— awl-shaped acute. Corolla yellow.	10.
	Ovate-lanceolate. 5. 7.	
	Calyxes hirsute acuminate. Corolla blue.	5.
	— smooth acuminate. Corolla blue.	7.
	Linear-fetaceous. Corolla rose-coloured.	8.
	Linear. 12. 13. 17.	
	Calyxes rounded blunt. 12. 13.	
	Stems declinate. Corolla blue.	12.
	— procumbent. Corolla blue.	13.
	Calyxes acuminate. Stems suffruticose.	
	Corolla white from yellowish.	17.
	Wedge-shaped. Corolla yellow.	18.
	Spatulate. Corolla yellow.	19.
Leaves opposite.		
20 to 25.	Linear-lanceolate. Corolla yellow.	20.
	Lanceolate. Corolla yellow.	21.
	Ovate-lanceolate. Corolla white.	22.
	Ovate-acuminate. Corolla white.	23.
	In fours. Corolla blue.	24.
	In whorls. Corolla blue.	25.]

PROPAGATION AND CULTURE.

1. Flax should be cultivated upon a rich soil, that has not been ploughed for several years, upon which it always makes the best improvement; but as it draws greatly from the soil, it should not be sown two years together upon the same ground, nor in less than after five or six years interval.

The ground should be as clean from weeds as possible: in order to have it so, it should be fallowed two winters and one summer, observing to harrow the ground well between each ploughing, particularly in summer, to destroy the young weeds soon after they appear: this will also break the clods, and separate the parts

^m Pollich.

ⁿ Ray suppl.

^o Barrelier.

^p Linn.

so, that they will fall to pieces on being stirred. If the land should require dung, that should not be laid on till the last ploughing, when it must be buried in the ground: but this dung should be clear from seeds of weeds, which it may be by laying it in a heap and fermenting it well. Just before the season for sowing the seed the land must be well ploughed, and laid flat and even. The seeds should be sown at the end of march or the beginning of april, when the weather is mild and warm.

The common way is to sow the seed broadcast, and to allow from two to three bushels of seed to an acre: but from many repeated trials I have found it a much better method to sow the seeds in drills, at about ten inches distance from each other, by which half the quantity of seed usually sown will produce a greater crop; and when the Flax is thus sown, the ground may be easily hoed to destroy the weeds: if this operation be twice repeated in dry weather, it will keep the ground clean till the Flax is ripe: this may be done at half the expence which hand-weeding will cost, and will not tread down the plants nor harden the ground, which by the other method is always done; and it is absolutely necessary to keep the Flax clean from weeds, otherwise they will overbear and spoil the crop.

Some recommend feeding sheep with the Flax, when it is a good height; and affirm that they will eat the weeds and grass, and do the Flax good, and if they should beat it down, that it will rise again with the next rain. But this is a very wrong practice, for if the sheep gnaw the Flax, it will shoot up very weak, and never come to half the size it would have done, if it had not been cropped: and if the sheep like the crop better than the weeds, they will devour that, and leave the weeds untouched.

Towards the end of august or at the beginning of september the Flax will begin to ripen, and it must not stand to be over ripe: it must therefore be pulled up as soon as the heads begin to change brown and hang downwards, otherwise the seeds will soon scatter and be lost; so that the pluckers must be nimble, in tying up the plants in handfuls, and setting them upright, till they are dry enough to be housed. If the Flax be pulled when it first begins to flower, the thread will be whiter, but then the seed will be lost: the thread however will be stronger when Flax is left till the seed is ripe, provided it does not stand too long; but the colour of it will not be so good.

The Siberian perennial Flax (n. 2) has been tried, and answers very well for making common strong linnen, but the thread is not so fine or white as that which is produced from the common sort; but as the roots of this will continue many years, it will require little other culture but to keep it clean from weeds, which cannot well be done, unless the seeds be sown in drills, that the ground may be constantly kept hoed to destroy the weeds when young. This sort must have the stalks cut off close to the ground when ripe, and then managed in the same way as the common sort: but it seldom produces more than three crops that will pay for standing.

Mr. Miller mentions another sort with a biennial root, which he therefore names *L. bienne*. He received it from Istria, and says that it produced the finest thread of all the sorts which he had tried. It grows taller than the common Flax, and in gardens lives through the winter without receiving the least injury from frost. Mr. Miller gave a parcel of the stalks of this, with the Spanish and Siberian perennial sorts, to a person well skilled in watering, breaking and dressing Flax, who having prepared them, assured him, that the Istrian Flax was by much the finest of the three, and was in goodness preferable to any he had seen.

The other sorts are chiefly preserved in Botanic gardens. *L. catharticum* (n. 22.) or purging Flax, is one of those plants which refuse culture; the seeds whether sown in spring or autumn will seldom come up.

[Several of the species are handsome plants. The Siberian Flax (n. 2.) is now very commonly found among hardy perennials in the borders of large flower-gardens and plantations, and is easily increased either by seeds or parting the roots.

L. flavum (n. 15.) bears large yellow flowers, and is a hardy perennial. It appears to be easy of culture, and succeeds best in a soil moderately stiff and moist. The seeds vegetate freely, and it may be increased either by parting the roots in autumn, or by cuttings of the young shoots.

Some of the sorts (n. 6. 17. 18. 20.) require the protection of a Greenhouse. N. 17, 18. 20. may be increased by cuttings, but not without some difficulty. They seldom or ever ripen their seeds in this country.

Old pastures, especially on land formed from the ouze or sediment of great rivers, are the best adapted to the growth of Flax. In Reedness, a tract of land in the county of York, on the south side of the river Ouze, near its junction with the Trent, they frequently plough their old pastures, when the herbage begins to fail, and adopt the following course of crops, viz. 1. Flax. 2. Rape or Cole. 3. Flax: and if the ground still continue too rank for Corn, they add 4. Rape. 5. Flax. 6. Oats.

When they break up the pasture, they plough the sward in december, about three inches deep; in this state it receives the winter's frost, and without any more preparation they sow the seed (linseed) two bushels on an acre, the second or third week in april, if the weather permit; or if not, as soon after as possible; and with light short-tined harrows, that will not drag the sod, they harrow it pretty much to mould. They keep the crop as free as possible from weeds, for which purpose it is hand-weeded once or twice, in dry weather, before, and not after the Flax is four inches high; from that time it will out-grow and nearly smother every weed, and will be ready for pulling by hand, the second, third or fourth week in july, according to the soil and season: but if it be intended for seed, it will require about a fortnight more. It is next tied into sheaves of about three inches diameter, with bands made of part of the Flax; and whilst the pulling and tying are going on, in dry weather, if possible, a team is employed in carrying it to the pits or ponds, which are previously well cleansed: here it is laid close and trod, one layer of sheaves upon another, until the man who treads it stands about mid-leg deep in water; the Flax is then covered with sods, earth, &c. sufficient to keep it entirely under water; a brisk fermentation ensues, and the pit stinks abominably; in this state it receives an additional treading, every night and morning, for about four days; when a sheaf is taken out of the pit, untied, and spread on the ground to dry; when dry, it is tried by rubbing between the fingers, to see if the bun (hecks or spongy part of the stalk) be sufficiently brittle to separate readily from the Flax (or fibres;) if not, they try another sheaf the day following, by which time it is usually raited (retted or rotted) enough; though, if the growing season has been more than usually wet, the Flax will be raited a day or two sooner: if needful, they try it again on the sixth and even the seventh day. As soon as it is discovered to be sufficiently raited, it is all taken out of the pit, and every sheaf being untied, is spread on clean grass land. Here it lies to dry from five to seven days, unless a considerable shower fall sooner; when it is to be turned, that both sides may be bleached alike; and it is sometimes turned a second or third time. The bun is frequently tried, to see if it be brittle, and part readily from the Flax. They are also particularly attentive to obtain their Flax of a lead colour, which complexion they value even more than the rottenness of the bun. When bleached sufficiently and perfectly dry, it is tied into sheaves, five or six times as large as the former, and carted into sheds or ricks; whence it is swungled and tied up for sale by professional labourers. The crop is from twenty-five to seventy stone on an acre.

The account of an acre may stand nearly thus,
 The average crop forty stone, at 9s. the medium price, and the bounty 4d. together } 18 13 4
 Every expence about 6l. with rent, taxes, assessments and titles, about 2l. 13s. 4d. } 8 13 4

Remains Profit £ 10 0 0

This

This profit is very great, but what makes the crop of Flax still more valuable, is the additional employment it gives to the poor in weeding, pulling and tying, management of the pit, drying and swingling to the amount of four or five pounds an acre; the article of swingling alone, might go a great way towards giving employment to the poor in country parishes during the dead months of winter. After the crop is off, the ground is cleared of weeds and grass, and as soon as convenient is ploughed an inch or two deeper, and rape seed from half a peck to a peck on the acre, according to the richness of the soil is sown, from a week before to a week after michaelmas. The seed lost in reaping and getting the Rape produces a crop of green food for sheep, which is fed off early enough to prepare the ground for a second crop of flax. If a third crop be taken after Oats, when that is off, a judicious mixture of grass seeds is sown, and the ground returns to meadow and pasture again^a.

The following is the expense and profit of five acres of Flax raised in Shropshire.

		£.	s.	d.
Rent, including tithe	—	18	10	0
Seed	—	3	3	0
Weeding, drawing, and sticking up	—	2	0	0
Binding and carriage	—	0	12	0
Threshing and winnowing	—	2	2	0
Spreading, gathering and carriage	—	1	14	3
Swingling, at 1s. per stone	—	14	1	4
		42	2	7
<i>Produce.</i>				
281 stone 5lb. at 5s.	—	70	6	3
Seed, 49 bushels	—	13	7	0
		83	13	3
Bounty	—	4	13	9½
		88	7	0½
		42	2	7
		46	4	5½

There is no charge in the above account for ploughing and harrowing; it being usual to give a large rent for old pastures, by those who make a business of raising Flax, the person who lets the land engaging to plough and harrow it with his team. The above crop was considered as a large one^b; yet the profit is somewhat less than the above, being 9l. 4s. 10½d. per acre.

The quantity of seed sown on an acre in the Isle of Ely is two bushels, the cost of which is a guinea or thereabouts; an experienced man is employed to sow the seed, there being few who understand that business. No manure is wanting, where clean or sward land is used, which is generally the case. The ground is ploughed but once, and harrowed fine. If rich, it will bring turneps, wheat, or clover, &c. after the flax is off. The cost is somewhat about 3l. an acre. The produce from twenty to fifty stone, according to the land. When it is fit to pull, a man should be employed who knows when to put it into the dike, and when to take it out, there being much difficulty in managing that point, without spoiling the flax. It is supposed not to impoverish the land, but to improve it^c.

In Ireland, on mountain lands they prefer American flax-feed; upon heavy or clay-lands they sow Riga, Dutch or Flanders seed: the quantity they get is more and better in quality than from the American, and will last twenty years. For fine linnens they never save seed, pulling it green; but for coarse linnens they save as much seed as they can. The produce of the flax depends on its oiliness; and the goodness of the linnen, on not being too much bleached.

^a Middleton in Young's Ann. 14. 90.

^b Harries in Young's Ann. 13. 102.

^c Bath papers, 4. 255.

They plough their potatoe land or barley stubble once at the end of march or april, and then sow it. They weed the Flax very carefully. They generally pull it at the end of july, or beginning of august, and immediately ripple it to get the seeds off; and then lay it into water from six or seven to twelve days, according to the softness of the water, trying it before they take it out. They generally lay it in bogs or pools, but reckon the bogs best. When they take it out, they spread it on meadow ground from ten to fifteen days, according to the weather; if that be bad, much of it is lost. They dry it by laying it in heaps on a hurdle fixed upon posts, and making a fire of turf under it. As fast as it dries, they beat it on stones with a beetle; then they scutch it to separate the heart of the *shoves* from the rest. Mills are invented for this; and if they use these, they pay 13d. a stone for it. They next send it to the flax-heckler, who gives it a sort of combing, and separates it into two or three sorts. In this state it is saleable. The crop is from eighteen to forty-eight stones per acre of flax, rough after scutching: the medium thirty stones, and it sells from 6s. 8d. to 9s. the stone. Much Dutch flax is imported; also from Riga, Konigberg and Petersburg.

Their Flax course for light and dry soils is 1. Turneps. 2. Flax. 3. Clover. 4. Wheat.

The Turneps should be eaten on the land. The common tillage of turnep-land for barley is applicable to the Flax, which requires the land to be very fine and friable: roll in the clover seed in the same manner; and the weeding and pulling the flax will assist its growth. The flax may be stacked like corn, and threshed in the spring.

Their Flax course for strong soils is 1. Beans. 2. Flax. 3. Clover. 4. Wheat. The bean land is prepared for the Flax, by getting off the beans as soon in august as possible; ploughing the ground directly if the weather be dry, and if the season permit giving it two more ploughings before winter, leaving the lands rounded up so as to shoot off all water, with deep and well-cleaned furrows.

Their Flax course for any soils except very strong ones, is 1. Potatoes. 2. Flax. 3. Clover. 4. Wheat. The potatoes to be managed in the common way, only upon taking them up, the land to be left till spring, letting no water rest on it in winter, if it be a wetish soil. In the spring plough more or less, so as to insure a fine friable surface to sow the Flax in. In all these courses the fallow crops, or turneps beans and potatoes must be kept absolutely free from all weeds, and in loose friable order. It is the principle of this husbandry to banish fallows, but then it is necessary to be assiduous to the last degree in keeping these crops in the utmost perfection of management^d.

In Dorsetshire the best seed is annually imported from Riga, it being considered as very material to change the seed. It is generally sown broad-cast about the middle of april, at the rate of two bushels to an acre, upon any stubble, after only one ploughing, and clover-seed is often sown with it. It is ripe about the end of july, or beginning of august, when it is drawn by hand, by women and children, and laid in swarths till it is dry, then bound up in small bundles, and the seed is beaten out in the field where it grew, by a flail heavier than the common one, and the seed sifted clean into a large sheet; afterwards the stalk is laid on stubble or pasture ground, till it is completely dried; being often turned, and if the weather be wet, set up in small bundles. When it is sufficiently dried, and fit to bark, which is called swingling, it goes to the flax-dresser, to be prepared for the manufacturer. It is always pulled up in a green state, and is fit to draw, when the leaf on the stalk drops, and the milky juice is dried up.

The stalk is never thrown into water, as is the common practice of Lincolnshire and other places, but attains its proper state more gradually, by what is called dew ripening, or exposing it to the air and dews for a long time together. From eight to twelve bushels

^d Young's Ireland, vol. 1. 133. and vol. 2.

of seed on an acre is esteemed a good crop: dry seasons suit it best; and the farmers think, if it be not sown more than once in six years, it does not exhaust the land. This crop, besides the seed, produces from fifty to sixty dozen pounds weight on an acre of flax for spinning, worth from 4s. 6d. to 7s. the dozen. Its value is generally from eight to ten pounds an acre, including the seed; but it is a precarious crop, much dependant upon seasons.

The land is frequently let to a middle man, called a flax-jobber, who pays the farmer four or five pounds an acre, manages the crop, finds seed and labour, and expects nothing from the farmer but ploughing, and the discharge of parochial taxes.

The inferior seed, not good enough to be sown, is valuable for the oil which it yields. Two gallons may be extracted from a bushel of seeds, which weighs about forty-eight pounds. The remaining hull or husk produces the oil-cake, so much esteemed for feeding cattle. Flax-seed is also used for the same purpose, by boiling or bruising, and then steeping it in hot water. Where malt grains can be had to mix with it, this food is of a very nourishing quality^e.

The culture of Flax is very general in Perthshire, but is not carried to a great extent in any one place. The foot of every brook in the Highlands, where the water runs slowly, and plenty of fine sediment is deposited, carries amazing crops of Lint. On the banks of large rivers, where the land is flooded by back-water, the Lint is generally a good crop: and Lint is raised successfully, the second crop, after good clover lay, which saves weeding; but this ought to be sparingly practised, because it is a bad rotation.

If persons were at pains to preserve the seed, an immense sum would be saved annually. For this purpose the sheaves may be stacked till spring; and the seed may then be easily rubbed off by a roller, without injury to the rind; the sheaves being laid head to head during the operation. The people have the whole summer before them to water and dress their Lint. Or if this process be thought tedious, or they think that they lie too long out of their money, the Lint may be rippled a few days after it is pulled; the capsules dried in the sun, or on a kiln, and the Lint watered immediately, and dressed. The seed ought to be changed annually from one soil to another.

It must be acknowledged that this crop makes no return of manure, and impoverishes the soil to a great degree. But when it is managed with judgement, it can purchase manure, and bring a considerable profit besides: nor does it rob the ground more than wheat, provided the land be fallowed whenever the crop is taken off. Clover and other artificial grasses grow, when sown with Flax, better than with any other crop^f.

In Ayrshire, about seven pecks of Flax seed are usually sown upon a Scotch acre, and when the land is well pulverized and duly weeded, produces at an average twenty stone of 24 lb. English weight, worth about 12s. the stone, or 12 l. per acre. Two-pence a pound is paid for scutching; 1 d. for heckling or hatcheling; and when the Flax spins into forty-eight cuts per lb. it will cost 16 d. for spinning. One cut is equal to five score threads, or turns of the reel; two cuts make one hear; twelve cuts one hank, half or slip; four hanks, or forty-eight cuts, one spindle.

Flax worth 1 s. per lb. usually spins from thirty-six to forty-eight cuts per pound. Tow or hards is sold as low as 5 d. Flax capable of spinning to seven spindles per lb. is worth 7 s. Linnen cloth for home consumption, worked in what is called a 1400 reed, costs about 7 d. a yard for weaving, and is worth 2 s. 4 d. or half a crown the yard.

Flax in this country is by many degrees less vigorous and luxuriant than in Flanders, where the fine lace and cambrics are manufactured^g.

They have a particular method of managing Flax in that country, which in French is called *Linramé*.

The land is ploughed and manured for it before winter: in the beginning of march, or sooner, according to the season, it is deeply ploughed again: some days before sowing they spread upon the land some pigeon's dung, and they cover the seed with a harrowing and rolling: When the Flax is four or five inches high, they weed it with the most scrupulous attention, and then build a kind of cover hanging over the little plants in the following manner. They stick on both sides of the ground, bordering the ridge, some strong wooden forks, about six inches high, upon which they put poles along the width of the ridge, in a direction parallel to the ground. These poles are crossed by small sticks, branches of trees, &c. so as to form a kind of grate full of holes, through which the plants of Flax pass, as they grow up: by this method their stems have a good defence against wind and rain, and their roots against either excessive humidity or heat; and thus their vegetation is very much benefited. The produce is very great; and when it succeeds well, the crop exceeds in value the land where it grows. The culture, indeed, is very expensive, for the requisite wood costs about 16 l. If, however, the crop on an acre be worth 50 l. and upwards, when an acre cultivated in the common way is worth no more than from 10 l. to 15 l., the expense and trouble are well paid; and the wood, when the crop is gathered, is still good for something^h. This culture is probably adopted with a view of drawing up the Flax tall and slender, for the purpose of having the fibres finer, for the delicate fabrics of that country.

It has been strongly recommended, instead of steeping the Flax in ponds or other cold water, to separate the *boon* or pulp of the stalk from the *barle* or fibrous part, which constitutes the Flax, by boiling it in water. If this process should be found to answer as well as the common one, much time and labour would be saved, and the air and waters would not be poisoned as they now are where Flax and Hemp are steeped. The Flax would also probably be of a finer colour; and the operation of bleaching would be safer, and less tedious. Whether the strength of the thread would be improved or diminished, must depend upon experienceⁱ.

From the foregoing accounts, and the result of general experience concerning this crop, the following observations may be made.

1. That Flax requires a rich dry soil, or fat sandy loam, particularly that which is formed from the sediment of great rivers: and that old grass-land of this description is its most proper matrix. It is, however, not unfrequently, sown on arable land; and when the soil is in heart, dry, friable and clean, with good success.

2. Much depends on the state of the soil at the time of sowing. It should neither be wet nor dry, and the surface ought to be made as fine as that of a garden bed. For the crop should all rise together, and the surface should be evenly seeded. If the plants come up at several times, or if by accident or mismanagement they are thin upon the ground, the crop is irreparably injured. This will be the case in a season of drought, or when spring frosts are severe, or when the crop is attacked by a small white slug, or when the ground being full of clods the seeds are not evenly dispersed, but not being able to pierce the clods, come up in circles round them, leaving vacancies in the centre favouring their early branching: than which nothing is more detrimental to the crop; the goodness of it depending much on its running up with a single stalk, for wherever it branches the fibres terminate, and they are worked off in dressing.

3. If the crop be intended for thread of the first quality, the time of pulling is when the seeds are formed; but if they be suffered to ripen, the advantage gained by the seed is balanced by the inferior quality of the Flax; the filaments being harsh, and the cloth made from them not taking a good colour in whitening. It is also a great exhauster of the soil, when it stands for the seed to ripen.

^h Balforno in Young's Ann. 14. 346.

ⁱ Bath papers 5. 297. Gentl. magaz. and Curtis flora Londin.

^e Agric. survey of Dorsetshire, p. 26.

^f Agric. survey of Perthshire, p. 37.

^g Agric. survey of Ayrshire, p. 38.

4. The Flax crop interferes with harvest, and therefore ought to be confined to rich grass-land districts, where harvest is a secondary object, and where exhaustion may be rather favourable than hurtful to succeeding arable crops, by checking the too great rankness of rich fresh-broken ground^k.

LINUM. See *Gypsophila*, *Lythymachia*, *Polypremum*.

LINZA. See *Ulva*.

LION'S-FOOT. See *Catananche*.

LION'S-LEAF. See *Leontice*.

LION'S-TAIL. See *Phlomis Leonurus*.

LIPARIA. (On account of the smoothness of the first species. From λιπος or λιπαρος, fat, comes Λιπαρια smoothness, used metaphorically for a smooth unruffled temper.)

Lin. gen. Reich. n. 950. Schreb. n. 1190. mant. 156. Juss. 353.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, very obtuse at the base; half-five-cleft, acute: the lowest division very long, elliptic, petal-like.

COR. papilionaceous, without processes of the keel or wing. Standard oblong, conduplicated, straight; the sides reflex. Wings oblong, straight, narrower at the base, two-lobed at the lower margin.

Keel lanceolate, subascending, two-parted at the base.

STAM. Filaments diadelphous; simple and nine-parted; filiform: three shorter than the rest. Anthers ovate.

PIST. Germ sessile, very short. Style filiform; middling. Stigma simple.

PER. Legume ovate.

SEEDS few.

ESSENTIAL CHARACTER.

Cal. five-cleft, with the lowest segment elongated.

Cor. wings two-lobed below. Stam. the larger, with three shorter teeth. Legume ovate.

SPECIES.

1. *Liparia sphærica*. Globe-flowered *Liparia*.
Lin. syst. 665. Reich. 3. 479. mant. 268.
Genista africana, rusci foliis longioribus, floribus luteis in globum congestis. Raii dendr. 107.
Flowers in heads, leaves lanceolate, nerved, smooth.
2. *Liparia graminifolia*. Grass-leaved *Liparia*.
Lin. syst. 665. Reich. 3. 479. mant. 268.
Genista africana, foliis pinastri, flor. spicatis luteis. Raii dendr. 105.
Flowers in heads, leaves linear alternate acute sessile, calyxes villose.
3. *Liparia umbellata*. Umbelled *Liparia*.
Lin. syst. 665. Reich. 3. 480. mant. 516.
Borbonia lævigata. Lin. syst. 643. Reich. 3. 398. mant. 100.
Flowers umbelled, leaves lanceolate, smooth and even, corollas smooth, calyxes and bractes hairy.
4. *Liparia villosa*. Woolly *Liparia*.
Lin. syst. 666. Reich. 3. 480. mant. 438. Houst. hist. nat. 5. t. 25. f. 1.
Borbonia tomentosa. Lin. spec. 994. Berg. cap. 190.
a. Genista africana tomentosa, folio cochleariformi, flore luteo. Seba thes. 1. 38. t. 24. f. 1.
β. G. afr. arborescens, folio argentea lanugine vestito. Seba thes. t. 24. f. 2.
γ. Lotus fruticosus. Lin. syst. 10. 1179.
Flowers in heads, leaves ovate acute villose.
5. *Liparia sericea*. Silky *Liparia*.
Lin. syst. 666. Reich. 3. 480.
Flowers subspiked axillary, leaves oblong-ovate acute villose.

DESCRIPTIONS, &c.

Linneus separates this genus from *Borbonia*, because the tenth stamen is not deficient in this, as it is in *Borbonia*. Lamarck unites them. The character of the genus is taken from the first species. It is composed of Shrubs, that have the habit of *Borbonia*, smooth or villose. Leaves simple, sessile, smooth or villose.

^k Marshall's Yorkshire, 2. 68.

Stipules scarcely any. Flowers axillary or terminating; solitary, or more often many^a. They are natives of the Cape of Good Hope.

1. This is a shrub with very handsome flowers. Stem four feet high; stout, smooth and even. Leaves alternate, remote, broad-lanceolate, quite entire, acute, rigid, dagger-pointed, pungent. Head terminating, sessile, smooth, the size of an Artichoke, surrounded by the leaves like a calyx, of the same length with the corollæ. The lowest segment of the calyx the length of the whole corolla, and of the same breadth also, coloured or petaloid, emarginate-trifid at the top. Corolla tawny. The manner in which the wings wrap round each other, before the flower opens, is very singular^b.

2. Stem shrubby, determinately branched, smooth and even, angular. Leaves flat, acuminate, stiff, smooth and even, one-nerved, alternate, much longer than the internodes, decurrent a little on the back and edges. Stipules minute, in pairs, awl-shaped. Head made up of a raceme, terminating, sessile, not longer than the leaves. Calyx hoary, hairy, with the lower segment longer. Corolla yellow. Dorsal stamen distinct. Germ hirsute. Stigma simple.

3. See the description under *Borbonia lævigata*.

4. This resembles *Indigofera sericea*. The flowers are in bundles: the corollas smooth and even: the stamens truly diadelphous^c.

Branches round, tomentose, warted, determinately divided: branchlets in whorls, divided into others also in whorls, thickly tomentose, silvery. Leaves scattered, tomentose on both sides, silvery, shining, frequent, scarcely an inch long, longer than the internodes, spreading a little. Heads or spikes sessile at the ends of the branchlets, fortified with leaves. Corolla red. Germ hirsute^d.

Introduced from the Cape in 1774, by Mr. Francis Masson^e.

5. This is allied to the preceding^f.

PROPAGATION AND CULTURE.

See *Borbonia*.

Liparia opposita. See *Crotalaria*.]

LIPPIA. (So named by Houstoun, from Augustine Lippi, who travelled into Egypt, and died in Abyssinia. Fungus melitenensis 1725.)

Lin. gen. n. 781. Reich. n. 844. Schreb. n. 993.

Houst. rel. 12. Jacqu. amer. 176. Gartn. t. 56.

Juss. 109.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of Stellatæ.—Vitices, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, compressed, four-toothed, bivalved when mature: valves membranaceous, acuminate, keeled, upright, permanent.

COR. one-petalled, unequal. Border four-cleft: divisions rounded, the inferior and superior one larger: the superior erect.

STAM. Filaments four, shorter than the corolla; two of them longer than the others. Anthers simple.

PIST. Germ ovate, compressed-flat. Style filiform, of the situation and length of the stamens. Stigma oblique.

PER. none: valves of the calyx cover the seeds.

SEEDS solitary, oblong.

OBS. Several fructifications are collected into a little head.

ESSENTIAL CHARACTER.

Cal. four-toothed, roundish, upright, compressed-membranaceous. Caps. one-celled, two-valved, two-seeded, straight. Seed one two-celled.

SPECIES.

1. *Lippia americana*.
Lin. spec. 883. syst. 574. Reich. 3. 187. Gartn. fruct. 1. 266. Houst. reliqu. 6. t. 12.
Heads pyramidal.
2. *Lippia hemisphærica*.
Lin. syst. 574. Reich. 3. 187. Jacqu. amer. 176. t. 179. f. 100.
Heads hemispherical.

^a Jussieu.

^b Linn. mant.

^c Ibid.

^d Bergius.

^e Hort. kew.

^f Linn. mant. 269.

- [3. *Lippia ovata*.
Lin. syst. 574. *Reish.* 3. 187. *mant.* 89. *Eurm.*
prodr. 17.

Dalea Lippiastrum. *Gærtn. fruct.* 1. 235. *t.* 51.

Selago ovata. *L'Herit. stirp. nov.* 2. *t.* 33.

Heads ovate, leaves linear, quite entire.

4. *Lippia hirsuta*.

Lin. syst. 574. *suppl.* 288.

Hirsute, leaves oblong wrinkled serrate, tomentose underneath, panicles axillary, heads ovate.

5. *Lippia cymosa*.

Swartz. prodr. 93. *Sloan.* 2. 30. *t.* 174. *f.* 3, 4.
(Spirææ congener, &c.)

Flowers cymed, leaves ovate, almost entire.]

DESCRIPTIONS, &c.

1. Height sixteen or eighteen feet, with a rough bark; branches and leaves in pairs. Leaves oblong, pointed, a little serrate. Peduncles axillary, sustaining many pyramidal scaly heads, about the size of a large gray pea, in which are many small yellow flowers between the scales.

[It is a shrub with round pale stems, compressed at the joints. Leaves lanceolate-ovate, serrate beyond the middle, petioled, rugged. Peduncles axillary, opposite, very short. Heads imbricate backwards, with innumerable scales, four-cornered, ovate, having one flower within each scale^a.

Corolla funnel-form. Fruits on long peduncles. Heads ovate-globular; scales very broad, emarginate at the base, mucronate at the tip, concealing the calyxes, the valves of which are hispid. Seeds two, coadunate, ovate, somewhat bony, convex and smoothish on one side, flat or slightly concave on the other, whitish^b.

Gærtner is for expunging this genus, and uniting it with *Blairia*. He remarks that the calyx is certainly not superior.

Found at La Vera Cruz by Dr. Houftoun, and cultivated by Mr. Miller before 1733.

2. This is a shrub ten feet in height, the whole odoriferous and aromatic; dividing into woody, round, weak branches, that bend down unless they are supported; the younger ones are quadrangular and flower-bearing. Leaves oval-lanceolate, acuminate at both ends, entire, or sometimes irregular at top, with a few incisures, smooth underneath, smoothish above; petioled, opposite, two or three inches long. Peduncles axillary, solitary, opposite, almost the length of the petioles, ending in an imbricate hemispherical head, the scales of which are rhomboid-cordate, acuminate, entire, one under each flower. Flowers small, each on a very short peduncle. Corolla white. Capsules connate, easily separable when ripe, and resembling a two-celled, two-valved capsule: or each capsule may be taken for the cover of the seed, and then there will be no pericarp. This plant connects the *Stellate* with the *Verticillate* plants, and yet is of neither order. Native of Carthage in New Spain^c.

Mr. Miller gives this species in the last folio edition of the Dictionary, but he does not say that he had cultivated it.

3. Linneus describes this in the mantissa under the name of *Lippia ovata*. Gærtner separates it from *Lippia*, on account of the inverted situation of the embryo, and names it *Dalea Lippiastrum*. L'Heritier has placed it among the *Selagos*, where a description of it will be found.

4. Stem four-cornered, hoary with shagginess. Leaves opposite, petioled, long, hairy above, hoary beneath. Peduncles axillary, several, elongated into a panicle, branching. Pedicels terminating in ovate heads, supported by two bractes. Flowers minute, white. Found in America by Mutis^d.

5. This shrub has often several stems from the same root, each no bigger than a goose quill, round, woody, brownish black, from three to six feet in height, slender, and requiring support: twigs many, opposite, having sharp prickles one third of an inch long, and opposite leaves, half an inch in diameter, a little pointed at the ends, almost round, yellowish green, smooth,

^a Linn. spec.

^b Gærtner.

^c Jacquin.

^d Linn. suppl.

something like those of *Nummularia*, and very strong scented like *Pulegium*. Petioles the eighth of an inch in length. The flowers come out at the top, are small, many together, of the colour, and somewhat resembling those of *Spiræa Theophrasti*, though not so close set, nor so handsome. Seeds small, oblong, channelled, brown. Native of Jamaica^e.]

PROPAGATION AND CULTURE.

These shrubs being natives of the Continent and islands of the West Indies, must be preserved in a bark stove. The seeds should be sown on a hot-bed, and the plants treated as other shrubby plants from the same country: by keeping them always in the stove, plunged in the bark bed, observing to give them a large share of air in warm weather, and to refresh them frequently with water. In winter they must be watered more sparingly, and be kept in a moderate degree of warmth, otherwise they will not live through the winter, especially when young; but when they have acquired strength, they may be preserved with a less share of warmth.

As the plants advance in their growth, shift them into larger pots, but this should not be too often repeated. Once every spring will be sufficient; for these and many other exotic plants do not thrive so well when frequently removed, as when they are permitted to fill the pots with their roots. Shift them in April, at which time the tan of the hot-bed should be stirred, and fresh tan mixed with it, to increase the heat. The earth in which these plants are placed, should be fresh and light, but not too rich.

LIQUIDAMBAR. (*A name given by the Spaniards in America to this tree, from the liquid gum which it distils.*)

Lin. gen. n. 1076. *Reich. n.* 1174. *Schreb. n.* 1452. *Clayt. Mitch.* 12. *Gærtn. t.* 90. *Juss.* 410.

Class. 21. 7. *Monoecia Polyandria.*

Nat. order of *Coniferae*.—*Amentaceæ*, *Juss.*

GENERIC CHARACTER.

* *Male Flowers* numerous, on a long, conical, loose ament.

CAL. Involucre common four-leaved; leaflets ovate, concave, caducous; the alternate ones shorter.

COR. none.

STAM. Filaments numerous, very short, on a body convex on one side, flat on the other. *Anthers* upright, twin, four-furrowed, two-celled.

* *Female Flowers* at the base of the male spike, heaped into a globe.

CAL. Involucre as in the male, but double.

Perianths proper bell-shaped, cornered, several, connate, warty.

COR. none.

PIST. Germ oblong, growing to the perianth. *Styles* two, awl-shaped. *Stigmas* growing on one side, length of the style, recurved, pubescent.

PER. Capsules as many, ovate, one-celled, bivalve at the tip, acute, disposed into a globe, woody.

SEEDS several, oblong, glossy, with a membrane at the point mixed with a great many chaffy corpuscles.

Emend. Gærtn.

PIST. Germs two, conjoined between each other, and with the perianth. *Style* to each long, awl-shaped. *Stigma* recurved.

PER. Capsules twin, leathery, beaked, one-celled, gaping inwards.

SEEDS several, oblong, glossy, compressed, ending in a little membrane above.

ESSENTIAL CHARACTER.

MALE. Cal. common, four-leaved. *Cor.* none. *Filam.* numerous.

FEM. Cal. in a globe, four-leaved. *Cor.* none. *Styles* two. *Caps.* many in a globe, two-valved, many-seeded.

SPECIES.

1. *Liquidambar Styraciflua*. *Maple-leaved Liquidamber*, or *Sweet Gum*.

Lin. spec. 1418. *Reich.* 4. 171. *mat. med.* 204. *Gærtn. fruct.* 2. 58. *Kalm. itin.* 2. 102. *Du Roi herb.* 1. 369. *Blackw. t.* 485.

^e Sloane.

L I Q

- Liquidambar. *Bauh. pin.* 502. *Gron. virg.* 2. 51.
Lin. hort. upf. 287. *hort. cliff.* 486. *Cold. noveb.* 228.
L. arbor f. Styraciflua aceris folio. Pluk. phyt. t. 42. *f. 6. Catesb. car. 2. t. 65. Dubam. arb. 1. t. 139.*
Styrax aceris folio. Raii hist. 1681. 1702. 1799.
Leaves palmate-lobed, with the sinuses of the base of the veins villose.
 2. Liquidambar imberbe. *Oriental Liquidamber.*
Ait. hort. kew. 3. 365.
Liquidamber orientalis. Mill. dict. n. 2.
Leaves palmate-lobed, with the sinuses of the base of the veins smooth.

DESCRIPTIONS, &c.

1. The trunk of the Sweet-Gum tree is commonly two feet in diameter, straight, and free from branches to the height of about fifteen feet; from which the branches spread and rise in a conic form to the height of forty feet and upwards from the ground. Leaves five-pointed, divided into so many deep sections, (or sometimes seven) and set on long slender petioles. In february before the leaves are formed, the blossoms begin to break forth from the tops of the branches into spikes of yellowish-red, pappose, globular flowers, which swell gradually, retaining their round form, to the full maturity of their seed-vessels, which are thick set with pointed hollow protuberances, and splitting open discharge their seeds. Each cell contains a seed, winged at one end with many small grains, distinct from the seed^a. These, which Linneus calls chaffy corpuscles, according to Gærtner, are immature germs. There are two capsules in each cell of the ament; they are grooved, shining, and of a bay-ferruginous colour. Common receptacle globular, honey-combed, with the female bell-shaped calyxes united: proper none, besides the inner walls of the capsules, to which the germs are fixed all round. Seeds as many as sixteen in a capsule, oblong elliptic, compressed like a lens^b.]

The leaves are shaped somewhat like those of the lesser Maple, but are of a dark green colour, with their upper surfaces shining. A sweet glutinous substance exudes through their pores in warm weather, which renders them clammy to the touch.

[The leaves of this species are distinguished from those of the second by the little tufts of hairs placed where the veins divide from the midrib.

The wood of this tree is good timber, and is used in wainscoting, &c. The grain is fine, and some of it beautifully variegated; but when wrought too green is apt to shrink, to prevent which no less than eight or ten years is sufficient to season the planks. From between the wood and the bark issues a fragrant gum, which trickles from the wounded trees, and by the heat of the sun congeals into transparent drops, which the Indians chew, as a preservative to their teeth. It smells so like Balsam of Tolu, that it is not easy to distinguish them. The Bark is also of singular use to the Indians for covering their huts^c.

Native of North America, in low clayey ground.—Cultivated in the garden of Compton, Bishop of London (in 1688) by his gardener George London. It was sent over from Virginia by Banister^d.]

2. The leaves of this have their lobes shorter, and much more sinuated on their borders, they end in blunt points, and are not serrated. [They have also none of those tufts of hair which are found on the leaves of the first sort. Its native country is unknown. According to Mr. Miller,] the seeds were sent to Mr. Peyssonet from the Levant, to the King of France's garden at Marli. Mons. Richard, the King's gardener, sent some of them to Mr. Miller, [who cultivated this tree in 1759^e.]

PROPAGATION AND CULTURE.

The Sweet-Gum tree is hardy enough to endure the severest cold of this country in the open air. It is commonly propagated by layers; but when raised from seeds, it grows to be a much fairer tree.

^a Catesby.

^b Gærtner.

^c Catesby.

^d Ray hist. 1681.

^e Hort. kew.

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The seeds of this tree, if sown in the spring, commonly remain in the ground a whole year before the plants come up; so that the surest way to raise them is, to sow the seeds in boxes or pots of light earth; which may be placed in a shady situation during the first summer, and in autumn they may be removed where they may have more sun; but if the winter should prove severe, it will be proper to cover them with Peas-haulm, or other light covering, which should be taken off constantly in mild weather. In the following spring, if these boxes or pots are placed upon a moderate hot-bed, it will cause the seeds to come up early, so that the plants will have time to get strength before the winter; but during the first and second winters, it will be proper to screen the plants from severe frost, but afterwards they will bear the cold very well.

[LIQUIDAMBAR PEREGRINUM. See *Comptonia asplenifolia*.

LIQUORICE. See *Glycyrrhiza*.

———— Vetch. See *Astragalus*.

————, Wild. See *Abrus*.

LIRICONFANCY. See *Convallaria*.

LIRIODENDRUM. (*Δενδρον λειριον, arbor liliacea, Lily tree, a tree bearing liliaceous flowers.*)

Lin. gen. n. 689. *Reich. n.* 747. *Schreb. n.* 941.

Gærtn. t. 178. *Juss.* 281. *Tulipifera. Catesb. t.* 48.

Class. 13. 7. Polyandria Polygynia.

Nat. order of Coadunatae.—Magnoliæ, Juss.

GENERIC CHARACTER.

CAL. *Involucre proper* two-leaved: leaflets triangular, flat, deciduous.

Perianth three-leaved; leaflets oblong, concave; spreading, petal-form, deciduous.

COR. six-petalled, bell-shaped; *Petals* spatulate, obtuse, channelled at the base: the three exterior deciduous.

STAM. *Filaments* numerous, shorter than the corolla, linear, inserted into the receptacle of the fructification. *Antbers* linear, growing longitudinally to the sides of the filament.

PIST. *Germs* numerous, disposed into a cone. *Style* none. *Stigma* to each globose.

PER. none. *Seeds* imbricated into a body resembling a strobile.

SEEDS numerous, ending in a lanceolate scale, emitting an acute angle towards the base of the scale from the inner side, compressed at the base, acute.

ESSENTIAL CHARACTER.

Cal. three-leaved. *Pet.* six. *Seeds* imbricated into a strobile.

SPECIES.

1. *Liriodendron Tulipifera. Common Tulip-tree.*

Lin. spec. 755. *synt.* 507. *Reich. 2.* 625. *hort. cliff.* 223. *upf.* 154. *Gærtn. fruct.* 2. 475. *Gron. virg.* 60. 83. *Kalm. itin.* 2. 322. *Trew. Ebret. t.* 10. *Butt. cun.* 229. *Du Roi herb.* 1. 374. *Curt. magaz.* 275. *Schmidt arb.* 1. 48.]

Tulipifera Liriodendron. Mill. dict.

T. arbor virginiana. Herm. lugdb. 612. *t.* 613.

T. virg. tripartito aceris folio, media lacinia velut abscissa. Pluk. phyt. t. 117. *f.* 15. & *t.* 248. *f.* 7. *Catesb. car. 1. t.* 48. *Dubam. arb. 2. t.* 102. *Raii hist.* 1798.

β. *T. caroliniana, fol. productioribus magis angulosis. Pluk. phyt. t.* 68. *f.* 3.

Leaves lobed.

[2. *Liriodendron Liliifera.*

Lin. spec. 755. *synt.* 507. *Reich. 2.* 625. *Burm. ind.* 124. *Lour. cochinch.* 346.

Sampacca montana. Rumph. amb. 2. 204. *t.* 69.

Leaves lanceolate.]

DESCRIPTIONS, &c.

1. This is a native of North America, where it grows so large as to be a tree of the first magnitude, and is generally known through all the English settlements by the title of Poplar. Of late years there has been great numbers of these trees raised from seeds in the English gardens, so that now they are become common in the nurseries about London, and there are many of the trees in several parts of England which do annually produce flowers. The first tree of this kind which flowered here, was in the gardens of the late Earl of

Peterborough, at Parsons Green near Fulham, which was planted in a wilderness among other trees; before this was planted in the open air, the few plants which were then in the English gardens, were planted in pots and housed in winter, supposing they were too tender to live in the open air; but this tree soon after it was placed in the full ground, convinced the gardeners of their mistake, by the great progress it made, while those which were kept in pots and tubs increased slowly in their growth; so that afterward there were many others planted in the full ground, which are now arrived to a large size, especially those which were planted in a moist soil. One of the handsomest trees of this kind near London, is in the garden of Mr. Jones at Waltham Abbey; and at Wilton, the seat of the Earl of Pembroke, there are some trees of great bulk; but the old tree at Parsons Green is quite destroyed, by the other trees which were suffered to over-hang it, and rob it of its nourishment, from a fear of taking down the neighbouring trees, lest by admitting the cold air to the Tulip tree it would injure it.

[Mr. Darby at Hoxton and Mr. Fairchild, seem to have been the first who raised this tree in any quantity from seeds, and from them the gardens abroad were chiefly supplied^a. Bishop Compton, however, cultivated it at Fulham in 1688^b. There is a fine tree in Mr. Ord's garden at Walham Green, every year covered with blossoms^c.]

The young shoots of this tree are covered with a smooth purplish bark; they are garnished with large leaves, whose foot-stalks are four inches long; they are ranged alternate; the leaves are of a singular form, being divided into three lobes; the middle lobe is blunt and hollowed at the point, appearing as if it had been cut with scissars. The two side lobes are rounded, and end in blunt points. The leaves are from four to five inches broad near their base, and about four inches long from the foot-stalk to the point, having a strong midrib, which is formed by the prolongation of the foot-stalk. From the midrib run many transverse veins to the borders, which ramify into several smaller. The upper surface of the leaves is smooth, and of a lucid green, the under is of a pale green. The flowers are produced at the end of the branches; they are composed of six petals, three without, and three within, which form a sort of bell-shaped flower, whence the inhabitants of North America gave it the title of Tulip. These petals are marked with green, yellow, and red spots, making a fine appearance when the trees are well charged with flowers. The time of this tree's flowering is in July, and when the flowers drop, the germ swells, and forms a kind of cone, but these do not ripen in England. [Gärtner says that he has dissected more than five hundred scales, or *samaræ*, as he calls them, without finding a single fertile seed. The upper scales have only one seed in them, but the lower ones have constantly two.]

Mr. Catesby, in his Natural History of Carolina, &c. says, there are some of these trees in America, which are thirty feet in circumference; that the boughs are unequal and irregular, making several bends or elbows, which render the trees distinguishable at a great distance, even when they have no leaves upon them. They are found in most parts of the northern continent of America, from the Cape of Florida to New England, where the timber is of great use, particularly for making of periaugues, the trunks of these being large enough to be hollowed into the shape of those boats, so they are of one piece.

[Mr. Marshall describes the Tulip tree as seventy or eighty feet in height. He mentions two varieties, one with yellow, and the other with white wood; the first soft and brittle, much used for boards and heels of shoes, also turned into bowls, trenchers, &c.; the white heavy, tough and hard, sawed into joists, boards, &c. for building. He remarks that the flower has sometimes seven petals or more.

Kalm observes, that it is very agreeable at the end of May to see one of these large trees, with its singular

leaves, and covered for a fortnight together with flowers, which have the shape, size, and partly the colour of Tulips. The wood is used for canoes, whence the Swedes in North America call it Canoe-tree, for boards, bowls, dishes, spoons, and all sorts of joiners work. Kalm speaks of having seen a barn of considerable size, the sides and roof of which were made of a single Tulip-tree split into boards. But there is one inconvenience attending it, for there is no wood that contracts and expands itself so much as this. The bark is divisible into very thin laminæ, which are tough like bast. It is pounded, and given to horses who have the bots. The roots are supposed to be as efficacious in agues as Jesuit's bark.

2. This is a middle-sized tree, with spreading branches. Leaves ovate, acuminate, quite entire, smooth, alternate. Flowers pale, large, without scent, heaped at the ends of the branches, one on a peduncle. Calyx none. Petals nine, ovate, thick, forming a tube at bottom, reflex at top. Filaments about sixty, thick, very short, placed on the base of the receptacle elongated. Anthers long, acuminate, bent in, perforated at top. Germs about fifty, flattish, acute, imbricate, but without scales. Stigmas sessile. Native of China, near Canton, and of Amboina^d.

Loureiro has two other species which he names *L. Figo* and *L. Coco*, but not knowing whether they belong to this genus or to that of *Magnolia*, I have not ventured to insert them among the species.]

PROPAGATION AND CULTURE.

This tree is propagated by seeds, which are now annually imported in great plenty from America. These may be either sown in pots or tubs filled with light earth from the kitchen-garden, or in a bed in the full ground. Those which are sown in the first way, may be placed on a gentle hot-bed, which will forward their growth, so that the plants will acquire more strength before winter. If they are thus treated, the glasses of the hot-bed should be shaded from the sun every day, and the earth in the pots should be frequently refreshed with water, for unless it is kept moist, the seeds will not grow; but this must be done with care, so as not to make it too wet, which will rot the seeds. When the plants appear, they must be still shaded in the heat of the day from the sun, but fresh air must be admitted daily to prevent their drawing up weak, and as the season advances, they must be gradually hardened to bear the open air. While the plants are young, they do not care for much sun, so they should be either shaded or placed where the morning sun only shines upon them; they must also be constantly supplied with water, but not have it in too great plenty. As the young plants commonly continue growing late in the summer, so when there happens early frosts in autumn, it often kills their tender tops, which occasions their dying down a considerable length in winter; therefore they should be carefully guarded against these first frosts, which are always more hurtful to them than harder frosts afterward, when their shoots are better hardened; however, the first winter after the plants come up, it will be the better way to shelter them in a common hot-bed frame, or to arch them over with hoops, and cover them with mats, exposing them always to the open air in mild weather.

The following spring, just before the plants begin to shoot, they should be transplanted into nursery-beds, in a sheltered situation, where they are not too much exposed to the sun. The soil of these beds should be a soft gentle loam, not too stiff, nor over light; this should be well wrought, and the clods well broken, and made fine. There must be great care taken not to break the roots of the plants in taking them up, for they are very tender; they should be planted again as soon as possible, for if their roots are long out of the ground, they will be much injured thereby. These may be planted in rows at about a foot distance, and at six inches distance in the rows, for as they should not remain long in these nursery-beds, so this will be room enough for them to grow; and by having them so close, they may be shaded in the summer, or shel-

^a Miller's Dict. ed. 1724. 8vo.

^b Hort. kew. from Ray hist.

^c Curt. magaz.

^d Loureiro.

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tered in the winter, with more ease than when they are farther apart.

When the plants are thus planted, if the surface of the beds is covered with rotten tanners bark, or with moss, it will prevent the earth from drying too fast, so that the plants will not require to be so often watered, as they must be where the ground is exposed to the sun and air; after this, the farther care will be to keep them clean from weeds, and if the latter part of summer should prove moist, it will occasion the plants growing late in autumn, so the tops will be tender, and liable to be killed by the first frosts. In this case, they should be covered with mats to protect them.

If the plants make great progress the first summer, they may be transplanted again the following spring; part of them may be planted in the places where they are to remain, and the other should be planted in a nursery where they may grow two or three years to acquire strength before they are planted out for good; though the younger they are planted in the places where they are to stand, the larger they will grow, for the roots run out into length, and when they are cut it greatly retards their growth, so that these trees should never be removed large, for they rarely succeed when they are grown to a large size before they are transplanted. Some trees I have seen removed pretty large, which have survived their removal, but young plants of two or three years old which were planted near them, were much larger in fifteen years than the old ones.

When the seeds are sown upon a bed in the full ground, the bed should be arched over with hoops, and shaded in the heat of the day from the sun; and frequently refreshed with water; as also should the plants when they appear, for when they are exposed much to the sun they make but small progress. The care of these in summer must be to keep them clean from weeds, supplying them duly with water, and shading them from the sun in hot weather; but as these seeds will not come up so soon as those which were placed on a hot-bed, they generally continue growing later in autumn, therefore will require shelter from the early frosts in autumn; for as the shoots of these will be much softer than those of the plants which had longer time to grow, so if the autumnal frosts should prove severe, they will be in danger of being killed down to the surface of the ground, by which the whole summer's growth will be lost, and sometimes the plants are entirely killed by the frost the first winter, if they are not protected.

As these plants will not have advanced so much in their growth as the other, they should remain in the seed-bed to have another year's growth before they are removed, therefore all that will be necessary to observe the second year is to keep them clean from weeds; and now they will not be in so much danger of suffering from the warmth of the sun as before, therefore will not require such constant care to shade them; nor should the watering of them be continued longer than the spring, for if the autumn should prove dry, it will prevent the plants from shooting late, and harden those shoots which were made early in the year, whereby the plants will be in less danger from the early frosts.

After the plants have grown two years in the seed-bed, they will be strong enough to remove, therefore, in the spring, just at the time when their buds begin to swell, they should be carefully taken up, and transplanted into nursery-beds, and treated in the same way as has been before directed for the plants which were raised on a hot-bed.

There are some people who propagate this tree by layers, but the layers are commonly two or three years before they take root, and the plants so raised, seldom make such straight trees as those raised from seeds; though indeed they will produce flowers sooner, as is always the case with stunted plants.

This tree should be planted on a light loamy soil, not too dry, on which it will thrive much better than upon a strong clay, or a dry gravelly ground; for in America they are chiefly found upon a moist light soil, where they will grow to a prodigious size, though it

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will not be proper to plant these trees in a soil which is too moist in England, because it might endanger the rotting of the fibres of the roots, by the moisture continuing too long about them, especially if the bottom be clay, or a strong loam, which will detain the wet.

[To raise them in the open ground the beginning of march, prepare a bed of good mellow rich earth well mixed with old rotten cow-dung, exposed to the sun, and sheltered from cold winds: place an old frame over the bed, and having sown the seeds, sift over them, half an inch thick, a soil composed some months before of one load old pasture earth, one of well-rotted cow-dung, and half a load of sea or fine pit-sand. Some of these seeds will probably make their appearance in nine or ten weeks, but much the greater part will lie in the ground till next spring. Water the beds therefore no more than barely sufficient to cherish the plants that have appeared: for four or five weeks screen them from the sun during the heat of the day, but afterwards let them receive its full influence. In bad weather, during winter, throw double mats over the frames.

In march the succeeding year, pick off all mossy, hard crusted earth from the bed, smooth it, and sift on some fine, rich mould. The end of april, or beginning of may, plants will appear in abundance, when they must be frequently but gently watered. Till the beginning of august they must be screened from the mid-day sun, by part of an old reed fence, or by nailing some thin boards together high enough to shade the bed. After this, no farther care is necessary, but frequent moderate waterings, and to throw a mat over the frame during any severe winter storm.

The beginning of april, next season, take up the plants carefully with a trowel, without bruising the roots, and if they cannot be planted immediately, mix a pail-full of sifted mould and water, to the consistence of pap; draw the plants through it, till as much adhere as covers their roots and fibres; in this condition they may be kept several days out of the ground. Cut only a little of the tap-root smoothly off, but let all the fibres remain; and then plant them in drills cut out with the spade, at a foot distance row from row, and six inches in the row. Plant five of these lines, and then leave an alley three feet wide. Water them frequently and plentifully during the summer months; throw mats over them in case of very severe frost, the first winter, and let them remain two years. Then remove them to another nursery, in rows three feet and a half distant, and eighteen inches in the row, and let them continue three years. Being now six or seven feet high, they will be of a good size for planting where they are to remain. No tree bears pruning its roots or branches worse than this.

It is a tree of extraordinary beauty and stateliness, and highly deserves a place in all noble and elegant plantations.

LIRIUM. See *Lilium*.

LISIANTHUS. (From *λίσ* or *λίσσος* smooth, and *ανθος*, a flower.)

Lin. gen. Reich. n. 224. Schreb. n. 274. Suppl. 135. Mant. 6. Brown. jam. t. 9. Juss. 142.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Rotaceæ.—Gentianæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted: *leaflets* lanceolate, keeled, membranaceous on the margin, very short, permanent.

COR. one-petalled, funnel-form. *Tube* long, somewhat ventricose, straitened at the base within the calyx. *Border* five-parted: *divisions* lanceolate, shorter than the tube, recurved.

STAM. *Filaments* five, filiform, longer than the tube. *Anthers* ovate, incumbent.

PIST. *Germ* oblong, sharp-pointed. *Style* filiform, length of the stamens, permanent. *Stigma* headed, two-plated.

PER. *Capsule* oblong, acuminate, two-celled: the margins of the *valves* intorted.

SEEDS numerous.

* Boucher.

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ESSENTIAL CHARACTER.

Cal. keeled. *Cor.* with a ventricose tube and recurved divisions. *Stigma* two-plated. *Caps.* two-celled, two-valved; the margins of the valves intorted.

SPECIES.

1. *Lifianthus longifolius*.
Lin. syst. 197. *Reich.* 1. 426. *mant.* 43. *Brown.*
jam. 157. 1. t. 9. f. 1. *Sloan. jam.* 1. 157.
t. 101. f. 1. (*Rapunculus*.)
Leaves lanceolate, segments of the corolla lanceolate, acute.
2. *Lifianthus cordifolius*.
Lin. syst. 197. *Reich.* 1. 427. *mant.* 43. *Brown.*
jam. 157. 2. t. 9. f. 2. *Swartz. obs.* 60.
Leaves cordate, segments of the corolla lanceolate, acute.
3. *Lifianthus exsertus*.
Swartz. prodr. 40.
Leaves ovate-lanceolate, peduncles trichotomous, genitals very long.
4. *Lifianthus latifolius*.
Swartz. prodr. 40.
Leaves lanceolate-elliptic acuminate, peduncles trichotomous, segments of the corolla erect, genitals included.
5. *Lifianthus umbellatus*.
Swartz. prodr. 40.
Leaves elongated obovate, flowers terminating peduncled umbelled, segments of the corolla very short, blunt, upright.
6. *Lifianthus frigidus*.
Swartz. prodr. 40.
Leaves ovate acuminate coriaceous, panicle terminating, trichotomous, corollas ventricose, with roundish segments.
7. *Lifianthus sempervirens*.]
Bignonia sempervirens. *Lin. spec.* 869. *Reich.* 3. 155.
Mill. dict. n. 7.
Gelfeminum f. Jasminum luteum odoratum virginianum scandens sempervirens. *Catesb. car.* 1. t. 53.
Raii hist. 1769.
Syringa volubilis virg. &c. *Pluk. phyt.* t. 112. f. 5.
Leaves lanceolate-elliptic, segments of the corolla ovate, blunt.
- [8. *Lifianthus glaber*.
Lin. syst. 197. *suppl.* 134. *Smith. ic. ined.* t. 29.
Smooth, leaves ovate petioled, corymbs terminating.
9. *Lifianthus Chelonoides*.
Lin. syst. 197. *suppl.* 134.
Smooth, leaves opposite subconnate oblong, panicle terminating dichotomous racemose.

DESCRIPTIONS, &c.

1. This elegant little plant rises generally to the height of fourteen or sixteen inches or more: it is not much divided, but all the branches shoot commonly to the same height, and are furnished with oblong pointed leaves, placed opposite. The flowers are large in proportion to the plant; are generally longer than the leaves, and stand at the extremities of the branches^a.

According to Sloane, it rises to about four or five feet high, being branched on every side. The branches and twigs are woody. The pairs of leaves at an inch distance from each other, an inch and half long, and half as much broad in the middle, smooth, dark green, on petioles an eighth part of an inch in length. Flowers yellow, superior. Capsule pyramidal, oblong, covered with a few small leaves, three-celled, with great plenty of small brown seed in each cell.

Native of Jamaica, in a dry, sandy, but cool soil.

2. Browne remarks, that this plant may be deemed a variation of the foregoing; or that they are at least so very like in the general make and habit, that the form of the leaves is almost the only difference. Swartz, however, observes, that the leaves are always heart-shaped, the upper ones only being ovate and sessile; the corollas are also rather larger.

Native of Jamaica.

3. 4. 5. Natives of Jamaica.

6. Native of the mountains of Guadeloupe^b.

7. See the description under *Bignonia sempervirens*. Linneus observes that the seed-vessels are cordate, simple filiques.

8. The whole plant smooth. Stem upright, branched,

^a Browne.

^b Swartz.

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round, leafy. Branchlets from the axils of the upper leaves, flowering at top. Leaves opposite, oval rather than ovate, acute, quite entire, veined, paler underneath. Petioles short, connate-embracing, keeled. Stipules none. Flowers on few-flowered simple umbels, terminating the stem and branchlets. Pedicels upright, one-flowered. Bractes like the leaves, but smaller, two or three at the base of each umbel. Calyx bell-shaped, five-cleft; segments unequal, acute: Corolla five times as long as the calyx, bell-funnel-form, with equal, acute clefts, and of a yellow colour. Filaments inserted towards the base of the corolla, equal, the length of the corolla. Anthers twin, cordate-oblong, opening in front. Germ superior, ovate. Style cylindric, after flowering twisted. Stigma two-lobed; lobes obovate, flat. Capsule ovate, acute, two-celled, two-valved; the valves bent in forming the partition. Found in South America by Mutis^c.

9. Stem herbaceous, simple, round, smooth, from two to three feet in height. Leaves elliptic-oblong, quite entire, bluntish. Panicle divided into two or three long racemes. Flowers alternate, remote, directed one way, pendulous, yellow. Calyx globular. Tube of the corolla somewhat recurved, gradually widening. Genitals ascending towards the tip. Germ pyramidal, attenuated into the compressed style. The two lobes or plates of the stigma recurved and tubercled. Capsule smooth, hanging down with the style.—The herb is very bitter, and strongly purgative. Native of Surinam^d. Aublet's plant, which is cited as synonymous in the Supplement, is distinct from this, and a new species^e.

PROPAGATION AND CULTURE.

7. See *Bignonia sempervirens*. The rest being natives of South America and the islands of the West-Indies, are much more tender, and must be nursed in the bark-stove.

LITA. (*Λιτα, lævia, glabra, smooth.*)

Lin. gen. Schreb. n. 1734. *Voyria. Aubl.* 208.
t. 83. *Vohiria. Juss.* 141.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Rotaceæ. Gentianæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, erect, coloured, five-cleft, sharp, permanent.

COR. one-petalled, salver-shaped. Tube cylindric, very long, enlarged at the base and tip: border five-cleft: divisions ovate, spreading.

STAM. Filaments none. Anthers five, twin, in the throat of the corolla.

PIST. Germ oblong. Style filiform, length of the tube. Stigma headed, truncated.

PER. Capsule oblong, one-celled, two-valved.

SEEDS numerous, saw-dust-like, affixed to the margins of the valves.

OBS. This genus is allied to *Gentiana*, but differs in the corolla, pistil, and fruit.

ESSENTIAL CHARACTER.

Cal. five-cleft, with two or three scales at the base.

Cor. salver-shaped, with a very long tube, dilated at the base and throat, border five-cleft. Anthers twin, inserted in the throat. *Caps.* one-celled, two-valved. *Seeds* numerous.

SPECIES.

1. *Lita rosea*.

Voyria rosea. Aubl. guian. 209. t. 83. f. 1.
Flowers in pairs, segments of the corolla acute.

2. *Lita cærulea*.

Voyria cærulea. Aubl. guian. 211. t. 83. f. 2.
Flowers in pairs, segments of the corolla rounded.

DESCRIPTIONS, &c.

1. Root tuberous; fibrous, about a foot deep in the ground. Stem knobbed, quadrangular, with two little, connate scales at each joint, pointed, fleshy and brittle: as soon as it comes out of the ground, it divides into three, four or five branches, scarcely an inch long, knobbed, scaly, two-flowered, seldom one-flowered. Corolla rose-coloured. These flowers are almost next the ground, most of the stem being concealed. The root, which is irregular, and as big as

^c Smith.

^d Linn. suppl.

^e Swartz. obs.

the fist of a man, white within, and covered with a russet skin, is eaten in Guiana, where it grows wild, and differs not greatly from Potatoes. It flowers in may.

2. The branches of this are more numerous, the calyx is larger, with longer narrower segments; the corolla is blue, with a larger aperture to the tube, and the segments of the border larger, wider and rounded. Sometimes these are six in number, and then the flowers have six stamens.

Native of Guiana flowering in may.

Gentiana aphylla of Jacquin (amer. t. 60. f. 3.) which has only one style, is of this genus.

LITHAGROSTIS. See *Coix*.

LITHONTHLASPI. See *Iberis* and *Thlaspi*.

LITHOPHILA. (*Λιθου φίλος*, fond of rocks.)

Swartz. prodr. 14. *Lin. gen. Schreb.* n. 1708.

Class. 2. 1. Diandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved; leaflets lanceolate, sharp.

COR. *Petals* three, ovate-lanceolate, upright, converging, length of the leaflets of the calyx.

Nectary two-leaved: leaflets opposite, smaller than the corolla, keeled, acute, upright, compressed.

STAM. *Filaments* two, awl-shaped, upright, from the base of the germ, of the length of the nectary. *Antthers* roundish.

PIST. *Germ* roundish, superior. *Style* upright, length of the stamens. *Stigma* obtuse, emarginate.

PER. two-celled.

SEED

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. three-petalled. Nect. two-leaved.

SPECIES.

1. *Lithophila muscoides*.

Swartz. prodr. 14.

Native of Navaza.]

LITHOSPERMUM. (*Λιθοσπερμον* of *Dioscorides*. From *λίθος* a stone, and *σπερμα*, a seed; which is of a stony hardness.

Lin. gen. n. 181. *Reich.* n. 193. *Schreb.* n. 241.

Tournef. t. 55. *Juss.* 130. *Gärtn.* t. 67.

Class. 5. 1. Pentandria monogynia.

Nat. order of *Asperifoliae*. *Borragineae* *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* five-parted, oblong, straight, sharp, permanent: divisions awl-shaped, keeled.

COR. one-petalled, funnel-form, length of the calyx. Tube cylindric. Border half-five-cleft, obtuse, upright. Throat perforated, naked.

STAM. *Filaments* five, very short. *Antthers* oblong, incumbent, covered.

PIST. *Germ*s four. *Style* filiform, length of the stamens. *Stigma* obtuse, emarginate.

PER. none. Calyx grown larger, upright, containing the seeds in its bosom.

SEEDS four, rather oblong, obtuse, gibbous.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. funnel-form, perforated at the throat, naked.

SPECIES.

1. *Lithospermum officinale*. Common or officinal Gromwell.

Lin. spec. 189. *fyst.* 185. *Reich.* 1. 385. *hort. cliff.*

46. *fl. suec.* n. 159. *mat. med.* 55. *Woodv. med.*

bot. 134. t. 213. *Gärtn. fruct.* 1. 327. *Huds.*

angl. 79. *Wither. arr. ed.* 3. 226. *Lightf. scot.*

132. *Relb. cant.* n. 147. *Engl. bot.* 134. *Hall.*

helv. n. 595. *Scop. carn.* n. 186. *Pollich. pal.*

n. 183. *Neck. gallob.* 99. *Fl. dan.* t. 1084.

Villars dauph. 2. 450. *Krock. files.* n. 271.

Gmel. fib. 4. 73. *Plenck. ic.* 75. *Ludw. est.*

t. 147. *Kniph. cent.* 9. n. 59. *Sabb. hort. rom.*

2. t. 29. *Fuchf. hist.* 489.

L. f. *Milium folis*. *Baub. hist.* 3. 590. 2. *Raii hist.*

503. *syn.* 228.

L. majus erectum. *Baub. pin.* 258.—perenne, flore

ochroleuco. *Mor. hist.* f. 11. t. 31. f. 1.

• Aublet & Jussieu.

L. arvense. *Tabern.* 850.

L. minus. *Matth.* 918. *Dod. pempt.* 83. 2. *Cam. epit.* 659. *Ger.* 486. 2. *emac.* 609. 2.

L. vulgare minus. *Park. theat.* 432. 1.

Seeds smooth and even, corollas scarcely longer than the calyx, leaves lanceolate.

2. *Lithospermum arvense*. Corn or Bastard Gromwell.

Lin. spec. 190. *fyst.* 185. *Reich.* 1. 385. *hort. cliff.*

46. *fl. suec.* n. 160. *Gärtn. fruct.* 1. 327. *Huds.*

angl. 79. *Wither. arr. ed.* 3. 226. *Lightf. scot.*

133. *Relb. cant.* n. 148. *Engl. bot.* 123. *Hall.*

helv. n. 594. (*Heliotropium*.) *Scop. carn.* n.

187. *Pollich. pal.* n. 184. *Neck. gallob.* 99.

Fl. dan. t. 456. *Villars dauph.* 2. 450. *Krock.*

files. n. 272. *Kniph. cent.* 10. n. 56. *Thunb.*

jap. 81.

L. arvense radice rubra. *Baub. pin.* 258. *Lin. lapp.*

n. 73.

L. arv. rad. rubente. *Park. theat.* 432. 6.

L. sylvestre arvense vel nigrum. *Camér. epit.* 660.

L. nigrum, flore albo femine echii. *Baub. hist.* 3. 592.

L. annuum tetracarpon, sem. nigro auguloso. *Mor.*

hist. f. 11. t. 31. f. 7.

Echioides flore albo. *Rivin. mon.* t. 9. f. 1.

Anchusa degener facie *Milii* folis. *Ger. emac.* 610. 4.

Raii hist. 503.

Buglossum arvense annuum *Lithospermi folio*. *Tournef.*

inst. 134. *Garid.* 68. *Raii syn.* 227.

Seeds ovate wrinkled, calycine leaflets lanceolate, corollas scarcely longer than the calyx, leaves lanceolate sharpish hispid.

[3. *Lithospermum incanum*. Hoary Gromwell.

Forst. flor. austral. n. 63.

Seeds rough, spikes terminating compound contracted, leaves linear villose.]

4. *Lithospermum virginianum*. Virginian Gromwell.

Lin. spec. 190. *fyst.* 185. *Reich.* 1. 386. *Gron.*

virg. 140. 24.

L. latifolium virg. flore albido longiore. *Mor. hist.*

f. 11. t. 28. f. 3. row 3. *Raii suppl.* 272.

Corollas longer than the calyx acute rough-haired on the

outside, leaves ovate acute hispid nerved.

[5. *Lithospermum tinctorum*. Dyer's Gromwell.

Vahl symb. 2. 33. t. 28.

Arnebia tinctoria. *Forst. descr.* 62, 63.

Seeds smooth and even, spike solitary terminating directed one way, bractes lanceolate, leaves linear-lanceolate blunt.]

6. *Lithospermum orientale*. Yellow Gromwell or Bugloss.

Lin. fyst. 185. *Reich.* 1. 386.

Anchusa orientalis. *Lin. spec.* 191. *hort. cliff.* 47.

Pallas it. 3. 665. *Mill. dict.* n. 4.

Asperugo divaricata. *Murr. in comm. gott.* 1776. p.

25. t. 2.

Buglossum orient. flore luteo. *Tournef. cor.* 6. *Buxb.*

cent. 3. 17. t. 29. *Dill. elth.* 60. t. 52. f. 60.

Flowering-branches lateral, bractes cordate embracing.

7. *Lithospermum purpureocæruleum*. Creeping Gromwell.

Lin. spec. 190. *fyst.* 185. *Reich.* 1. 386. *hort. cliff.*

46. *Huds. angl.* 79. *Wither. arr. ed.* 3. 226.

Engl. bot. 117. *Hall. helv.* n. 596. *Scop. carn.*

n. 185. *Pollich. pal.* n. 185. *Jacqu. austr.* 1. 11.

t. 14. *D'Asso arrag.* n. 152. *Villars dauph.* 2.

451. *Krock. files.* n. 273.

L. majus. *Dod. pempt.* 83. 1. *Ger.* 486. 1. *emac.*

609. 1.—repens. *Clus. hist.* 2. 163. 2.—vulgare.

Park. theat. 431.—flore purpureo, femine *Anchusæ*.

Baub. hist. 3. 592. *Raii hist.* 503. *syn.* 229. *Petiv.*

brit. 29. 6.

L. minus repens latifolium. *Baub. pin.* 258.

L. perenne procumbens flore purpureo-cæruleo. *Mor.*

hist. f. 11. t. 31. f. 2.

L. umbellatum latif. *Bocc. sic.* 75. t. 40. & angustif.

t. 41.

Anchusa repens, &c. *Pluk. phyt.* t. 76. f. 2.

Seeds smooth and even, corollas twice as long as the calyx, leaves lanceolate somewhat hairy.

[8. *Lithospermum tenuiflorum*.

Lin. fyst. 185. *suppl.* 130.

Buglossum chium arvense annuum, *Lithospermi folio*,

flore cæruleo. *Tourn. cor.* 6.

Corollas filiform, leaves linear-lanceolate strigose.]

9. *Lithospermum fruticosum*. *Shrubby Gromwell*.
Lin. spec. 190. *syft.* 185. *Reich.* 1. 387. *D'Affo*
arrag. 153. *Sauv. monsp.* 50. 63. *Barr. ic.*
 1168. (*Anchusa*)
Anchusa angustifolia. *Baub. pin.* 255.
Buglossum fruticosum rosmarini folio. *Garid. aix.* 68.
 t. 15.
 3. *Anchusa arborea*. *Alp. exot.* 69. t. 68.
Buglossum famium frutescens, fol. *rosmarini* obscure
virentibus lucidis & hirsutis. *Tournesf. cor.* 6.
Shrubby, leaves linear hispid, stamens equalling the co-
rolla.
 [10. *Lithospermum callosum*.
Vahl symb. 1. 14. *Forsk. descr.* 39.
Leaves lanceolate-linear callous warted hispid, stem suf-
fruticose hispid.
 11. *Lithospermum ciliatum*.
Vahl symb. 1. 14. *Forsk. descr.* 39.
Leaves ovate hoary callous at the edge ciliate, stem suf-
fruticose muricated hispid.
 12. *Lithospermum dispernum*.
Lin. spec. 191. *syft.* 185. *Reich.* 1. 387. *Dec.* 1.
 13. t. 7.
Seeds only two, calyxes spreading.

DESCRIPTIONS, &c.

1. Root perennial, strong. Stems erect, roundish, rough with close-pressed bristles, and clothed with alternate, entire leaves, which are slightly revolute on their margin, hairy beneath, rough above with minute cartilaginous tubercles. Each of the numerous flowering-branches terminates in a recurved leafy spike of pale yellowish flowers: in the feeding state these branches become erect, much elongated, and the leaves they bear are considerably enlarged, being broader than those on the stem. It is seldom that more than two seeds are perfected in each flower: they are exquisitely polished, of a gray or yellowish hue, very hard, but brittle, seeming of a stony substance; whence the generic name, and whence also the ancient celebrity of these seeds as a cure for the stone, without the least shadow of a reason^a.

Gærtner calls them stony, egg-shaped nuts, marked on the inside with a streak and two obsolete lines, imperforate, one-celled, valveless: seed ovate-beaked, black-brown.

Native of most parts of Europe, in dry, gravelly and chalky soils; with us in general sparingly, but common in some woods. It flowers in may and june.

2. Root annual, small, and not much branched; its bark abounding with a deep red dye, which stains paper, linen, &c. and is easily communicated to oily substances. Hence the name of Bastard Alkanet, sometimes given to this plant. Linneus, in his *Flora Suecica* informs us, that the country girls in the north of Sweden use the root to stain their faces on days of festivity.—Stem upright, a foot high or more, round or slightly angular, rough with close-pressed hairs, often much branched at top. Leaves alternate, lanceolate, entire, rigid, sessile, rough with bristly hairs close-pressed, standing out from the edge. Flowers solitary, nearly sessile, in the axils of the upper leaves. Corolla small and white, with five swellings round its orifice, exactly as in *L. purpureo-cæruleum*. Very near the bottom of the tube stand the five very short minute stamens, on a level with the style, which is about half as long as the tube. Seeds brown, rugged; rather covered with hard tubercles than wrinkled: two, three, or four, but generally three, with one abortive: sometimes when there are four perfect seeds, there are two others abortive, and six divisions in the calyx. The calycine segments are narrower than in *L. officinale*, and after flowering are three or four times as long as the seeds, whereas in the preceding species they are not twice the length^b. Gærtner says, the nuts are stony, ovate, acuminate-beaked, convex on one side, angular on the other by means of a keel along the middle, rugged all over with tubercles.

Frequent in corn fields and waste places, flowering from may to july.

3. This is a shrubby species, found in Teautea and Savage islands^c.]

4. Root perennial. Stems several, very hairy, about a foot and half high. Leaves sessile, alternate. Flowers in short reflexed spikes at the ends of the branches. Corolla white, longer than the calyx, the segments ending in acute points.

[Linneus remarks, that the dots scattered over the leaves are excavated, and that the wider of these have a bristle issuing from them.

Native of Virginia and Maryland.] It flowers here in june, and the seeds ripen in autumn.

[Cultivated by Mr. Miller, in 1759.

5. Root fusiform, two inches long, annual. Stems several, a finger's length, quite simple, shaggy with hairs, as is the whole plant; the lateral ones decumbent, the middle one erect. Leaves sessile; those next the root near two inches long, narrowed towards the base; those on the stem an inch long and blunt. Spike the length of the stem, closely imbricate. Bracte linear-lanceolate at the base of the calyx, the length of the flower. Calyx deeply five-parted, with linear, bluntish segments: when fruit-bearing twice the size. Corolla longer than the calyx, with a filiform tube. Nuts four, obcordate-triangular, even, shining, convex on the outside, flat on the inside.

It differs from *L. apulum* (*Myosotis apula*. *Lin.*) to which it is very nearly allied, in having a laxer stem, longer blunt leaves, a solitary spike terminating the stem, and as long if not longer than it, narrower blue corollas, and seeds twice as big^d.

Native of Egypt.

6. Stem barren upright, with fewer hairs. Leaves lanceolate, narrower at the base, quite entire, blunt, with dewy hairs on each side. Flowering-branches from the axils of the lower leaves, with cordate smaller bractes, having also dewy hairs. Flowers subpeduncled, yellow. Filaments shorter than the tube with black anthers^e.] It is a perennial plant, with long trailing branches; the under leaves are long, broad and hairy, diminishing as they approach the top. The flowers are about the same size with those of common Bugloss: there is a succession of them great part of the year.

Native of the Levant. [Cultivated in 1713, in the botanic garden at Chelsea. It flowers in may and june^f.

7. The long woody perennial root produces many round hairy leafy stems, most of which are proscumbent, and throw out roots: the flowering ones only are perfectly erect, and from twelve to eighteen inches high. Leaves numerous, alternate, acute, clothed with short close-pressed bristles, which on the upper side of the leaf often arise from minute white tubercles, or warts, as in many of this natural order. The beautiful flowers appear in april or may, standing erect in a sort of double leafy spike, with the extremities a little curved downwards before flowering. Calyx hairy, divided to the base into five very narrow linear obtuse segments. Corolla first purple, then blue, with a pale reddish tube; round its orifice are five blunt hairy swellings, which however do not close it. Filaments somewhat shorter than the tube, and united with it half way up. Style about the same length, with a slightly-notched stigma. Germ and seeds very smooth; the latter frequently abortive, as in other plants that increase much by their roots^g.—The segments of the calyx, after flowering, become much longer, as in *L. arvense*^h, and other plants of this natural order.

Native of most of the temperate parts of Europe. Found in the West of England, as in Somersetshire near Taunton. Near Denbigh in Wales. Mr. Latham discovered it in a chalky soil near Greenhithe in Kent.

8. This is an annual plant, a hand or a span in height, like the second species in miniature. Stem upright, filiform, with one or two branches; subpubescent. Leaves alternate, sessile, very shortly strigose or hairy, bluntish. Calyxes on the branches all

^c Forster.

^d Vahl.

^e Linn.

^f Hort. kew.

^g Engl. bot.

^h Withering.

^a Engl. bot.

^b Engl. bot. Wither. Pollich.

directed one way, subpedicelled, alternate, oblong, five-parted, as in *L. arvense*. Corollas very small, blue: tube the length of the calyx; limb minute.

Native of Egypt¹.]

9. Root perennial, running deep into the ground. Stem upright, shrubby, from two to three feet high, pretty closely set with hairs. The flowers are produced in short reflex spikes. Calyxes hairy. Corollas reddish purple, changing to a deep purple; the two upper segments are turned back.

[Native of the South of Europe and the Levant. Cultivated in 1683, by Mr. James Sutherland. It flowers in may and june^k.

10. Stem a long span in height, with a white bark, villose at bottom, hispid at top: branches the height of the stem, once or twice divided at top. Leaves sessile, remote, blunt, with white callosities all over them, and with rigid concolor bristles towards the end. Spike terminating, revolute, extremely hirsute; with a linear leaflet, longer than the calyx, and ciliate, at the base of each flower. Tube of the corolla villose. It varies with the branches more or less erect.

11. This is a small stiff shrub, upright, a long span in height, hoary, muricated at top, hispid, very much branched: branches dichotomous. Leaves half embracing, patulous at the tip, warted with white callosities at the edge, small. Spike lateral, half an inch in length^l.

12. Root annual. Stem herbaceous, a hand in height, round, hispid, upright; dividing at top into two almost upright branches, seldom more. Stem-leaves alternate, sessile, tongue-shaped, spreading very much or recurved, channelled, blunt, hispid, somewhat rugged, an inch long, veinless. Branch-leaves lanceolate, acute, erect; smaller. Flowers alternate, directed one way, opposite to the branch-leaves, on short round hispid peduncles. Calyx hispid, a little shorter than the corolla: Corolla blueish white, small; border flattish. Filaments scarcely visible with the naked eye. Germs only two: Seeds ovate, acuminate, even, converging.

Native of Spain, between Madrid and Cadiz^m.

Of the foregoing species the following are

Herbaceous	
Annual.	2. 5. 8. 12.
Perennial.	1. 4. 6. 7.
Shrubby. 3. 9. 10. 11.	
Seeds	Smooth. 1. 5. 7. 12.
	Rugged. 2. 3.
Leaves	Lanceolate. 1. 2. 6. 7.
	Linear-lanceolate. 5. 8. 10.
	Linear. 3. 9.
	Ovate. 4. 11.
Corolla	Tongue-shaped. 12.
	White. 2. 4.
	Pale yellow. 1.
	Yellow. 6.
	Blue. 5. 7. 8.
	Blueish white. 12.
	Purple. 9.]

PROPAGATION AND CULTURE.

These plants may be cultivated by sowing their seeds soon after they are ripe, in a bed of fresh earth, allowing them room, and keeping them clear from weeds. They will thrive in almost any soil and situation: [and if the seeds be permitted to scatter, the plants will in general rise without care. Some of the sorts (6. 7.) are not without their beauty. The first being wild is seldom cultivated, and the second is a common weed among corn.

[LITHOSPERMUM. See *Anchusa*. *Coix*. *Linum*. *Myosotis*. *Pulmonaria*. *Stellera*.

LITHOXYLUM. See *Fucus*.

LITTORELLA. (Dimin. from *Littus*, the shore; this plant growing on the sea coast.)

Lin. gen. *Reich. n.* 1145. *Schreb. n.* 1415. *Berg. in act. succ.* 1768. *Juss.* 90.

Class. 21. 4. Monoecia Tetrandria.

Nat. order of *Plantagines* *Juss.*

¹ Linn. suppl.

^k Hort. kew.

^l Vahl.

^m Linn. dec.

* Male.

CAL. *Perianth* four-leaved, upright.

COR. one-petalled. Tube the length of the calyx:

Border four-parted, upright, permanent.

STAM. *Filaments* four, filiform, very long, inserted into the receptacle. *Anthers* heart-shaped.

* Female in the same plant.

CAL. none.

COR. one-petalled, conic, with slightly four-cleft mouth; permanent.

PIST. *Germ* oblong. *Style* filiform, very long. *Stigma* acute.

PER. the investing corolla.

SEED. *Nut* one-celled.

OBS. The flower is that of *Plantain*, but the fruit different.

ESSENTIAL CHARACTER.

MALE. Cal. four-leaved. Cor. four-cleft. Stam. long.

FEM. Cal. none. Cor. slightly four-cleft. Styles long; Seed a nut.

SPECIES.

1. *Littorella lacustris*. *Plantain Shoreweed*.

Lin. syst. 848. *Reich.* 4. 124. *mant.* 295. *Berg. in act. Stockb.* 1768. p. 341. *Huds. angl.* 415. *Wither. arr. ed.* 3. 194. *Lightf. scot.* 571. *Relb. cant. n.* 701. *Fl. dan. t.* 170. *Giseke ic. fasc. i. t.* 21.

Plantago uniflora. *Lin. spec.* 167. *fl. lapp. n.* 64. *succ. n.* 135. *Hall. helv. n.* 655. *Juss. in act. par.* 1742. p. 131. t. 7. *Guett. stamp.* 2. 26.

Plantago palustris, &c. *Tournef. inst.* 128. *Raii syn.* 316.

Gramen junicum. f. *Holosteum minimum palustre*, &c. *Pluk. phyt. t.* 35. f. 2. *Mor. hist.* 3. 230. f. 8. t. 9. f. 30. *Raii hist.* 1310.

Subularia repens fol. convexo-planis: *Dill. musc.* 542. t. 81.

DESCRIPTION, &c.

The root shoots out long running fibres, which take root afresh, and thus in a short time cover the brink of the lakes with tufts of semicylindrical linear acute leaves, about two inches long. Three, four or more naked stalks arise from between the leaves; about an inch and half long, terminated each with one greenish male flower: The female flowers are sessile, commonly two, sometimes three, at the base of the male stalk.

Linneus in his earlier works, following Tournefort, placed this plant with the *Plantagos*. It has indeed their flower; but the stamens and pistils being found in separate flowers, though on the same plant, and the fruit being different from that of the *Plantains*, he afterwards separated it from that genus. He remarks, that the male flower is on a stalk, taller than the female: the female flower sessile at the root, and the style often as long as the stalk of the male flower.

Native of the north of Europe, on the shores of lakes.

Ray, who ranges it with the Rush-Grasses, and calls it the smallest Marsh *Plantain*, observed it near Cambridge, Glasgow and Pensance. Frequent in Scotland and some parts of Wales. On Hounslow heath. Near Lowestoft, Suffolk. Hoveley lough, Northumberland, &c. On the margins of all the lakes in Ireland, that have gravelly shores.

LIVE-IN-IDLENESS. See *Viola*.

LIVE-LONG. See *Telephium*.

LIVERWORT. See *Anemone* and *Lichen*.

LIZARDS-TAIL. See *Saururus*.

LOASA. (Probably so named, by Adanson, from some Spanish Botanist.)

Adans. fam. 2. 501. *Jacqu. obs. t.* 38. *Juss.* 322.

Loosa. *Lin. gen.* *Reich. n.* 724. *Schreb. n.* 908.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, superior, permanent: leaflets lanceolate, very spreading, with reflex sides.

COR. *Petals* five, obovate, hooded, large, extremely spreading, narrowed at the base into claws.

ⁿ Lightfoot.

Nectary of five leaflets, alternating with the petals, converging into an acute cone, rather shorter than the calyx, lanceolate, rugose, awned with a double filament.

STAM. *Filaments* numerous, capillary, longer than the nectary, from fifteen to seventeen to each petal. *Antthers* incumbent, roundish.

PIST. *Germ* subovate, seed-bearing. *Style* filiform, upright, the length of the stamens. *Stigma* simple, obtuse.

PER. *Capsule* top-shaped, one-celled, three-valved at the tip; valves semi-ovate, acute, spreading.

SEEDS a great many, ovate, small. *Receptacles* three longitudinal lines running from the bottom of the capsule to the incisures of the valves.

OBS. *In point of affinity it approaches to Mentzelia. Jacqu. In habit, and situation of the germ and seeds, it approaches the Cucurbitataceous plants.*

ESSENTIAL CHARACTER.

Cal. five-leaved, superior. *Cor.* five-petalled; petals hooded. *Nect.* five-leaved, converging. *Caps.* turbinate, one-celled, three-valved, many-seeded.

SPECIES.

1. *Loasa hispida.*

Lin. syst. 495. *Reich.* 2. 588.

L. urens. Jacqu. obs. 2. 15. t. 38.

Ortiga chilensis urens, acanthi folia. Feuill. peruv. 2. 757. t. 43.

DESCRIPTION, &c.

This is an elegant annual plant, rising from a fibrous white root, the thickness of the little finger. It is subdivided into spreading branches; and is armed all over with stiff shining brownish prickles, that sting like the nettle. Stems round, whitish green, marked here and there with short brown longitudinal lines. Leaves pinnatifid, petioled, irregularly alternate, rough, blunt: the segments pinnatifid, tooth sinuate; in the upper ones less divided, but very unequal. The uppermost leaves are only sinuate. All the branches terminate in very loose racemes. Peduncles solitary, an inch long, both axillary and opposite to the leaves. Bractes none. Flowers elegant but void of scent. Calycine segments acuminate, hairy. Petals somewhat hairy, and finally turned back. The filaments are erect, but after the explosion of the pollen are successively bent back. Germ hairy, half inferior. Capsule rough-haired, surrounded at top with the shrivelled segments of the calyx. The petals are yellow; the nectaries white variegated with red and green dots. These are at a little distance from each other, the filaments whilst they remain upright occupying the interstices, and the anthers exploding their pollen whilst they are close to the stigma. After the fecundation is completed the filaments retire gradually under the arches of the petals. Adanson calls these small laminae petals, and therefore makes the number of the petals ten.

Feuillée says, that the corolla in his plant is red and deep green beneath, and that the leaves are opposite. Adanson affirms that the capsule is five-valved, and the petals connected, which is not the case in Jacquin's plant. Perhaps Feuillée's and Adanson's plant may be the same, and different from Professor Jacquin's.

Native of South America, and cultivated at Vienna before 1767°.

LOBELIA. (So named by Plumier, from Matthias de Lobel, a Flemish botanist, born 1538. Physician and Botanist to K. James I. Died at London, 1616.

Lin. gen. n. 1006. *Reich. n.* 1091. *Schreb. n.* 1363. *Gertn. t.* 25. *Juss.* 165. *Dortmanna. Rudb. A. V.* 1720. *Laurentia. Mich.* 14. *Rapuntium. Tournef. t.* 51. *Dill. elth.* 242. *Gertn. t.* 30.

Class. 19. 6. Syngenesia Monogamia.

Nat. Order of Campanaceæ. Campanulaceæ Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-cleft, very small: growing round the germ, withering: toothlets nearly equal: the two superior ones looking more upward.

• Jacqu. obs.

Cor. one-petalled, irregular. *Tube* cylindric, longer than the calyx, divided longitudinally above: *Border* five-parted, *divisions* lanceolate; of which the two superior ones are smaller, less reflex, more deeply divided, constituting an upper lip: the three inferior ones more spreading, frequently larger.

STAM. *Filaments* five, awl-shaped, the length of the tube of the petal, connate above. *Antthers* connate into an oblong cylinder, gaping five-ways at the base.

PIST. *Germ* sharp-pointed, inferior. *Style* cylindric, length of the stamens. *Stigma* obtuse, hispid.

PER. *Capsule* ovate, two or three-celled, two or three-valved, gaping at the top, girt by the calyx. *Dissepiments* contrary to the valves.

SEEDS a great many, very small. *Receptacle* conic.

ESSENTIAL CHARACTER.

Cal. five-cleft. *Cor.* one-petalled, irregular. *Caps.* inferior, two or three-celled.

SPECIES.

* *With entire leaves.*

1. *Lobelia simplex. Slender Lobelia.*

Lin. syst. 800. *Reich.* 3. 953. *mant.* 291.

L. debilis. Lin. suppl. 395.

Stem upright, leaves linear quite entire, peduncles solitary.

2. *Lobelia Columnæ. Mealy Lobelia.*

Lin. syst. 800. *suppl.* 393. *Smith. ic. inod.* 1. t. 22.

Leaves oblong blunt revolute very much wrinkled, shining above, tomentose beneath.

3. *Lobelia bellidifolia. Daisy-leaved Lobelia.*

Lin. syst. 800. *n.* 12. *suppl.* 396.

Stem upright panicled, leaves obovate crenate.

4. *Lobelia pinifolia. Pine-leaved Lobelia.*

Lin. spec. 1318. *syst.* 800. *Reich.* 3. 954. *Berg.*

cap. 343. *Breyn. cent.* 173. *t.* 87. *Burm. afr.*

111. t. 41. *f.* 2. *Raii suppl.* 384. *n.* 14. (*Rapunculus*) item, *Rapuntium n.* 31. *p.* 385.

Shrubby, leaves linear clustered quite entire.

5. *Lobelia Dortmanna. Water Lobelia or Gladiole.*

Lin. spec. 1318. *syst.* 800. *Reich.* 3. 954. *fl. lapp. n.*

279. succ. n. 783. *hort. cliff.* 426. *Huds. angl.*

377. Wither. arr. ed. 3. 245. *Engl. bot.* 140.

Lightf. scot. 505. *t.* 21. *Fl. dan. t.* 39.

Dortmanna lacustris, flor. sparsis pendulis. Rudb. att.

upf. 1720. *p.* 97. *t.* 2. (*p.* 17. *f.* 7.)

Gladiolus stagnalis f. lacustris. Rudb. elys. 2. 202.

f. 15.

G. stagn. Dortmanni. Clus. cur. 40. *Raii hist.*

1325. 1911. syn. 287. *Petiv. brit. t.* 67. *f.* 7.

G. lac. Clusii, f. Leucoium palustre, flore subcæruleo.

Park. theat. 1250.

Leucoium pal. flore subcæruleo. Baub. pin. 41.

Campanula aquatica. Blair. obs. 103. *t.* 2.

Leaves linear two-celled quite entire, stem almost naked.

6. *Lobelia Tupa.*

Lin. spec. 1318. *Reich.* 3. 954. *Feuill. peruv.* 2.

739. t. 29. (*Rapuntium.*)

Leaves lanceolate quite entire, raceme spiked.

7. *Lobelia Kalmii.*

Lin. spec. 1318. *Reich.* 3. 955. *Tournef. inst.* 164.

(*Rapuntium.*)

Stem upright, leaves lanceolate-linear bluntish alternate

quite entire, raceme terminating.

8. *Lobelia paniculata. Panicled Lobelia.*

Lin. spec. 1319. *Reich.* 3. 955. *Burm. afr.* 100.

t. 83. *f.* 3.

Leaves linear quite entire, panicle dichotomous.

9. *Lobelia grandis. Great Lobelia.*

Lin. syst. 800. *suppl.* 394.

Leaves oblong quite entire smooth, corymbs bracted, corollas

hispid.

10. *Lobelia ferruginea. Rust-coloured Lobelia.*

Lin. syst. 801. *suppl.* 394.

Stem villose, leaves lanceolate ferrate acute, where the

veins anastomose rust-coloured-tomentose on both sides,

genitals elongated.

11. *Lobelia chinensis. Chinese Lobelia.*

Lour. cochinch. 514.

Leaves lanceolate quite entire, flowers solitary terminating,

stem creeping.

12. *Lobelia cornuta. Horned Lobelia.*

Lin. spec. 1319. *Reich.* 3. 955.

- Leaves ovate petioled, stamens very long.
 ** With an upright stem and gashed leaves.
13. *Lobelia Phyteuma*.
Lin. spec. 1319. *Reich.* 3. 955.
 Leaves ovate-oblong crenate, stem almost naked spiked, anthers hirsute distinct.
14. *Lobelia bulbosa*. Tuberous-rooted *Lobelia*.
Lin. spec. 1319. *syft.* 800. *Reich.* 3. 955. *suppl.* 396.
Cyphia bulbosa. *Berg. cap.* 172. *Lin. mant.* 482.
Rapuntium tuberosum, &c. *Burm. afr.* 99. t. 38. f. 2.
 Stem upright, lower leaves pedate.
15. *Lobelia triquetra*. Tooth-leaved *Lobelia*.
Lin. syft. 800. *Reich.* 3. 955. *mant.* 120.
 β. *L. comosa*. *Lin. spec.* 1323. *hort. cliff.* 500.
L. corymbosa. *Berg. cap.* 344.
 Stem upright, leaves lanceolate toothed, raceme terminating leafless.
16. *Lobelia longiflora*. Long-flowered *Lobelia*.
Lin. spec. 1319. *syft.* 800. *Reich.* 3. 956. *mant.* 482. *Brown. jam.* 322. 1. *Jacqu. amer.* 219. *piet.* 107. t. 200. *hort. t.* 27.]
Rapuntium longiflorum. *Mill. dict. n.* 7. *descr. n.* 8.
Rapunculus aquaticus, fol. eichorei, flore albo, tubo longissimo. *Sloan. jam. t.* 101. f. 2. *Raii suppl.* 383
Trachelium fonchi folia, flore albo longissimo. *Plum. spec.* 3. ic. 253 f. 1.
 Leaves lanceolate toothed, peduncles very short lateral, tube of the corolla filiform very long.
- [17. *Lobelia tomentosa*. Downy *Lobelia*.
Lin. syft. 800. *suppl.* 394.
 Straight, tomentose; leaves linear toothed; peduncles terminating very long one or two-flowered.
18. *Lobelia fecunda*.
Lin. syft. 801. *suppl.* 395.
 Upright, smooth, lower leaves oblong toothed, upper lanceolate entire, peduncles racemed directed one way.
19. *Lobelia affurgens*. Tree *Lobelia*.
Lin. spec. 1321. *Reich.* 3. 956. *amoen.* 5. 408.
Swartz. obs. 317. *Brown. jam.* 322. 3.
 Leaves broad-lanceolate serrate, toothblotted and decurrent below, racemes compound terminating.
20. *Lobelia patula*. Spreading *Lobelia*.
Lin. syft. 801. *suppl.* 395.
 Herbaceous, diffused, virgate, smooth, leaves ovate toothed, peduncles lateral.
21. *Lobelia acuminata*. Pointed-leaved *Lobelia*.
Swartz. prodr. 117. *Brown. jam.* 322. 2.
Rapunculus folio oblongo, &c. *Sloan. jam.* 1. 158. t. 95. f. 2.
 Stem upright suffruticose, leaves lanceolate attenuated ferrulate, raceme terminating many-flowered.
22. *Lobelia stricta*.
Swartz. prodr. 117.
 Stem upright suffruticose, lower leaves ovate-lanceolate smooth toothblotted and prickly at the edge, raceme terminating spiked.
23. *Lobelia Cardinalis*. Scarlet *Lobelia*, or Cardinal's flower.
Lin. spec. 1320. *syft.* 801. *Reich.* 3. 957. *hort. cliff.* 426. *ups.* 276. *Gron. virg.* 34. *Kniph. cent.* 4. n. 42. *Knorr. del.* 2. t. L. 2. *Mill. illustr.* *Curt. magaz.* 320.]
Rapuntium Cardinalis. *Mill. dict. n.* 1.
R. galeatum virginianum, coccineo flore majore. *Mor. hist.* 2. 466. f. 5. t. 5. f. 54.
R. maximum cocc. spicato flore. *Hern. mex.* 879. t. 880.
R. americanum flore coccineo. *Rob. ic.* 263.
Trachelium amer. rubrum. *Ferrarii. Raii hist.* 746.
 —flore ruberrimo, f. *Planta Cardinalis*. *Park. parad.* 356. t. 355. f. 6.
 Stem upright herbaceous, leaves oblong-lanceolate serrate somewhat villose, flowers in a sort of spike, calyxes smooth, segments quite entire.
24. *Lobelia siphilitica*. Blue *Lobelia* or Cardinal flower.
Lin. spec. 1320. *syft.* 801. *Reich.* 3. 957. *mant.* 482. *hort. cliff.* 426. *mat. med.* 194. *Woodv. med. bot.* 177. t. 63. *amoen.* 4. 527. *Gron. virg.* 134. *Kniph. cent.* 8. n. 60. *Jacqu. ic.* 3. t. 597. *collect.* 1. 163.

- Rapuntium siphiliticum*. *Mill. dict. n.* 2. *Gertn. fruct.* 1. 152.
R. americanum flore dilute cæruleo. *Dodart. mem.* 105. *Rob. ic.* 264.
Rapunculus galeatus virginianus flore violaceo majore. *Mor. hist.* 2. 466. f. 5. t. 5. f. 55.
 Stem upright, leaves ovate-lanceolate subserrate, sinuses of the calyx reflex.
- [25. *Lobelia lactescens*.
L. arborea. *Forst. flor. austral. n.* 308.
 Shrubby, leaves smooth elliptic-lanceolate serrate, peduncles axillary solitary without bracts, calyxes smooth.
26. *Lobelia furinamensis*.
Lin. spec. 1320. *Reich.* 3. 957. *Curt. magaz.* 225. *Ait. hort. kew.* 3. 498.
L. lævigata. *Lin. syft.* 801. *suppl.* 392.
 Suffruticose, leaves oblong serrate smooth, peduncles axillary solitary bracted at the base, calyxes torulose.
27. *Lobelia inflata*. Bladder-podded *Lobelia*.
Lin. spec. 1320. *Reich.* 3. 958. *hort. ups.* 276. *cliff.* 500. *Ait. ups.* 1741. p. 23. t. 1. *Gron. virg.* 34.]
Rapuntium inflatum. *Mill. dict. n.* 5.
 Stem upright, leaves ovate subserrate longer than the peduncle, capsules inflated.
28. *Lobelia cliffortiana*. Purple *Lobelia*.
Lin. spec. 1320. *syft.* 801. *Reich.* 3. 958. *hort. cliff.* 426. t. 26. *Gron. virg.* 107. 134.
Rapuntium cliffortianum. *Mill. dict. n.* 3.
R. trachelii folio, flore purpurascens. *Plum. spec.* 5. ic. 235. f. 2.
 Stem upright, leaves cordate even obsoletely toothed petioled, corymb terminating.
29. *Lobelia urens*. Stinging *Lobelia*.
Lin. spec. 1321. *syft.* 801. *Reich.* 3. 958. *Hudf. angl.* 378. *Wither. arr. ed.* 3. 246. *Loefl. it.* 167.
Rapuntium urens. *Mill. dict. n.* 4.—*solonienfe*. *Mor. bles.* 300. *Bocc. sic. t.* 11. *Raii hist.* 746. *Menn. obs.* 131.
Rapunculus galeatus, &c. *Mor. hist.* 2. 467. f. 5. t. 5. f. 56.
Draba flore cæruleo galeato. *Baub. prodr.* 110. pin. 53.
 Stem upright smooth angular, leaves lanceolate toothed smooth, racemes spike-shaped, calycine segments wheel-shaped even.
- [30. *Lobelia minuta*. Least *Lobelia*.
Lin. syft. 801. *Reich.* 3. 959. *mant.* 292.
 Root-leaves ovate, scapes capillary.
31. *Lobelia volubilis*. Twining *Lobelia*.
Lin. syft. 801. *suppl.* 396. *Burm. prodr.* 25.
 Stem twining.
 *** With a prostrate stem, and gashed leaves.
32. *Lobelia Laurentia*. Italian annual *Lobelia*.
Lin. spec. 1321. *syft.* 801. *Reich.* 3. 959. *Gouan. hort.* 466. var. β. *Schreb. in nov. act. nat. cur.* 3. 480.
Laurentia annua minima flore cæruleo. *Mich. gen.* 18. t. 14.
Rapunculus aquaticus repens, flore cæruleo inaperto. *Raii suppl.* 383. *Bocc. mus.* 35. t. 27.
 β. *Rapuntium creticum minimum bellidis folio* flore maculato. *Tournef. cor.* 9. *Schreb. act. nat. cur.* 3. 480. β.
 Stem prostrate, leaves lanceolate-oval crenate, stem branched, peduncles solitary one-flowered very long.
33. *Lobelia repandā*.
L. angulata. *Forst. flor. austral. n.* 309.
 Stem prostrate quite simple, leaves roundish repand-toothed, peduncles axillary solitary one-flowered.
34. *Lobelia Erinus*. Small spreading *Lobelia*.
Lin. spec. 1321. *syft.* 802. *Reich.* 3. 959. *mant.* 483.]
Rapuntium Erinus. *Mill. dict. n.* 8.
Campanula minor africana, &c. *Herm. lugdb.* 110. t. 111.
Trachelium minus afric. flor. violaceis per caulem sparsis. *Tournef. inst.* 131.
 Stem patulous, leaves lanceolate somewhat toothed, peduncles very long.

35. *Lobelia erinoides*. *Trailing Lobelia*.
Lin. spec. 1322. *syft.* 802. *Reich.* 3. 960. *mant.* 291. *hort. cliff.* 426.
Rapuntium erinoides. *Mill. dict. n.* 9.
Campanula minor africana, *erini facie*, *caul. procumbentibus*. *Herm. lugdb.* 108. *t.* 100.
Stems prostrate filiform, leaves petioled oblong toothed.
- [36. *Lobelia anceps*.
Lin. syft. 800. *suppl.* 395.
Leaves lanceolate decurrent.
37. *Lobelia pubescens*. *Downy-leaved Lobelia*.
Ait. hort. kew. 3. 498.
Stems angular prostrate, leaves lanceolate toothed rough-haired, peduncles axillary one-flowered.
38. *Lobelia zeylanica*.
Lin. spec. 1322. *Reich.* 3. 960. *Seba. thes.* 1. 37. *t.* 22. *f.* 12? (*Campanula*.)
β. L. hirta. *Lin. spec.* 1. 932.
Stems procumbent, leaves ovate serrate acute, lower obtuse, peduncles one-flowered, capsules subvillose.
39. *Lobelia lutea*. *Yellow Lobelia*.
Lin. spec. 1322. *syft.* 802. *Reich.* 3. 960.
Rapuntium fol. oblongis dentatis, flore luteo spicato, flagellis procumbentibus. *Burm. afr.* 101. *t.* 39. *f.* 1.
Rapunculus afr. ramosus, &c. *Herm. afr.* 18. *Raii suppl.* 248.
Stems procumbent, leaves lanceolate serrate, flowers sessile subspiked.
40. *Lobelia hirsuta*.
Lin. syft. 802. *n.* 41. *suppl.* 395.
Shrubby, hirsute, prostrate, leaves ovate-toothed, peduncles lateral very long two or three-flowered.
41. *Lobelia coronopifolia*.
Lin. spec. 1322. *syft.* 802. *Reich.* 3. 961. *mant.* 483.
Burm. afr. t. 38. *f.* 1. *Herm. afr.* 18. *Breyn. cent. t.* 88. (*Rapuntium*.)
Leaves lanceolate toothed, peduncles very long.
***** With a prostrate stem and entire leaves.*
42. *Lobelia depressa*.
Lin. syft. 802. *suppl.* 395.
Depressed, leaves lanceolate, stem fleshy.

DESCRIPTIONS, &c.

These are mostly herbaceous plants, some annual but more perennial, and some of the species suffruticose, or woody at the bottom of the stems, which in some are prostrate, in others upright. Leaves alternate. Flowers either solitary and axillary with two small bractes, or in loose terminating spikes with three little bractes. *L. laetescens* and *minuta* (n. 25. 30.) have no bractes. *L. longiflora* has a very long tubular flower, with a bifid stigma^a. *L. Phyteuma*, *bulbosa*, *volubilis* and *lutea* have the anthers distinct. The predominant colour in the corollas is blue.

1. This is a small annual plant, scarcely a hand in height, herbaceous, upright, simple, smooth and even. Leaves alternate, sessile, remote, acute, even, patulous. Peduncles axillary, one-flowered, naked, even, upright, twice as long as the leaves. Capsule inferior, turbinate. Native of the Cape of Good Hope^b.

L. debilis of the supplement is doubtless the same with this. It is there said to be a very little plant, so much resembling *L. depressa* (n. 41.) as to be perhaps only a variety of it; and to have been observed at the Cape by Thunberg.

2. Branch or stem somewhat woody, angular, tomentose-mealy, especially towards the top, leafy. Leaves scattered, oval-oblong, netted-veined, very thickly tomentose underneath, with the veins thick and standing out. Leaves quite entire at the edge, but being rolled back, Linneus mistook the interstices between the veins for notches, and set them down as crenate in the specific character. Petioles channelled, mealy. Flowers axillary, solitary, peduncled. Calyx mealy, hemispherical, ten-angled, five-toothed; teeth linear, upright, pressed close to the corolla. Corolla curved in, bellying a little in the middle, five-cornered, the segments of the border unequal, linear, mealy on the outside. Stamens a little longer than the corolla. Anthers united into an oblique incurved smooth cylinder, bearded at top below the stigma. Style a little

^a Jussieu.

^b Linn. mant.

longer than the stamens. Capsule four-valved; valves bowed back, smooth. Native of New Granada, where it was found by Mutis. Linneus suspected a great affinity between this plant and *Columnnea scandens*^c; and has given the differences in the supplement.

3. This is an annual plant, about a hand in height, upright, hispid and leafy below, divided at top into a longer panicle. Leaves blunt, pubescent underneath. Panicle smooth and even, with the leaves of the ramifications awl-shaped. The lower peduncles are longer. Found at the Cape of Good Hope by Thunberg^d. Both in the *Systema* and *Supplementum* it is by mistake named *bellidiflora*.

4. This is a shrubby, upright, branched plant, the branches surrounded with abundance of narrow sharp leaves an inch in length. Flowers many, small, blue, at the tops of the twigs, among the leaves^e. The calycine leaflets have a gland at their base.

Native of the Cape of Good Hope^f. Introduced in 1786, by Mr. Francis Masson^g.

5. The root consists of numerous capillary whitish fibres. Leaves growing at the bottom of the water in a circle, numerous, about two inches long, reflected into an elegant curve at the end, smooth, consisting of two hollow parallel tubes. Stem erect, round, hollow, smooth, from twelve to eighteen inches high, naked except three or four oval sessile scales about a quarter of an inch long. Flowers about nine in a loose spike, above the water, from half an inch to an inch asunder, on slender peduncles about half an inch long, each arising from a bracteal scale similar to those on the stems. Calyx divided into five linear or awl-shaped segments, a line and half or two lines long. Corolla white faintly tinged with blue: tube narrow: upper lip of two narrow lanceolate segments, erect; lower of three oval reflected segments, the middle one larger and longer. Capsule elliptical, surrounded with the calyx, forming a ring a little beneath the summit, and terminated by the style with its club-shaped hairy stigma^h. Linneus remarks that the whole plant, even the leaves beneath the water, are milky: and that the flowering-stalk is of a length proportional to the depth of the water in which the plant grows.

Native of the north of Europe; in lakes of mountainous countries. With us in Wales, Westmoreland, Cumberland, Scotland. It flowers in July and August.

It was sent to Clusius by Dortmann an apothecary at Groeningen, hence he named it *Gladiolus stagnalis Dortmanni*, and Rudbeck called it *Dortmanna*.

6. The root and herb of this species are a violent poison.

Native of Peruⁱ.

7. A foot high, with a round stem, scarcely branched. Leaves linear-lanceolate below, linear above, quite entire, bluntish, naked, sessile. Flowers in a loose raceme, solitary on alternate peduncles, from the axils of the upper leaves, furnished with a leaflet. Corollas blue. It is an annual plant, and a native of Canada, where it was found by Kalm^k.

8. Native of the Cape of Good Hope.

9. Leaves very large, repand, petioled. Flowers many in corymbs, interspersed with rounded hispid bractes. Pedicels elongated, hispid. Calyx hispid, with ovate, blunt segments. Corolla club-shaped, ferruginous, before flowering curved, afterwards straight. Stamens red hispid.

Native of South America, where it was found by Mutis.

10. This differs from the preceding in the ferruginous nap with which the stems, petioles, nerves of the leaves, peduncles, calyx and corolla are covered; in having the leaves much smaller, acute and serrate; the peduncles more elongated, almost the length of the leaves; the flowers more curved; and the genitals elongated far beyond the corolla, not included in it.

Native of America, found by Mutis.

The hairiness in this and *L. Columnnea* is singular, parts of the herb and flower being quite concealed by it^l.

^c Smith.

^d Linn. suppl.

^e Raii suppl.

^f Linn.

^g Hort. kew.

^h Woodw. Mfs.

ⁱ Linn. from Feuillée.

^k Linn. spec.

^l Linn. suppl.

11. Stem herbaceous, filiform, annual, procumbent, creeping; with upright branches, five inches in length. Leaves alternate, smooth, sessile. Flowers peduncled, solitary, terminating. Calycine segments short, awl-shaped, interrupted, patulous. Corolla pale blue. Stigma bifid, revolute. Capsule two-celled. Seeds roundish.—It differs both from *L. zeylanica* and *erinoidea* in having the leaves quite entire and the peduncles terminating; though it is like them in habit.

Native of China near Canton^m.

12. Native of Cayenne. Distinguished and named from the great length of the stamens. Linneus says that he saw the plant in Royen's collection, and we are no otherwise acquainted with it.

13. Native of the Cape of Good Hope.

14. This resembles *L. coronopifolia* (n. 40.) very muchⁿ. The filaments are connate at the base; the anthers distinct; and the petals equal. Hence Bergius separated it from *Lobelia* under the name of *Cyphia*^a.

15. This is an annual plant. Stems herbaceous, a foot high. Leaves alternate, sessile, narrow-lanceolate; and as it were glued together at the base: the upper ones less remote. Raceme peduncled, upright; with the peduncle obsoletely three-cornered in most. Flowers blue.

Native of the Cape of Good Hope^p. Introduced in 1774, by Mr. Francis Masson. It flowers from may to september^a.

16. This is an annual, herbaceous elegant plant, seldom above fourteen or sixteen inches in height, the whole of it rough-haired. Stem almost upright, very much branched from all the axils. Leaves alternate, sessile, subpinnatifid-toothed, sharpish, smooth, half a foot long. Peduncles one-flowered, axillary, solitary, villose. Bracte awl-shaped. Calyx truncated, with five distant, toothletted teeth. Corolla handsome, upright, white, four inches long: tube the length of the leaf, filiform; border equal. Filaments joined to the tube of the corolla almost to the top. Anther ten-grooved. Germ turbinate, five-cornered. Stigma fleshy, two-lipped. Capsule green, when it bursts at the ripening of the seeds. The whole plant is very poisonous. Taken internally it brings on an invincible purging. If the plant be handled, and the hand be unawares applied to the eyes or lips, it brings on an inflammation. Horses are reported to burst with eating it; whence in the Spanish West Indies it has the name of *Reventa-cavallos*. It is well known in Domingo under the name of *Quedec*^r. It is also native of Jamaica, Cuba, Martinico, by rivulets, and in moist, cool, shady places.—Cultivated in 1739, by Mr. Miller. It flowers from june to august^s.

17. This is very distinct from *L. hirsuta* (n. 39.)

Native of the Cape of Good Hope, where it was found by Thunberg.

18. This species is singular in having the branches flowering almost from the base in all the axils of the leaves, and the flowers all nodding to one side. Found at the Cape by Thunberg^t.

19. Root perennial. Stem herbaceous, three or four feet high, simple or only simply divided at top, angular, thick, smooth, red, milky. Leaves subsessile, or on very short petioles, ovate-lanceolate, a foot long, alternate, nerved, smooth on both sides: toothlets at the base of the leaf linear. Petioles very short, decurrent at the sides, whence the stem is winged, continued under the leaf to the tip, thick, red. Raceme almost upright; curved. Flowers numerous, heaped, blood-red, very large, pubescent, on round peduncles an inch in length, with linear bractes at the base of them. Calyx superior, with five long lanceolate reflex ferrate teeth. Corolla curved inwards. The anther has five blue grooves. Germ inferior, angular, surrounded by the calyx. Style thick. Stigma inclosed within the anther, capitate-compressed, white-villose. Capsule angular, two-celled, crowned by the calyx^u.

Native of Jamaica, in the cooler mountains, where it shoots frequently to the height of five or six feet^x. Introduced in 1787, by Mr. Alexander Anderson^y.

20. Found by Thunberg at the Cape of Good Hope. In the supplement, it is said to be singular that it seldom has leaves or flowers.

21. This seldom rises above three feet in height. It grows generally in the lower shady hills of Jamaica^z.—Sloane says it has a stalk as big as one's finger, green and smooth. Leaves many, without order, ten inches long, and two broad in the middle, dark green. Flowers pale yellow. Seeds very small, brown.

22. Native of the island of Guadeloupe^a.]

23. The root is composed of many white fleshy fibres. The lower leaves are oblong, and of a dark purplish colour on their upper side. The stalks are erect, about a foot and half high, with leaves about three inches long, and an inch and half broad in the middle, on very short petioles and placed alternately. The stalk is terminated by a spike (raceme) of flowers, of an exceeding beautiful scarlet colour. They have a pretty long tube, which is a little incurved, and at the top they are cut longitudinally into five segments; two upper, which are the smallest, are greatly reflexed; the three under, which form the lower lip, are longer, and spread open. They appear at the end of july and in august, when they make a fine appearance for a month or more, and when the autumn proves favourable, they will produce good seeds here. It grows naturally by the side of rivers and ditches in great part of North America. [Linneus and the Kew Catalogue assign it to Virginia only. Parkinson, who mentions it as cherished in our gardens (in 1629), says, "that it groweth near the river of Canada, where the French plantation in America is seated."]

24. Root perennial. Stem simple, from a foot to two feet in height, and upwards, strong, simple, smooth, with angles formed by the decurrent edges of the leaves having stiffish hairs on them. Leaves alternate, sessile, somewhat rugged. Flowers axillary, solitary, numerous, large, on short peduncles, forming altogether a long spike. Calyx ferrate-toothed; the segments lanceolate, covering the germ, as in *Campanula Medium*, &c. Corolla blue, varying in shades from a rich violet to pale blue, angular: the segments almost equal, ciliated along the keel, and having two bumps on the palate^b. Capsule united with the calyx to the middle, subglobular, mucronate, marked with a slight groove on both sides, two-celled, two-valved: partition contrary to the valves. Receptacle spongy, excavated, conical, convex on one side, fastened on the other to the middle of the partition on both sides. Seeds numerous, small, ovate-oblong, wrinkled, of a reddish yellow colour^c.

Native of Virginia. Cultivated here in 1665, as appears from Rea's Flora^d. It flowers from august to october; or according to Mr. Miller] earlier than the preceding, and the seeds frequently ripen in England.

[Every part of the plant abounds with a milky juice, and has a rank smell. The root, which is the part directed for medicinal use, in taste resembles tobacco, and is apt to excite vomiting. It derives the trivial name from its efficacy in the cure of syphilis, as experienced by the North American Indians, with whom it was a secret. Sir William Johnson purchased the secret, and it has since been published by Kalm, Bartram, &c.

The method of employing this medicine is as follows. A decoction is made of a handful of the roots in three measures of water. Of this, half a measure is taken in the morning fasting, and repeated in the evening: the dose is gradually increased till its purgative effects become too violent, when it is to be intermitted for a day or two, and then renewed till a perfect cure is effected. During the use of this medicine a proper regimen is enjoined, and the ulcers are also to be frequently washed with the decoction, or if deep and foul, to be sprinkled with the powder of the inner

^m Loureiro. ⁿ Linn. suppl. ^o Linn. mant. & Berg. cap.
^p Linn. mant. ^q Hort. kew.
^r Jacquin, Linn. mant. Browne. ^s Hort kew.
^t Linn. suppl. ^u Swartz.

^x Browne. ^y Hort. kew. ^z Browne. ^a Swartz.
^b Linn. mant. ^c Gertner. ^d p. 140. Hort. kew.

bark of New-Jersey Tea-tree (*Ceanothus americanus*). Although the plant is said to cure the disease in a very short time, yet its virtues have not been confirmed by any instances of European practice^a.

25. This species is a native of the island of St. Helena. It is probably the same with *L. arborea* of Forster, found in the Society isles.

26. Leaves alternate, subpetioled, acute, very finely ferrate. Peduncles the length of the leaves, with two linear bractes towards the base. Calyx gibbous, with linear-lanceolate segments. Corolla the length of the leaf, five-cornered, impressed in five rows above the base. Capsule ventricose^f.

L. lævigata, which is the same with this, is thus described in the Supplement. Stem herbaceous, smooth, round. Leaves alternate, petioled, elliptic or ovate-lanceolate, acute, smooth, ferrate. Peduncles lateral, axillary, round, with two awl-shaped bractes at the base. Calyx superior, with five, awl-shaped, patulous teeth. Corolla oblong, tubular, incurved, red, with a cavity at the base within and below the stamens: border short, five-cleft: the two upper segments acute, the three lower shorter. Stamens longer than the corolla. Capsule globular, crowned with the calyx, two-celled. Seeds minute.

Native of the West Indies. Introduced in 1786, by Mr. Alexander Anderson. It flowers in april^g.]

27. This is a biennial plant in England. Stems channelled, hairy, two feet high. Leaves about two inches long, and one broad in the middle, sessile, light green. Flowers small, on long, slender, axillary peduncles, forming a loose spike. Corolla light blue. It flowers in july, and the seeds ripen in september.

[Native of Virginia and Canada. Cultivated by Mr. Miller in 1759^h.]

28. This is an annual plant. The stem rises about a foot high, and then divides into four or five smaller, which grow erect. The lower part has heart-shaped smooth leaves, an inch and half long, and three quarters of an inch broad at the base, lessening to a point at the end, on short petioles. The upper slender stems are thinly furnished with small purplish flowers to the top.

[The peduncles are long and somewhat angularⁱ. It is a native of America. Linneus says of Virginia and Canada: but Mr. Miller gives it to Jamaica, whence Dr. Houstoun sent him the seeds. He cultivated it in 1739^k.

29. This is an annual plant. Stem nearly upright, somewhat curved, from twelve to eighteen inches high, simple, smooth, angular; the angles rough. Lower leaves elliptical, blunt, two inches long, from six to eight lines broad, irregularly and slightly toothed, petioled: the next above sessile; the upper lanceolate, half embracing, closely pressed to the stem at the base; frequently having a bundle of small leaves in the axils, appearing like the rudiments of branches; all smooth. Flowers in a long spike, sometimes more than twenty; the lower ones distant, the upper rather crowded, each on a short peduncle, from the axil of a bracteal leaf; of which the lower ones are lanceolate, the upper awl-shaped. Calyx deeply divided into five awl-shaped erect segments, three lines long. Corolla about half an inch long, rough, bright blue; tube narrow; upper lip with two awl-shaped erect segments; lower with three lanceolate reflected, the middle one longest. Stamens longer than the tube. Anthers forming a cylinder, deep blue with white hairy margins. Style slender. Stigma club-shaped, hairy, inclosed within the cylinder of anthers^l.

The whole plant is milky, of a warm taste, and if chewed, especially the root, excites a pungent sense of burning in the tongue^m.

Native of France, Spain and England. On Shute common between Axminster and Honiton; Mr. Newbery. It flowers in july and august.

30. This is a minute annual plant, like *Cameraria* and *Bellium*, only about an inch high. Root filiform, creeping by runners. Leaves radical, obovate, obtuse,

^a Woodville. ^f Linn. spec. ^g Hort. kew. ^h Ibid.
ⁱ Linn. ^k Hort. kew. ^l Woodward, Mfs.
^m Wither. from Bocc. & Mor.

tender, scarcely crenate, on long petioles. Scape setaceous, two inches high, upright, one-flowered. Calyx oblong, lanceolate, almost upright. Corolla funnel-form. Capsule inferior, oblong. It is allied to *L. Laurentia*, but is more tender, without any bracte on the scape. It differs from *L. Erinus* in having no stem but the scape or naked flowering stalkⁿ.

Native of the Cape of Good Hope. Introduced in 1772, by Mons. Richard. It flowers from june to september^o.

31. Stem filiform, contrary, herbaceous. Leaves alternate, remote, even, linear, with obsolete subcallose toothlets; at top frequently trifid, the lateral segments very short. Flowers lateral, solitary, peduncled. Anthers distinct.

Native of the Cape of Good Hope, where it was found both by Sparrmann and Thunberg^p.

32. This is seldom more than three or four inches high. The leaves resemble those of the common Daisy in shape and size. The flowers come out singly on very long slender peduncles^q: with a setaceous bracte on the middle of each^r.

Native of Italy, about Pisa. In the island of Elba, Corsica and Sicily.

Micheli made this a distinct genus under the name of *Laurentia*, in compliment to Marcantonio Laurenti, M.D. and Professor at Bologna.

33. Native of New Zealand^s.

34. This is an annual plant. Stem a span high, filiform, branched and spreading out at bottom. Root-leaves oval; stem-leaves lanceolate; all smooth. Peduncles axillary, naked, three times as long as the leaves, slender, one-flowered^t.] Flowers small and blue, appearing in july: succeeded by small roundish seed-vessels, filled with small seeds which ripen in september.

Native of the Cape of Good Hope. [Cultivated by Mr. Miller in 1759. Said in the Kew catalogue to have been introduced by Mr. Masson in 1774.

35. This also is an annual plant, with many slender, trailing, herbaceous, simple stems, half a foot long. Leaves alternate, subpetioled, remote, bluntish, with two or three obsolete lateral teeth. Peduncles lateral, solitary, shorter than the leaf. Calycine leaflets lanceolate. Corolla funnel-form-lanceolate, angular, equal, blue, with patulous segments. Filaments united into a five-streaked, club-shaped tube. Anthers with distant tips. Germ inferior. Stigma two-lipped hirsute. Capsule obovate, two-celled.

Native of the Cape of Good Hope^u. Cultivated by Mr. Miller in 1759. Said in the Kew Catalogue to have been introduced by Mr. Masson in 1786.

36. Root annual. Root-leaves petioled, obovate. Stem quite simple, a span high, even. Stem-leaves alternate, even, scarcely toothed, remote. Flowers from the upper axils of the leaves, peduncled, solitary, small, blue. It may perhaps be a variety of the preceding^v.

Native of the East Indies.

37. Native of the Cape of Good Hope, where it was found by Mr. W. Paterfon. Introduced in 1780, by the Countess of Strathmore. It flowers from may to august^w.

38. This is a small plant, that has the appearance of *Veronica Chamædrys*. Stem creeping. Leaves alternate, petioled, almost smooth: lower obtuse, crenate; upper acute, sharply ferrate. Peduncles axillary, subsolitary, longer than the leaf, pubescent^x. Stem round. Leaves cordate, smooth, petioled. Flowers blue.

Native of China, in watery and shady places^y.

39. Stem quite simple, upright, striated. Leaves alternate, sessile, upright, with a few acuminate upright ferratures. Flowers terminating, yellow, larger than the leaf. Filaments connate. Anthers erect, striated, distinct, bearded at the tip. Style also bearded at the tip. Stigma oblong, bifid, revolute^z.

ⁿ Linn. mant. ^o Hort. kew. ^p Linn. suppl. ^q Ray.
^r Linn. syst. ^s Forster. ^t Linn. mant. ^u Ibid.
^v Linn. suppl. ^w Hort. kew. ^x Linn. spec.
^y Osbeck voy. Engl. edit. 1. 391. ^z Linn. mant.

Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers in June and July^c.

40. Found at the Cape of Good Hope by Thunberg^d.

41. Stem procumbent, hairy. Leaves linear, with three teeth on each side. Peduncles longer than the whole plant^e. Native of the Cape of Good Hope. Introduced in 1787 by Mr. Francis Masson. It flowers in July and August^f.

42. Stem herbaceous, a hand long, varicose, prostrate on every side. Peduncles alternate, the length of the leaves, solitary. Leaves not at all decurrent. Flowers dark-purple. Native of the Cape of Good Hope^g.

Thunberg has several other species, and has enumerated thirty *Lobelias* natives of the Cape of Good Hope, in his *Prodromus Plantarum Capensium*, p. 39, 40.

Miller has only one species of *Lobelia*, which is the *Scævola* of Linneus. His *Rapuntiums* belong to this genus. He enumerated ten in the seventh edition of his Dictionary. In the eighth he omitted the second species, which is only a variety of the first, but preserved the ten descriptions, so that the numbers do not correspond, but the description of the third sort belongs to n. 2. and so of the rest. This error is rectified in the quarto edition of 1771.

The following synopsis, though incomplete, may assist in discriminating the species.

Herbaceous.
 { Annual. 1. 3. 7. 27. 28. 29. 30. 32. 34. 35.
 36. 39. 40.
 { Perennial. 5. 16. 19. 20. 23. 24. 31. 37. 38.
 41. 42.
 { Shrubby. 2. 4. 21. 22. 25. 26. 40.

Stem
 { Upright. 1 to 7. 13 to 31.
 { Prostrate. 11. 32 to 41.

Leaves
 { Entire. 1 to 12. 41.
 { Cut or Gashed. 13 to 40.

Roundish. 33.
 Lanceolate. 6. 10. 11. 16. 18. 21. 29. 34. 36.
 37. 39. 41. 42.
 Lanceolate-linear. 7.
 Lanceolate-oval. 32.
 Ovate. 12. 20. 27. 30. 38. 40.
 Ovate-lanceolate. 19. 22. 24.
 Ovate-oblong. 13.
 Elliptic-lanceolate. 25.
 Obovate. 3.
 Oblong. 2. 9. 26. 35.
 Oblong-lanceolate. 23.
 Linear. 1. 4. 5. 8. 17. 31.
 Cordate. 28.
 Pedate. 14.

Corolla
 { Blue. 4. 7. 24. 29. 32. 34. 35. 36. 38. 41.
 { Pale Blue. 11. 27.
 { Blueish White. 5.
 { White. 16.
 { Purple. 28. 42.
 { Red. 26. Blood-red. 19. Scarlet. 23.
 { Yellow. 39. Pale Yellow. 21.

Anthers
 { Connate. 1 to 12. 15 to 30. 32 to 42.
 { Distinct. 13. 14. 31. *Cyphia Bergii*.]

PROPAGATION AND CULTURE.

16. The seeds of this sort should be sown after it is ripe, in pots filled with rich earth, and plunged into the tan-bed in the stove, observing to refresh the earth frequently with water. In the spring these pots may

^c Hort. kew. ^d Linn. suppl. ^e Linn. mant.
^f Hort. kew. ^g Linn. suppl.

be removed, and plunged into a hot-bed, which will soon bring up the plants: when these are fit to remove, they should be each transplanted into a separate small pot filled with rich earth, and plunged into a fresh hot-bed, shading them from the sun till they have taken new root; then they may be treated in the same way as other tender plants from the same country, giving them a large share of air in warm weather, and frequently refreshing them with water. In autumn the plants must be plunged into the tan-bed of the stove, where they will flower the following summer, and produce ripe seeds, soon after which the plants will decay. If the seeds of this plant are brought from the West-Indies, they should be sown as soon as they arrive, in pots filled with rich earth; and if it happens in the winter, the pots should be plunged into the tan-bed in the stove; but if it is in the spring or summer, they may be plunged into a hot-bed in the common frames. These seeds when sown in the spring, seldom grow the same year, therefore the following autumn the pots should be removed into the stove, and managed according to the above directions.

23, 24. These are propagated by seeds, which, when they ripen in England, should be sown in autumn in pots filled with rich kitchen-garden earth, and placed under a common hot-bed frame, or, if the seeds come from the country where the plants grow naturally, they should be sown in the same way as soon as they arrive, for if they are kept out of the ground till spring, they will lie a year in the ground before they vegetate. The pots in which these seeds are sown should be exposed to the open air at all times when the weather is mild, but they must be screened from the frost, and the very hard rain in winter. In the spring the plants will appear, when they should have as much free air as possible in mild weather, and if the spring proves dry, they must be frequently refreshed with water. As soon as they are fit to remove, they should be each planted in a separate small pot filled with the same rich earth, and placed in the shade till they have taken new root; then they may be placed where they may have the morning sun, in which situation they may remain till autumn. During the summer, they must be duly watered in dry weather, and when the roots have filled the pots, they should be removed into larger. In autumn they must be placed under a common frame to screen them from hard frost, but they should enjoy the open air at all times when the weather is mild. The spring following they should be new potted, and placed where they may have the morning sun, always observing to water them duly in dry weather, which will cause their stalks to be stronger, and produce larger spikes of flowers in August. These will continue long in beauty, if they are not too much exposed to the sun, and, if the autumn proves warm, the seeds will ripen well in England. The roots will sometimes last two or three years, and produce offsets for increase, but they will not flower so strong as the seedling plants, therefore an annual supply of them should be raised. There are many who propagate them by cutting their stalks into proper lengths, and plant them in pots filled with good earth, or into an east border, covering them close with glasses. These frequently take root, but they are not so good as the seedlings.

They will live in the full ground if they are protected from hard frost in winter, and they will flower stronger than those in pots.

27. Sow the seeds in autumn in pots filled with rich earth, and treat the plants in the same way as the twenty-third sort.

28. When the seeds are permitted to scatter on pots which stand near them, and these are sheltered from frost, the plants will come up plentifully the following spring: or if they be sown in pots in autumn, and sheltered in winter, the plants will rise the following spring. Transplant these into separate small pots, and place them under a frame.

29. Sow the seeds in autumn in a warm border, or in pots filled with loamy earth, and placed under a common frame in winter. When they come up in the spring, transplant them into a border of soft loamy earth, or into other pots, shading them till they have

taken new root, and duly watering them in dry weather, which will cause them to flower strong, and produce good seeds annually.

34. 35. If the seeds of these sorts be sown in autumn, they will succeed much better than when they are sown in spring: these may be sown in pots, and sheltered under a common hot-bed frame in winter, exposing them to the open air at all times in mild weather, but screening them from the frost; and in the spring, the pots should be plunged into a moderate hot-bed, which will soon bring up the plants; when these are fit to remove, they should be each planted in a separate small pot filled with rich earth, and plunged into a moderate hot-bed again, shading them from the sun till they have taken new root; when they must have a large share of air at all times when the weather is mild; and as the plants grow strong, they should be gradually hardened to bear the open air, into which they should be removed in June, placing them in a sheltered situation, where they will flower in July, and if the season prove favourable, the seeds will ripen in September; but if the season should prove cold, it will be proper to remove one or two plants into a glass case, to obtain good seeds.

[N. 5. 7. 23. 24. 27. 29. 32. being natives of Europe or North America, are hardy plants, and directions for their treatment are given under 23. 27. and 29.]

N. 1. 3. 4. 8. 13. 14. 15. 17. 18. 20. 30. 31. 34. 35. 37. 39. 40. 41. 42. are natives of the Cape of Good Hope. These, therefore, must be preserved in the dry stove, and treated as directed for N. 34.

The rest being natives of the West Indies, and other hot climates, must be preserved in the bark stove, and treated as directed above for N. 16.

Lobelia Cheiranthus. See *Manulea*.

—— frutescens. See *Scævola*.

Loblolly Bay. See *Gordonia*.

Lobus aromaticus. See *Epidendrum*.

—— echinatus. See *Guilandina*.

—— machæroides. See *Dolichos*.

LOCKER-GOULANS. See *Trollius*.

LOCUSTA. See *Valeriana*.

LOCUST TREE. See *Ceratonia*, *Gleditsia*, and *Hymenæa*.

LOEFLINGIA. (So named by Linneus from Peter Loeffing, one of his disciples, who travelled in Spain and America, and died on his travels in 1756.)

Lin. gen. n. 52. Reich. n. 58. Schreb. n. 71.

Gært. t. 129. Juss. 299.

Class. 3. 1. Triandria Monogynia.

Nat. order of Caryophyllei. Caryophylleæ, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved, upright: leaflets lanceolate, marked on each side at the base with a toothlet, sharp-pointed, permanent.

COR. Petals five, very small, oblong-ovate, converging into a globe, round.

STAM. Filaments three; length of the corolla. Anthers roundish, twin.

GERM superior, ovate, three-cornered. Style filiform, rather wider above. Stigma a little obtuse.

PER. Capsule ovate, somewhat three-cornered, one-celled, three-valved.

SEEDS a great many, ovate-oblong.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled, very small. Caps. one-celled, three-valved.

SPECIES.

1. *Loeflingia hispanica*.

Lin. spec. 50. fyst. 83. Reich. 1. 95. Aët. holm.

1758. 16. t. 1. f. 1. Loeff. it. 113. t. 1. f. 2.

Gært. fruct. 2. 222. Cavan. hisp. 64. n. 103.

t. 94.

DESCRIPTION, &c.

Root annual. Leaves opposite, mucronate. Branches prostrate, alternate, pubescent, clammy. It has the appearance of *Scleranthus*^a. Capsule small, narrower above. Receptacle columnar, loose, pencil-branched above, almost the length of the capsule. Seeds sixteen to twenty, very small, ovate produced into a beak,

^a Linn. fyst.

with a very slight groove along the back, hollow-dotted, straw-coloured or rufescent^b. Native of Spain, on open hills.—Introduced in 1770, by Mont. Richard. It flowers in June^c.

Cavanilles says, that the stems are a span high, subdichotomous. Leaves very small, with stipulaceous appendages, toothletted below. Flowers solitary, axillary, and in the divisions of the branches. Calycine leaflets mucronate, wider at the base, concave; the three outer two-awned below, the two inner almost always awnless. Corolla white; petals obovate, emarginate. Filaments shorter than the corolla. Anthers ovate, twin. Germ ovate-acuminate. Stigmas three. Capsule ovate-acute.

Loeflingia indica. See *Pharnaceum depressum*.

LOESELIA. (So named by Linneus from John Loefel, author of *Flora Prussica*, 1654; published by Gottsched, with additions in 1703.)

Lin. gen. n. 767. Reich. n. 826. Schreb. n. 1029.

Gært. t. 62. Juss. 135. Royenia. Houst. in Phil. transf.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Convolvuli*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, four-cleft, sharp, short, permanent.

COR. one-petalled, unequal. Tube the length of the calyx. Border five-parted: all the divisions deflected to the lower side, ovate-lanceolate, equal.

STAM. Filaments four, length of the corolla; of which two are shorter; all opposite the divisions of the petal, and reflected in a contrary situation to the corolla. Anthers simple.

PIST. Germ ovate. Style simple, situated as the stamens. Stigma thickish.

PER. Capsule ovate, three-celled.

SEEDS solitary or two, obscurely cornered.

OBS. The stamens are five, one of which is shorter than the rest, and fastened to the nearest segment of the corolla; the rest are inserted into the tube. G.

ESSENTIAL CHARACTER.

Cal. four-cleft (five-toothed, G.) Cor. with all the segments directed one way (deeply five-cleft, with oblong ciliated segments. G.) Stam. opposite to the petal (five, unequal. G.) Caps. three-celled, (gaping at top. G.)

SPECIES.

1. *Loefelia ciliata*.

Lin. spec. 875. fyst. 567. Reich. 3. 168. Roy.

lugdb. 299. Gært. fruct. 1. 295.

Royena fol. acute dentatis & veluti spinosis, flore luteo. Houst. Mfs.

DESCRIPTION, &c.

Stem upright, obsoletely quadrangular, brachiate. Leaves opposite, lanceolate-ovate, acutely ferrate. Branches opposite: last branchlets imbricate, with subcordate, embracing, ferrate, ciliate leaflets; the lower ones smaller, the upper ones more crowded, and gradually larger, till a branchlet terminates in a floriferous head^d. Capsule small, clothed with the calyx, obovate or turbinate, thin, whitish, opening three ways at top. In each cell one or two seeds, fastened to the inner angle, oblong, convex on one side, obsoletely angular on the other, of a pale rufescent colour, with abrupt transverse lines of a deeper colour disposed longitudinally in rows; covered with a single membranaceous skin that dissolves in water into a pellucid mucilage^e.

Found at La Vera Cruz in South America by Houstoun.

LOGONDIUM. See *Vitex*.

LOGWOOD. See *Hematoxylum*.

LOLIUM, (of Pliny, Varro, and other Latin writers; γ. λαϊον ολειν, *segetem perdere*, or λαϊον ολον, *seges noxia*. A bad weed among corn; hence called infelix lolium by Virgil.)

Lin. gen. n. 95. Reich. n. 101. Schreb. n. 126.

Class. 3. 2. Triandria Digynia.

Nat. order of *Gramina*, *Gramineæ*, or *Grasses*.

^b Gartner.

^c Hort. kew.

^d Royen.

^e Gartner.

GENERIC CHARACTER.

CAL. Receptacle common elongated into a spike, pressing the flowers distichally spiked to the angle of the culm.

Glume univalve; opposite the shaft, awl-shaped, permanent.

COR. bivalve: *Valvule inferior* narrow-lanceolate, convolute, sharp-pointed, the length of the calyx: *Valve superior* shorter, linear, more obtuse, concave upwards.

Nectary two-leaved: *leaflets* ovate, obtuse, gibbous at the base. S.

STAM. Filaments three, capillary, shorter than the corolla. Anthers oblong.

PIST. Germ top-shaped. Styles two, capillary, reflex. Stigmas plumose.

PER. none. Corolla cherishes the seed, gapes, lets it fall.

SEED single, oblong, convex on one side, furrowed-flat on the other, compressed.

OBS. The sessile spikes are placed in the same plane with the culm; hence the stem bears the office of a second calycine valve (deficient and opposite.)

ESSENTIAL CHARACTER.

Cal. one-leaved, fixed, many-flowered.

SPECIES.

1. *Lolium perenne*. Perennial Darnel or Ray Grass.

Lin. spec. 122. syst. 124. Reich. 1. 230. fl. lapp. n. 32. succ. n. 110. Hudf. angl. 55. Wither. arr. ed. 3. 167. Relb. cant. n. 101. Engl. bot. 315. Fl. rust. 4. Anders. essays, 2. 208. t. 2. Swayne gram. pasc. Dickf. hort. sic. Hall. helv. n. 1416. Scop. carn. n. 129. Neck. gallob. 70. Pollich. pal. n. 129. Leers herborn. n. 97. t. 12. f. 1. Schreb. gram. t. 37. Fl. dan. t. 747. Villars dauph. 2. 175. Krock. fles. n. 189.]

Gramen loliaceum angustiore folio & spica. Baub. pin. 9. theat. 127, 128. Scheuch. gram. 25. t. 1. f. 7. A. B. C. Reliqu. Rudb. 13. A. Mill. dict. n. 2. Monti ic. 19. Raii hist. 1263. syn. 395.

[Gr. lol. spica simplici vulgare. Mor. hist. f. 8. t. 2. f. 2. L. rubrum. Ger. emac. 78. 2. L. rubr. f. Phoenix. Park. theat. 1145. 2. Phoenix Lolio similis. Baub. hist. 2. 436. Phoenix. Matth. 1023. Dod. pempt. 540. 1. Hordeum murinum. Lob. obs. 21. 1. Spike awnless, spikelets compressed, longer than the calyx, and composed of several flowers.]

2. *Lolium tenue*.

Lin. spec. 122. Reich. 1. 230. Gmel. tub. 31. Allion. pedem. n. 2186. Villars dauph. 2. 176.

L. perenne 2. Wither. arr. ed. 3. 167. Gramen loliaceum, fol. & spicis tenuissimis. Vaill. par. 81.

Gr. loliacei varietas spica tereti angustissima. Scheuch. gram. 28.

Spike awnless, round, spikelets three-flowered.

3. *Lolium temulentum*. Annual Darnel or Ray Grass.

Lin. spec. 122. syst. 124. Reich. 1. 231. fl. succ. n. 109. Hudf. angl. 55. Wither. arr. ed. 3. 168. Lightf. scot. 107. Relb. cant. n. 102. Fl. rust. 33. Mus. rust. 6. t. 1. f. 1. Hall. helv. n. 1420. Scop. carn. n. 130. Willich. illustr. n. 10. Gouan. illustr. 5. Pollich. pal. n. 130. Leers herborn. n. 98. t. 12. f. 2. Schreb. gram. 74. t. 36. Fl. dan. t. 160. Gumm. norv. 1. 63. n. 163. Allion. pedem. n. 2187. Krock. fles. n. 190. Villars dauph. 2. 176.

Gramen loliaceum, spica longiore. Baub. pin. 9. theat. 121. Scheuch. gram. 31. t. 1. f. 7. E. F. Monti ic. 18. Reliqu. Rudb. t. 12.

Lolium. Dod. pempt. 538. Lob. obs. 21. 2. Matth. 41. Camer. epit. 198.—album. Ger. 71. 1. emac. 78. 1. Park. theat. 1145. 1. Raii hist. 1262. 1. syn. 395.—verum. Mor. hist. 3. 181. f. 8. t. 2. row 2.

L. gramineum spicatum, caput tentans. Baub. hist. 2. 437.

Spike awned, spikelets compressed, many-flowered.

4. *Lolium bromoides*. Sea Darnel.

Hudf. angl. 55. Wither. arr. ed. 3. 169.

Festuca avenacea sterilis paniculis confertis erectioribus, aristis brevioribus. Raii syn. 413. t. 17. f. 2.

—ster. humillima, spica unam partem spectante.

Pet. conc. gram. n. 101. Syn. ed. 2. 261. 5.

Panicle simple, pointing one way, spikelets awned.

5. *Lolium distachyon*.

Lin. syst. 124. Reich. 1. 231. mant. 187.

Spikes in pairs, calyxes one-flowered, corollas woolly.

DESCRIPTIONS, &c.

1. Root perennial, creeping. Stems several from the same root, prostrate or oblique at the base, but the flowering stem upright, smooth, from six inches to eighteen, twenty and twenty-four inches in height, according to the soil: they have several joints near the base, at a small distance from each other, but on the upper part only one or two. (August the 2d, 1797, I count, on a great number of plants of a middling size three joints, and never more than four, the flowering-stem running up from eleven to fourteen inches above the last joint.) They are frequently russet-coloured at the joints. Leaves four or five inches long, and from two to four lines wide, lengthened out into a point; the leaf on the stem above twice as broad as those next the root and on the runners. The sheath covers the stem for several inches above the upper joint; both that and the leaves are smooth. The flowers are in a spike, which is from four to six or seven, and even nine inches in length, composed of many (ten to eighteen) spikelets, ranged at a little distance from each other, in two rows alternately along the rachis or common receptacle. The spike is generally flat, but sometimes nearly cylindrical; and it sometimes shows a disposition to become branched, particularly towards the bottom. The rachis is flexuose, or changes its direction in a curve line from one spikelet to another; and each spikelet being lodged at the base in a hollow of it, has no occasion for an inner valve to the calyx for protection, and therefore is not provided with one. The number of flowers in each spikelet varies from three or four to six, seven or eight, and even sometimes nine, ten and eleven; but six or seven is the most common number. The valve of the calyx tapers to a point; and the terminating calyx is two-leaved. The two inner husks, which are the valves of the corolla, are both of the same length, or nearly so. The germ is placed between the upper of these, and two small white semitransparent substances, which Linneus calls the nectaries. The seed easily quits the chaff.

There are many varieties of this Grass, differing in size or colour of the stem and spike, as well as the number of flowers in each spikelet. The flowers are now and then found with awns or beards. The spikelets also are sometimes clustered, and sometimes branched.

Perennial Darnel is common in most parts of Europe, by way sides and in pastures, flowering in June. It is called in English *Ray-grass*, from the French *Foraie*, which is their name for *L. temulentum*, and they call this *Fausse Foraie*. It is corruptly called by farmers *Rie-grass*, but this Grass bears no resemblance to *Rie*, and that is a name appropriate to a very different Grass, *Hordeum pratense*. Mr. Ray names our Ray-grass *Red Darnel-grass*. In some places it is called *Crap*, in Devonshire, *Eaver*, in Norfolk, *White Nonesuch*. In German it has many names; *Perennierende* or *dauernde Lolch*, *Winterlolch*, *Suffer Lolch*, *Englische Reygras*, *Lothe*, *Lothegras*, *Dort*, *Dorten*, *Drot*, *Wintertrespe*, *Mausgerste*, *Mausbaser*, *Rothbaser*, *Furstbaser*, *Mauskorn*, *Peterskorn*, *Taubkorn*, *Wilder Dinkel*, *Dinkelspelzen*, *Graslauch*, *Graslolch*, *Tänsch*, *Tewer*. In Danish, *Raigræs*. In Swedish, *Renrepe*, *Engelmans Rijegras*. In Italian, *Loglio vivace*, *Loglio salvatico*, *Fenice*. In Spanish, *Ballico*, *Vallico*. In Portuguese, *Foyo vivace*. In Russian, *Pschanez*.

How long Ray-grass may have been in cultivation, I am not able to ascertain. We may, however, venture to fix the introduction of it after the middle of the last century. For not only Gerarde in 1597, his republisher Johnson in 1633, and Parkinson in 1640, give not the least hint of any use to which this grass is applied; but none of the writers on husbandry before the Restoration, as Sir Hugh Plat, Googe, Markham, Sir Richard Weston, Hartlib, Gabriel Plantes, Blith or Yarranton, say a word in its commendation, or even insinuate

insinuate that this, or any particular species of Grass, properly so called, was sown in laying down land.

The first mention I find made of it for cultivation, is in Dr. Plot's Oxfordshire, printed in 1677^a. "They have lately sown, says he, *Ray-grass*, or the *Gramen loliaceum*, by which they improve any cold, sour, clay-weeping ground, for which it is best, but good also for drier upland grounds, especially light stony or sandy land, which is unfit for sainet foin. It was first sown in the Chiltern parts of Oxfordshire, and since brought nearer Oxford by one Mr. Eustace, an ingenious husbandman of Islip, who, though at first laughed at, has since been followed even by those very persons that scorned his experiment; it having precedence of all other grasses, in that it takes almost in all sorts of poor land, endures the drought of summer best, and in the spring is the earliest grass of any, and cannot at that time be overstocked, its being kept down making it sweeter and better beloved by cattle than any other grass: nay sometimes they have been known to leave meadow hay to feed on this: but of all other cattle it is best for horses, it being hard hay; and for sheep, if unsound, it having been known by experience to have worked good cures on them, and in other respects the best winter grass that grows." Some, he informs us, sow two bushels on an acre, but it is best to sow three, with Non-such.

Ray, in his history (1688) relates, that it is sown in a few places, and that it is excellent for fattening bullocks. In the third volume of the Oxford history of Plants by Morison and Bobart (1699) it is said, that the seeds are gathered and sown in stiff and moist land; and that it is much esteemed, under the name of Ray-grass, as food for sheep and other cattle.

According to Stillingfleet, "it makes a most excellent turf on sound rich land, where it will remain. Many, he adds, are tempted by the facility of procuring the seed of this grass to lay down grounds near their houses, where they want to have a fine turf with it; for which purpose, unless the soil be very rich, a worse grass cannot be sown, as it will certainly die off in a very few years entirely." This gentleman thinks that Ray-grass does not feed good venison, and presumes from hence that it is not proper for sheep, having always observed that the same kind of ground which yields good venison, yields also good mutton. If it be the natural produce of very strong or wet lands, this is easily accounted for. In such situations it is by no means unprolific of leaves; but in dry upland pastures it runs much to stalks or bents. It is not well adapted to form a lawn, its foliage being of quick growth, and its flowering stems continually shooting forth^b.] Mr. Miller says^c, that Ray-grass will succeed better than any other sort in strong cold land, and is an earlier feed in the spring; but that it is a very coarse grass, becoming very hard and wirey unless it be cut early, so that few cattle care to eat it. He remarks, that it has few leaves, and runs much to stalk or bents, or as it is called in some counties Bennet. When this grass is fed, therefore, he recommends the bents to be mown off. He adds, that there is another species (variety) called Red Darnel, which is of a worse nature, than the other; the stalks growing hard much sooner, and having narrower leaves. It is very common in moist pasture grounds, for as it comes early to flower, the seeds are generally ripe before the hay is cut. [This variety is the produce chiefly of dry pastures, where Ray-grass certainly produces little else besides stalks.

After all the encomiums that have been bestowed upon this grass, Dr. Anderson asserts that it is now in general known to be but a very indifferent grass for pasture, on account of the tendency it has to send out numerous seed-stalks very early in the season, after which no animal will taste it; so that unless it be for a very short while in the spring, when the leaves are tender and succulent, it is no longer fit for pasturage: the stalks after the month of May becoming withered; so that after that period, the field is usually covered

entirely with these dead stalks, and remains during the rest of the season with very few signs of vegetation. It is moreover but a short-lived grass, usually dying out entirely in five or six years. On both which accounts, it is by no means to be recommended in general as a proper grass for pasturage.

All grasses that run chiefly to seed-stalks, should seem to be, for the same reasons, improper for that purpose; so that our researches ought to be directed principally to discover such grasses as run chiefly to leaves, and produce but few flower-stalks.

It was this quality that first recommended to Dr. Anderson the *Purple Fescue-grass*, and induced him to try some experiments with regard to it^d.

It is judiciously remarked by Mr. Curtis, that though *Lolium perenne* may not possess all that is desirable in a grass, it is not therefore to be considered as of no value, and indiscriminately rejected. The complaint so generally urged against it, of its producing little more than stalks or bents, will be only found valid when the plant grows in upland pasture: in rich moist meadows its foliage is more abundant, and it seems to be the general opinion of agriculturists that it is highly acceptable and nutritious to cattle^e. Certainly it is not adapted to all soils and situations equally. Several sorts may be even preferable to it; and though early, it is not the first that springs; not only the vernal, but the Fox-tail and the Meadow-grasses, all excellent in their kind, appearing earlier than this^f. Ray-grass, however, is still valuable both as an early seed, and as being fit to mow for hay a fortnight before mixt grasses. For the latter use the abundance of stalks is an excellence, provided the grass be cut whilst the sap is in them, the chief nutriment of hay residing in these.

Mr. Swayne having hinted in his *Gramina pascua*, a work very useful to gentlemen and farmers in distinguishing pasture grasses, that there was reason to think that Ray-grass had by frequent sowing degenerated, so as to be inferior in many respects to that which grows naturally in our best meadows. Mr. Pacey, an enlightened agriculturist in the upper part of the county of Stafford, has raised it from seed selected from old pastures, and has multiplied it to that extent as to sell annually a considerable quantity; it having been proved by the most competent judges to be greatly superior to the Ray-grass commonly cultivated^g. Mr. Swayne asks whether the *L. temulentum* has had any share in bringing on this degeneracy? I should think not, but ascribe it rather to cultivating and saving the seed on improper soils, particularly such as are too dry. Some persons are of opinion that if land lies under Ray-grass two or three years, it exhausts; and assert, that if one half of a field be laid down with clover, trefoil, &c. and the other half with a mixture of Ray-grass; when it is ploughed for corn, the latter part will be worse to a considerable degree^h. It would, however, probably be the same with any other grass.

How this species came to be selected originally for cultivation, I cannot say. If it was not accident, it was perhaps because it is common, and the seeds are easily collected. That it should now be the only sort of seed which is to be had in any quantity in the shops, is a disgrace to us, since the best sorts have been so repeatedly pointed out by Mr. Curtis and others, and premiums offered for collecting them, during so many years, by the Society for the Encouragement of Arts, Manufactures and Commerceⁱ.

2. This is smaller than the preceding. It is distinguished by the tenuity of the culm and spike; which last is cylindrical and awnless; the spikelets are three-flowered^k. Allione and Villars suppose it to be annual. It is generally looked upon to be no more than a variety of *L. perenne*. Native of France and Germany. Linneus remarks that it is very different from *Triticum tenellum*.

3. Root annual. Stems or culms from two to three feet in height, upright, round, especially near the spike, rough when stroked upwards, having three, four,

^a Ch. 6. par. 31. 32. 33. ^b Curtis, pract. obs. p. 33. ^c Art. Gramen, n. 2.

^d Essays, 2. 208. ^e Pract. obs. 33. ^f Ibid. 4. and 65.

^g Swayne in Wither. arr. ed. 3. 168.

^h Young's ann. 2. 75. and 16. 43. ⁱ See art. Grass.

^k Villars and Withering.

or five joints. Leaves flat, pointed, from nine inches to a foot or more in length, and three or four lines in breadth, the upper surface rough when stroked upwards, the lower smooth. Sheaths striated, rough, crowned with a short blunt ligula, slightly notched at the edge. Spike from five or six inches to a foot in length, rough. Spikelets alternate, in a double row, pale green, half an inch long: the number of flowers in each varying from five to nine. The single valve of the calyx is the length of the spikelet; and has not any awn; the terminating flower of each spikelet, and frequently the lower spikelets, have two calycine valves. The outer valve of the corolla is only half the length of the calyx; it is edged with white, and puts forth below the tip a straight awn, twice its own length. The seed is inclosed in the corolla, fastened to the inner valve, and does not quit it spontaneously.

There is a variety of this without awns, and with a smooth culm, which Withering makes a distinct species, under the name of *L. arvense*, or White Darnel.

Annual Darnel is a native of most parts of Europe, Japan, the Cape of Good Hope, &c. Though there can be no doubt of its being a distinct species from the Perennial Darnel, yet we are at a loss for specific distinctions: for that has sometimes awns to the flowers, and this, not unfrequently, has none. This however is annual, taller and larger in every respect, and of a paler hue. Its place of growth is also different; for it is a weed among corn, especially wheat and barley, and also among flax. It flowers in July and August, later than *L. perenne*.

Virgil joins it with the Wild Oat, as a weed among crops in general—

———“*Interque nitentia culta*

“*Infelix lolium & steriles dominantur avenæ*.”

The epithet *infelix* is probably given it from its deleterious qualities.

Ovid unites it with *Tribulus*, infesting Wheat—

———“*Lolium tribulique fatigant*

“*Triticeas messes & inexpugnabile gramin*.”

The flour of the seeds, mixed with wheat flour, produces disorders in the human body, as vomiting, purging, and violent cholics, but it has not a sensible effect, unless taken in considerable quantity; or, according to Linneus, unless it be eaten hot. The seed, malted with barley, soon occasions drunkenness; hence the French name *Ivraie*, and by corruption our English *Ray*.

In Yorkshire it is called *Droke*, and in Ireland *Sturdy*.—In Germany *Jakrige Lolch*, *Germaine Lolch*, *Somme Lolch*, *Lulchtrespe*, *Betaubende Lolch*, *Taubkorn*, *Tollkorn*, *Taubkraut*, *Tobhauser*, *Toberich*, *Toberling*, *Taumel*, *Taumellulch*, *Schwindelhafer*, *Schwindelkorn*, *Trunkenweizen*, *Schlafweizen*, *Kuhweizen*, *Rausch*, *Rauschkorn*, *Dippelhafer*, *Somnurtrespe*, *Trasp*, *Traspen*, *Tresp*, *Tresszen*, *Weizentalch*, *Twalch*, *Wendische Piank*, *Radel*, *Schwanzel*, *Dort*, *Traspendort*, *Trespdorf*, *Schafgrafs*, *Leitharb*, *Unkraut*, *Zizania*. In Denmark, *Heyre*, *Heyregræs*, *Heire*, *Swingel*, *Dude*. In Sweden, *Darrepe*. In Italy, *Loglio*, *Gioglio*, *Zizzania*. In Spain, *Joyo*, *Cizana*, *Zizana*. In Portugal, *Joyo*, *Zizania bastarda*. In Russia, *Kukol*.

In this enlightened age it can scarcely be necessary to correct an old vulgar error, that wheat degenerates into this grass. The fact is, that in very wet seasons, and among very bad husbandmen, Darnel has so far prevailed as to suffocate the wheat, and to take its place.

Celsus recommends the meal of *Lolium* to be used in poultices, in common with that of wheat, far, barley, and *ervum*.

4. Root annual. Culms several, from six inches to a foot in height, oblique, round, smooth, somewhat branched. Leaves rolled in a little, acute, naked, much shorter than the sheath, which is ventricose and naked. Ligule bluntish. Spikelets peduncled, linear, with from four to eight flowers in each. Peduncles short, thickened, rugged. Calycine valve linear, concave, awned. Outer valve of the corolla larger,

linear, keeled, awned, rugged: inner shorter, linear, flat, awnless. Awn twice as long as the floret.

Native of England, on the sea coast, in loose sand; flowering in May and June.

5. Culms decumbent, branched at the base: the flowering ones rising, a foot high, filiform, narrow, even. Spikes in pairs, terminating, equal, sessile, linear, very narrow, directed one way outwards: flowers alternate, white with shaggy hairs. Glume of the calyx sublateral, linear, blunt, permanent. Corolla ovate, woolly with white shagginess.

Native of Malabar. Observed by Koenig.

PROPAGATION AND CULTURE:

1. *Ray-grass*.

This Grass is usually sown with Clover, upon such lands as are designed to be ploughed again in a few years, and the common method is to sow it with Spring Corn; but from many repeated trials, I have always found, that by sowing these seeds in August, when there has happened a few showers to bring up the Grass, that the crop has answered much better than any which has been sown in the common way; for the Grass has often been so rank, as to afford a good feed the same autumn; and the following spring there has been a ton and a half of hay per acre mowed very early in the season, and this has been upon cold sour land; so that I am convinced of that being the best season for sowing these Grasses, though it will be very difficult to persuade those persons to alter their practice, who have been long wedded to old customs. The quantity of seeds which I allow to an acre is about two bushels, and eight pounds of the common Clover, which, together, will make as good plants upon the ground as can be desired; but this is not to be practised upon lands where the beauty of the verdure is principally regarded, but is fit only for those who have profit in view.

When this grass is fed, mow off the bents in the beginning of June, otherwise they will dry upon the ground, and have the appearance of a stubble field all the latter part of summer; and they will not only be disagreeable to the sight, but troublesome to the cattle, who will not touch them. By permitting them to stand the after-growth of the grass is greatly retarded, and the beautiful verdure lost for three or four months, so that it is good husbandry to mow the bents before they grow too dry, and rake them off the ground: if they are then made into hay, it will serve for cart-horses or dry cows in winter.

[Dr. Anderson affirms, that Ray-grass requires a deep open loose deepish soil, tending to dampness, to bring it to full perfection. On a soil of this sort he has measured several stalks above six feet in length.]

He observes that foot, which does not promote the growth of clover, has a surprising effect upon that of Ray-grass.

Mr. Kent says, that Ray-grass is sown with clover at the rate of a quarter of a peck to an acre, or by itself at the rate of two pecks to an acre, or in the proportion of a gallon to an acre, with eight pounds of clean trefoil; that all cattle are particularly fond of it in the spring, but towards midsummer the stalks become dry, and cattle then refuse them; that therefore this grass should be kept down by being constantly fed. When mixed with clover and mowed for hay, it may however be spring-fed, and is even the better for it, because it would otherwise be ripe before the clover. When sown with clover its greatest advantage is experienced in the second and third years, for as the clover declines, this increases in proportion. When mixed with trefoil, it is a very good grass upon light land, designed to continue several years in sheep-pasture.

In Norfolk the second year's lay of Ray-grass and clover is invariably-pastured; the spring-shoot being usually expended in finishing or topping up turnep-fed bullocks; for which purpose no other vegetable is perhaps superior to Ray-grass. Store-cattle follow the bullocks, and keep possession of the lays till they

¹ Georg. 1. 153.

² Metam. 1. 5.

³ L. 2. c. 33.

⁴ Hudon.

⁵ Linn. mant.

⁶ Essays, 2. 300, 309.

⁷ Hints, p. 47.

are broken up for wheat, in july, august, september or october³.

Next to Saintfoin, Ray-grass is in the highest esteem with the Cotswold farmers. Not only the green herbage, but the hay is there considered as superiorly nutritious. Bullocks are finished with ordinary barley and ray-grass hay; that is, not with the straw of ray-grass, but with the herbage cut in a state of succulency, and properly made¹.

If suffered to stand too long before it be mown, the hay will of course be ordinary. If suffered to run up in the spring before stock be turned upon it, much of it will be left uneaten. If the seed sown be foul, the herbage will be of a bad quality. Under bad management the succeeding wheat crop will be unprofitable.

The seed should be winnowed, and freed from the seeds of weeds, as carefully as the seed of wheat or other grain.

If Ray-grass be intended for pasturage, it ought to be broken as early in spring as the land will bear stock; which ought to be so proportioned, that it never can get above a moderate bite.

If it be shut up for hay, it ought to be mown as soon as the seed-stems are fully formed, before the flowers come out.

If it be intended for seed, it ought to stand until the flowers be fully blown: but it must not be expected, in this case, that the straw will prove hay.

As a spring-feed Ray-grass is preferable to every other grass; and in autumn it renews its nutritious bite. This property, added to its productiveness, and to the facility with which its seeds may be collected in quantity, give it a decided preeminence to every other blade-grass at present known.

But this, like other early grasses, remains in a great measure unproductive during the summer months. This renders it improper to be sown alone, for pasturage; and White Clover, the Trefoils, or other summer herbage should be cultivated with it.

All perhaps that is wanted in addition to these, in order to render the business of cultivating perennial lays as nearly perfect as common practice may require, is one or more summer blade-grasses of a nutritious quality and productive growth; the seeds of which may be easily collected separately from the seeds of weeds.

Meadow Fescue (*Festuca pratensis*) is most likely to answer this purpose; or Meadow Poa (*Poa pratensis*) if the seeds were easily separable.

From a gallon to a peck of clean winnowed seed of Ray-grass is abundantly sufficient to sow an acre, when mixed with the Clovers, Trefoil, &c.⁴

In general, where prejudices have arisen against Ray-grass, it has been because bad seed has been sown, or because the soil is improper for it, or that the management has been faulty.

3. Annual Darnel is very injurious to a wheat crop, but may easily be avoided, as it is sown along with the seed, from which it may be separated by the sieve; and not being a root-weed it is unpardonable to suffer it to increase to any considerable degree.

LOLIUM. See *Agrostemma* and *Cynosurus*.

LOMBA. See *Piper*.]

LONCHITIS. (From *λόνχης*, a spear.)

Lin. gen. n. 1177. Reich. n. 1294. Schreb. n. 1629.

Class. 24. 2. Cryptogamia Filices.

Nat. order of *Filices* or *Ferns*.

GENERIC CHARACTER.

Capsules disposed in lunulated lines lying under the sinuses of the frond.

SPECIES.

[1. *Lonchitis hirsuta*.

Lin. spec. 1536. syst. 932. Reich. 4. 400. Brown. jam. 89. 3.

Filix ramosa pinnulis quercinis. Plum. fil. 18. t. 20.

Adiantum pinnis quercinis, ramis villosis. Pet. fil. 82. t. 4. f. 5.

³ Marsh. Norf. 1. 303, 309.

¹ Marsh. Gloc. 2. 72.

⁴ Marsh. Yorksh. 2. 89.

Fronds pinnatifid blunt quite entire, shoots branched hirsute.

2. *Lonchitis aurita*.

Lin. spec. 1536. syst. 932. Reich. 4. 400.

Filix latifolia spinulis mollibus & nigris aculeata. Plum. fil. 14. t. 17.

F. spinosa, seminibus lunulatis. Pet. fil. 172. t. 4. f. 4.

Fronds pinnate, the lowest pinnae two-parted, shoots undivided prickly.

3. *Lonchitis repens*.

Lin. spec. 1536. syst. 932. Reich. 4. 400.

Filix aculeata repens. Plum. fil. 11. t. 12.

F. ramosa acul. Pet. fil. 39. t. 4. f. 6.

Fronds pinnate, pinnae alternate sinuate, shoots branched prickly.

4. *Lonchitis pedata*.

Lin. spec. 1536. syst. 932. Reich. 4. 401. Brown. jam. 89. 2. t. 1. f. 1, 2.

Fronds pedate, pinnae pinnatifid serrulate.

5. *Lonchitis tenuifolia*.

Forst. flor. austral. n. 425.

Arborescent, fronds decomposed, leaves pinnate, pinnae linear-oblong serrate, the lowest pinnatifid.

DESCRIPTIONS, &c.

1. This Fern rises commonly to the height of four or five feet, and is moderately hirsute³.

Native of South America and Jamaica.

2. 3. Natives of South America.

4. This Fern rises by a simple stalk to the height of two or three feet, and then divides into three parts, whereof the middle is simple, but each of the lateral divisions is again parted into three simple branches of a proportionate length.

Native of Jamaica, in the mountains of New Linguinee¹.

5. Native of the isle of Tanna in the South Seas².

Mr. Miller has two species under *Lonchitis*—

1. *L. aspera*, which is *Osmunda* or *Blechnum Spicant*.

2. *L. aspera major*, which is *Polypodium Lonchitis*.

PROPAGATION AND CULTURE.

These Ferns being natives of very hot climates, must be planted in pots, and plunged into the bark-pit. They may be increased by parting the roots. In summer they should have plenty of free air, and be frequently watered.

LONCHITIS. See *Acrostichum*, *Adiantum*, *Asplenium*, *Blechnum*, *Ophioglossum*, *Osmunda*, *Polypodium*, *Pteris*. LONDON-PRIDE. See *Saxifraga*.]

LONICERA. So named by Plumier, from Adam Lonicer, physician at Frankfort, where he died in 1588, aged 58. —*Methodus herbarum*, 1540. *Kranterbuch*, 1546. *Historia Naturalis*, 1551, 1555, &c.

Lin. gen. n. 233. Reich. n. 250. Schreb. n. 319.

Caprifolium. Tournef. t. 378. Juss. 212. Gærtn. t. 27.

Periclymenum. Tournef. t. 378.—Chamæcerasus.

Tournef. t. 379.—Xylosteum. Tournef. t. 379.

Juss. 212.—Diervilla. Tournef. Juss. 211.

Symphoricarpos. Dill. elth. 273. Juss. 211.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Aggregateæ. Caprifolia. Juss.*

GENERIC CHARACTER.

CAL. *Perianth* five-parted, superior, small.

COR. one-petalled, tubular; Tube oblong, gibbous; Border five-parted: divisions revolute, one of which is more deeply separated.

STAM. *Filaments* five, awl-shaped, nearly the length of the corolla. *Anthers* oblong.

PIST. *Germ* roundish, inferior. *Style* filiform, the length of the corolla. *Stigma* obtuse-headed.

PER. *Berry* umbilicated, two-celled.

SEEDS roundish, compressed.

OBS. *Caprifolium* has the inferior division of the corolla separated twice as deep. *Berries* distinct.

Periclymenum has the divisions of the corolla cut almost equally deep. *Berries* distinct.

Chamæcerasus has the lower division of the corolla twice as deeply cut. Two *Berries* seated on the same base.

³ Browne.

¹ Ibid.

² Forster.

Xylosteum has the divisions of the corolla almost equally cut. Two Berries on the same base.

Symphoricarpos. Corolla nearly bell-shaped: Fruit two celled, half-four-celled, seeds solitary.

L. Alpigena and cærulea are singular in having one germ for two floscules, like Mitchella.

ESSENTIAL CHARACTER.

Cor. one-petalled irregular. Berry many-seeded, two-celled, inferior. (In Xylosteum one-celled, in alpigena three-celled. G.)

SPECIES.

* Periclymena, with a twining stem.

1. Lonicera Caprifolium. Italian Honeysuckle.

Lin. spec. 246. fyst. 215. Reich. 1. 480. Hort. cliff. 45. upf. 42. vir. cliff. 14. Sauv. monsp. 139. Villars dauph. 2. 534. Scop. carn. n. 242. Jacqu. austr. 4. 30. t. 357. Du Roi barbk. 1. 385. Pollich pal. n. 217. Allion. pedem. n. 465. Krock. fles. n. 328. Pallas ross. 1. 55. Kniph. cent. 3. n. 58. Knorr. del. 1. t. S. 4. Plenck. ic. t. 134.

Periclymenum perfoliatum. Baub. pin. 302. Dalech. 1427. Raii hist. 1490. Ger. 743. 2. emac. 891. 2.—f. italicum. Park. theat. 1460. 3.

P. italicum. Mill. dict. n. 5.

α. Caprifolium ital. perfol. præcox. Hort. angl. 14. n. 3. t. 5. Italian early White Honeysuckle.

β. C. ital. Hort. angl. 14. n. 1. t. 5. Dubam. arb. 3. Dod. pempt. 411. Tourn. inst. 608. Garid. 80. t. 20.

Flowers ringent in terminating whorls, leaves deciduous, the upper ones connate-perfoliate.

[2. Lonicera dioica. Glaucous Honeysuckle.

Lin. fyst. 215. Ait. hort. kew. 1. 230.

L. media. Murr. in nov. comm. gott. 1776. p. 28. t. 3.

Whorls subcapitate bracted, leaves deciduous glaucous beneath, the upper ones connate-perfoliate, corollas ringent gibbous at the base.]

3. Lonicera sempervirens. Trumpet Honeysuckle.

Lin. spec. 247. fyst. 215. Reich. 1. 481. Hort. cliff. 58. Fabric. helmst. 398. Du Roi barbk. 1. 337. Hort. angl. t. 7. Kniph. cent. 3. n. 59. Knorr. del. 1. t. 53.

Periclymenum sempervirens. Mill. dict. n. 1.

P. virginianum. Riv. mon. 116.

P. perfoliatum virgin. sempervirens & florens. Herm. lugdb. 484. t. 483. Raii hist. 1491.

α. major. Great Trumpet Honeysuckle.

With roundish leaves.

β. minor. Small Trumpet Honeysuckle.

With oblong leaves.

Spikes naked terminating, the upper leaves connate-perfoliate, corollas almost regular, tube bellying at top.

4. Lonicera grata. Evergreen Honeysuckle.

Ait. hort. kew. 1. 231.

Periclymenum americanum. Mill. dict. n. 7.

Caprifolium perfoliatum sempervirens, floribus speciosis. Rand. chelf. 9.

Flowers in terminating whorls, leaves perennial obovate glaucous beneath, the upper ones connate-subperfoliate, corollas ringent.

[5. Lonicera implexa. Minorca Honeysuckle.

Ait. hort. kew. 1. 231.

Flowers ringent in whorls, bractes even, leaves perennial smooth oblong, the upper ones connate-perfoliate, the uppermost dilated.]

6. Lonicera Periclymenum. Common Honeysuckle.

Lin. spec. 247. fyst. 216. Reich. 1. 481. hort. cliff. 58. upf. 42. Fl. succ. n. 193. mat. med. 62. Hudj. angl. 94. Wither. arr. ed. 3. 246. Curt. lond. 1. 15. Relb. cant. n. 178. Hall. belv. n. 673. Pollich pal. n. 218. Villars dauph. 2. 534. Krock. fles. n. 329. Allion. pedem. n. 466. Lour. cochinch. 150. Du Roi barbk. 1. 382. Blackw. t. 25. Fl. dan. 908. Scop. carn. n. 243.

α. L. vulgaris. Common Wood-bind.

Periclymenum vulgare. Mill. dict. n. 6.

Periclymenum. Fuchs. bist. 646. Trag. 822. Lob. obs. 358. 1. Ger. 743. 1. emac. 891. 1.

P. non perfoliatum. Baub. hist. 2. 104. 1.—germanicum. Baub. pin. 302.

P. f. Caprifolium vulgare. Park. theat. 1460. 1. Raii hist. 1490.

Caprifolium germanicum. Dod. pempt. 411. Raii syn. 458. Tourn. inst. 608.—non perfoliatum.

Hort. angl. t. 8. f. 1, 2. Kniph. cent. 8. n. 61.

β. L. ferotina. Late Red Honeysuckle.

Caprifolium german. flore rubello ferotinum. Hort. angl. 14. n. 4. t. 7. Mill. fig. 53. t. 79. Riv. mon. t. 122.

γ. L. belgica. Dutch Honeysuckle.

Periclymenum germanicum. Mill. dict. n. 4.

Capr. german. floribus speciosis. Hort. angl. 15. n. 5. t. 6.

Pericl. f. Capr. german. flore rubello. Park. theat. 1460. n. 2. Raii hist. 1490.

δ. L. quercifolia. Oak-leaved Honeysuckle.

Capr. non perfoliatum, foliis sinuosis. Tourn. inst. 608. Raii syn. 458. Dubam. arb. 6.

Pericl. fol. guercinis. Merr. pin. 92.

Flowers ringent in terminating beads, leaves deciduous all distinct.

[7. Lonicera japonica. Japanese Honeysuckle.

Lin. fyst. 216. Thunb. jap. 89.

Flowers terminating in pairs sessile, all the leaves distinct, stem twining:]

** Chamæcerasa with two-flowered peduncles.

8. Lonicera nigra. Black-berried upright Honeysuckle.

Lin. spec. 247. fyst. 216. Reich. 1. 481. Jacqu. austr. 4. p. 7. t. 314. Sauv. monsp. 140. Villars dauph. 2. 534. Krock. fles. n. 331. Allion. pedem. n. 467. Hall. belv. n. 676. (Caprifolium.)

Periclymenum rectum fabaudicum. Ger. 1111. 1.

emac. 1294. 1.—fructu nigro. Park. theat. 1462.

f. 2. Raii hist. 1491.—2. Clus. hist. 1. 58.—fol. ferrato. Baub. hist. 2. 107.

P. alpinum nigrum. Gesn. fasc. 37. t. 8. f. 48.

Chamæcerasus alpina, fructu nigro gemino. Baub. pin. 451. Tournef. inst. 609.

Peduncles two-flowered, berries distinct, leaves elliptic quite entire.

9. Lonicera tatarica. Tartarian Upright Honeysuckle.

Lin. spec. 247. fyst. 216. Reich. 1. 482. hort. upf. 42. Gmel. sib. 3. 134. n. 7. Amm. ruth. 184. n. 262. Kniph. cent. 9. n. 61. Pallas ross. 1. 55. t. 36. Du Roi barbk. 1. 391. Jacqu. ic. collect. 1. 34.

Peduncles two-flowered, berries distinct, leaves cordate obtuse.

10. Lonicera Xylosteum. Fly Honeysuckle.

Lin. spec. 248. fyst. 216. Reich. 1. 482. Fl. suet. n. 194. hort. cliff. 58. Wither. arr. ed. 3. 247. Scop. carn. n. 244. Pollich pal. n. 219. Sauv. monsp. 140. Villars dauph. 2. 535. Krock. fles. n. 530. Allion. pedem. n. 468. Du Roi barbk. 1. 388. Fl. dan. t. 808. Pallas ross. 1. 56. Gmel. sib. 3. 129. n. 5. Lour. cochinch. 150. Dubam. arb. 2. t. 154. Mill. fig. t. 167. f. 1.

Caprifolium Xylosteum. Gertn. fruct. 1. 135. Hall. belv. n. 677.

Periclymenum rectum germanicum. Ger. 1111. 2.

emac. 1294. 2.—fructu rubro. Park. theat. 1462.

1. Raii hist. 1491.—fructu rubro & nigro. Baub. hist.

Xylosteum. Dod. pempt. 412. 1. Riv. mon. t. 120.

Chamæcerasus dumetorum, fructu gemino rubro. Baub. pin. 451. Tourn. inst. 603.

Peduncles two-flowered, berries distinct, leaves quite entire pubescent.

11. Lonicera pyrenaica. Pyrenean Upright Honeysuckle.

Lin. spec. 248. fyst. 216. Reich. 1. 483.

Xylosteum pyrenaicum. Tournef. inst. 609. Magn. hort. t. 209. Raii dendr. 93. Dubam. arb. 2. 274. t. 110.

Peduncles two-flowered, berries distinct, leaves oblong smooth.

12. Lonicera alpigena. Red-berried Upright Honeysuckle.

Lin. spec. 248. fyst. 216. Reich. 1. 483. hort. cliff. 58. Scop. carn. n. 245. Jacqu. austr. 3. 40. t. 274. Sauv. monsp. 140. Villars dauph. 2. 535. Krock. fles. n. 332. Allion. pedem. n. 470. Pallas ross. 1. 57. Mill. fig. t. 167. f. 2.

Capri-

Caprifolium alpinum. *Gärtn. frucht.* 1. 136. *Hall. belv.* n. 675.

Periclymenum rectum 4. *Clus. hist.* 1. 159.—3. *Tabern.* 900.—fructu rubro. *Ger. emac.* 1295. 4. *Park. theat.* 1463. 4. *Raii hist.* 1492.

Xylosteum fructu cerasi. *Riv. mon. t.* 121.

Chamæcerasus. *Gesn. fasc.* 33. t. 14. f. 44.—montana. *Gesn. ap. Cord.* 213. *fasc.* 33. t. 14. f. 44.

C. alpina, fructu rubro gemino, duobus punctis notato. *Bauh. pin.* 451. *Tournef. inst.* 609.

Peduncles two-flowered, berries coadunate twin, leaves oval-lanceolate.

[13. *Lonicera caucasica*.

Pallas roff. 1. 57.

Peduncles two-flowered, berries coadunate-twin, leaves ovate-lanceolate quite entire.]

14. *Lonicera cærulea*. *Blue-berried Upright Honeysuckle.*

Lin. spec. 249. *syft.* 216. *Reich.* 1. 484. *Gmel. fib.*

3. 131. n. 6. *Pallas roff.* 1. 58. t. 37. *itin.* 2.

568. (*L. pyrenaica*.) *Scop. carn. n.* 246. *Du*

Roi barbk. 1. 394. *Jacqu. austr.* 5. 35. *app. t.* 17.

Hall. belv. n. 674. (*Caprifolium*.)

Periclymenum rectum fructu cæruleo. *Clus. paun.* 85.

Bauh. hist. 2. 108. *Ger.* 1112. 3. *emac.* 1295. 3.

Park. theat. 1463. 3. *Raii hist.* 1492.

Chamæcerasus montana, fructu singulari cæruleo.

Bauh. pin. 451. *Dubam. arb.* 4.

Peduncles two-flowered, berries coadunate-globular, styles undivided.

*** *Stem upright, peduncles many-flowered.*

[15. *Lonicera mongolica*.

Pallas roff. 1. 59. t. 38. *itin.* 3. *app.* 721. n. 76.

Gmel. fib. 3. 135. n. 8. t. 25.

Peduncles many-flowered, berries simple one-flowered, leaves ovate serrate pubescent.]

16. *Lonicera Symphoricarpos*. *Shrubby St. Peter's-wort.*

Lin. spec. 249. *syft.* 216. *Reich.* 1. 484. *hort. cliff.*

58. *Gron. virg.* 23. *Du Roi barbk.* 1. 396.

Plenck ic. t. 133.

Symphoricarpos foliis alatis. *Dill. elth.* 371. t. 278.

f. 360. *Dubam. arb.* 2. t. 82.

Vitis idæa caroliniana, fol. subrotundis hirsutis. *Hort. angl.* 85. t. 20.

Heads lateral peduncled, leaves petioled.

[17. *Lonicera bubalina*.

Lin. syft. 216. *suppl.* 146. *Thunb. prodr. cap.* 41.

Vahl symb. 3. 37.

Heads terminating peduncled, leaves oblong quite entire smooth.]

18. *Lonicera Diervilla*. *Yellow-flowered Upright Honeysuckle.*

Lin. spec. 249. *syft.* 217. *Reich.* 1. 484. *mat. med.*

62. *Willich obs.* n. 76. *Du Roi barbk.* 1. 396.

Kniph. cent. 9. n. 60. *Plenck. ic. t.* 135.

Diervilla. *Lin. hort. cliff.* 63. t. 7.

D. *Lonicera*. *Mill. dict.*

D. *acadiensis fruticosa*, flore luteo. *Tourn. in act. par.*

1706. t. 7. f. 1. *Dubam. arb.* 1. 209. t. 87. *Mill.*

fig. 83. t. 124. *marked* 125.

Racemes terminating, leaves serrate.

[19. *Lonicera corymbosa*.

Lin. spec. 249. *syft.* 217. *Reich.* 1. 484.

Periclymenum foliis acutis, floribus profunde dissectis.

Feuill. peruv. 1. 760. t. 45.

Corymbs terminating, leaves ovate acute.

DESCRIPTIONS, &c.

Some authors separate this natural genus of shrubs, keeping the first section or *Periclymena* of Linneus together under the name of *Caprifolium*: the second section or *Chamæcerasa* under the name of *Xylosteum*: and the third with the name of *Diervilla*. The first have twining stems, the leaves of some connate, the flowers sessile in terminating heads or whorls several together. The second have upright stems, and the peduncles two-flowered, axillary and solitary. The third have many-flowered axillary and terminating peduncles^a.]

1. The first sort is commonly called the Italian Honeysuckle; of this there are two or three varieties,

^a Jussieu.

the early white Honeysuckle is one; this is the first which flowers, always appearing in May. The branches of this are slender, covered with a light green bark, and garnished with oval leaves of a thin texture, placed by pairs, sitting close to the branches, but those which are situated towards the end of the branches, join at their base, so that the stalk seems as if it came through the leaves. The flowers are produced in whorled bunches at the end of the branches; they are white, and have a very fragrant odour, but are of short duration, so that in about a fortnight they are entirely over; and soon after the leaves appear as if blighted and sickly, making an indifferent appearance the whole summer, which has rendered them less valued than the others. The other variety is the yellow Italian Honeysuckle, which is the next in succession to the white. The shoots of this are much like those of the former, but have a darker bark; the leaves are also of a deeper green; the flowers are of a yellowish red, and appear soon after the white; they are not of much longer duration, and are succeeded by red berries, containing one hard seed inclosed in a soft pulp, which ripens in the autumn.

[This is a very smooth shrub, in its natural state twining round trees with its long, round, opposite branches. Leaves very smooth, conjugate; the lower ones ovate, blunt, connate by a membrane investing the branch, more united under the flowering-stalks, a pair on the flowering-stalks themselves; the uppermost almost orbicular, perfoliate, forming a sort of dish for the flowers; they are all glaucous underneath. Flowers about six in a whorl (or from six to eight, sometimes fewer), slender and delicate, white, reddish white, red, or yellow, extremely fragrant, from an inch and half to almost two inches in length, the lips by no means so long or large as in the Woodbind or German Honeysuckle, but short, and broader in proportion. Stamens and style shorter than the corolla. Berries roundish or subovate, succulent, smooth, red or orange with a black spot at top, containing four or five (from one to six) roundish smooth seeds.

Native of the South of Europe. Cultivated by Gerard in 1596. It seems then not to have been long known, for Gerard says, "the double Honi-fuckle groweth now in my garden, and many others" likewise in great plenty, although not long since, "very rare and hard to be found, except in the garden" of some diligent herbarist.

Italian Honeysuckle is named in German *Geißblatt*, *Durchwachse welsche oder Italienische Geißblatt*, *Durchwachs*, *Je langer je lieber*, *Jerichorose*, *Welsche Specklilie*, *Waldlilie*, *Waldwinde*, *Zaunling*, *Gilgenconfort*. In Dutch, *Italiaansche Kamperfolie*, *Caprifolie*, *Geitenblad*. In Danish, *Italiensk Gedeblad*, *Skovlilie*. In Swedish, *Italienskt Getblad*. In French, *Chevrefeuille des jardins* or *d'Italie*. In Italian, *Madreselva*, *Caprifoglio*. In Spanish, *Madreselva*. In Portuguese, *Matrisylva*.

2. Murray called this species *media* because it has the stem and manner of flowering as in the *Periclymena*, but a short corolla with a gibbose tube, as in the *Chamæcerasa*^b.

It is a native of North America, and was introduced in 1766, by Peter Collinson Esq. It flowers in June and July^c.]

3. This sort grows naturally in Virginia, and many other parts of North America, but has been long cultivated in the English gardens by the title of Virginia Trumpet Honeysuckle. Of these there are two varieties, if not distinct species, one being much hardier than the other. The old sort, which came from Virginia, has stronger shoots; the leaves are of a brighter green; the bunches of flowers are larger, and deeper coloured than the other which came from Carolina. These plants have the appearance of the common Honeysuckle, but the shoots are weaker than any of those, except the wild sort called Woodbine; they are of a purplish red colour, and smooth. The leaves are of an oblong oval shape inverted, and closely surround the stalk; of a lucid green on their upper side, but pale on their under. The flowers are produced in

^b Linn. syft. 216. n. 6.

^c Hort. kew.

bunches at the end of the branches; these have long slender tubes, which are enlarged at the top, where they are cut into five almost equal segments. The outside of the flower is of a bright scarlet, and the inside yellow; they have great appearance of the Honey-suckle, but are not so deeply divided, nor are the segments reflexed. They have no odour, but for the beauty of their flowers, and their long continuance, together with their leaves being evergreen, they are preserved in most curious gardens.

[The involucre is very large, and more perfectly connate-perfoliate than even in the first sort. The spike of flowers is composed of three or four whorls one above another, not spread all round, but mostly turned to one side, either quite naked, or having only an imperfect leaf at the base. Flower-stalk single with one perfoliate leaf, or triple, with a large perfoliate leaf at the base of the whole, and a smaller one a little below the flowers on each side stalk. Flowers six in each whorl, eighteen to twenty-four in the whole spike. Corolla from an inch and half to an inch and three quarters in length, almost straight, very slender at bottom, but swelling very much at top; lip less irregular than in the other Honey-suckles, but yet one petal is somewhat separated from the rest, and a little bent back. Stamens the length of the corolla. Pistil longer.

Ray mentions its being cultivated at Fulham, "in horto instructissimo Rev. Episcopi Londinensis D. Compton." It was however cultivated earlier than this, namely in 1656, by John Tradescant Junior. It flowers from may to august^d.]

4. This sort grows naturally in North America; it has strong branches, covered with a purple bark, which are garnished with lucid green leaves embracing the stalks, and continuing their verdure all the year. The flowers are produced in whorled bunches at the end of the branches; there are frequently two and sometimes three of these bunches rising one out of another; they are of a bright red on their outside, and yellow within, of a strong aromatic flavour. This sort begins to flower in june, and there is a succession of flowers till the frost puts a stop to them, so that it is the most valuable of all the sorts.

[Cultivated in 1739, by Mr. Miller.

5. Leaves smaller and narrower than in the other sorts.

Native of Minorca. Introduced about 1772, by Monf. Richard. It flowers from june to september^e.]

6. The common wild English Honey-suckle or Woodbind trails over bushes, and twines round the boughs of trees, with its very slender hairy (or smooth) branches, [which are opposite, and commonly stained with purple, in part at least or on one side. Leaves opposite, ovate, smooth (or hairy), underneath glaucous, all distinct and more separated from the stem, though even in these there is a slight membranaceous ring running round the branch and connecting the two opposite leaves. The upper floral leaves are sessile and cordate. Peduncles short, single, or more often triple, covered with glandular hairs, as are also the calyx, and tube of the corolla. Flowers in a thick roundish whorled spike, many together (from ten or twelve to nineteen or twenty;) tube an inch long, curved a little; border two-parted, both parts reflex, the upper one divided into four blunt and nearly equal segments, the lower one linear and entire. The tube is wider and shorter, the border much longer than in the Italian Honey-suckle. On account of the border being turned back, the stamens stand much above the corolla, and the pistil much above them. The corollas are usually red on the outside, and yellowish within, but they vary much in colour, between red, purple and yellow, and in the shade are very pale. They are very sweet, especially in the evening. There are very small, whitish blunt bodies at the base of the style, which are supposed to be the nectaries. Berries roundish, red, distinct, having the remains of the calyx adhering to them, and containing several seeds, of a yellowish brown colour, round on one side, and flattish on the other.

^d Hort. kew.

^e Ibid.

Native of most parts of Europe in woods and hedges, also in many parts of the Chinese empire. With us it flowers from the end of may to july.

The early writers attribute virtues to this shrub, which are now quite given up: but the beauty and exquisite fragrance of the flower still give it a place in our ornamental plantations. In climbing it turns from east to west, with most of our other English climbers; and in common with them it bears clipping and pruning well; for in a state of nature, those plants that cannot ascend without the assistance of others, are often liable to lose large branches, they have therefore a proportional vigour of growth to restore accidental damages. This shrub is subject, when placed near buildings, to be disfigured and injured by Aphides, vulgarly called blights: these insects were formerly supposed to be brought by the east wind, and consequently the mischief was looked upon as inevitable; but observation has corrected that error; their history is well known, but no effectual remedy against them is as yet discovered. These insects are not very numerous in spring, but as the summer advances they increase in a surprising degree: their first attacks therefore should be watched, and the branches they first appear on cut off and destroyed, for when they have once gained ground, they are defended by their numbers. Small plants may be cleared of them by tobacco dust or Spanish snuff, but this is not practicable for large trees. The leaves are likewise liable to be curled up by a small caterpillar, which produces a beautiful little moth, *Phalena tortrix*. In the evening some species of Sphinges or Hawk-Moths are frequently observed to hover over the blossoms, and with their long tongues to extract the honey from the very bottom of the flowers^f. A considerable quantity of nectareous juice may sometimes be discerned in the tube. Insects that are too large to penetrate into the narrow part of the tube, and have not a long tongue, like the Sphinges, to reach the juice, let it out, by making a puncture towards the bottom, and thus tapping the liquor. The resources of animals in procuring their food are innumerable.]

β. The late-red Honey-suckle produces a greater quantity of flowers together than either the Italian or Dutch Honey-suckle, so that it makes a finer appearance than either of them during the time of flowering.

It has not been so long an inhabitant of the English gardens as the Dutch Honey-suckle, for about the year 1715 it was esteemed a great curiosity; when it was called the *Flemish Honey-suckle*, and was probably brought over by the Flemish florists, who at that time came over annually with flowers and plants for sale^g.

γ. The plants of Dutch Honey-suckle may be trained with stems, and formed into heads, which the wild sort cannot, the branches being too weak and trailing for this purpose. The branches of this are smooth, of a purplish colour, garnished with oblong oval leaves three inches long, and an inch and three quarters broad, of a lucid green on their upper side, but pale on their under, having very short foot-stalks; they are placed by pairs, but are not joined at their base. The flowers are produced in bunches at the end of the branches, each flower arising out of a scaly cover, which cover, after the flowers fade, forms an oval head, whose scales lie over each other like those of fish. The flowers are of a reddish colour on their outside, and yellowish within, of a very agreeable odour. This sort flowers in june, july, and august. There are two varieties of it, one is called the long blowing, and the other the late red Honey-suckle. β.

[The stems are stronger, the leaves larger, the flowers and heads of berries larger, and the corollas redder than in our Woodbind.

δ. This has sinuate leaves, cut like the Oak, and smooth. Found first near Oxford by Mr. Jenner, and afterwards by Mr. Knowlton, in the way from Hitchin to Wembly^h. In Sir John Woodhouse's woods Norfolk, by Mr. Woodwardⁱ.

There is also a variety with variegated leaves.

^f Curtis.

^g Mill. fig.

^h Ray syn.

ⁱ Wither. arr.

In English this shrub is Woodbine, Honeyfuckle, Suckling and Caprifoly.

Shakspeare seems to have distinguished the Honeyfuckle from the Woodbind, or Woodbine,

"So doth the Woodbine, the sweet Honeyfuckle
"Gently entwist——^k"

Milton appears to have mistaken it, when he calls it the Eglantine, which is the Sweet Briar.

"Through the Sweet Briar or the Vine,
"Or the twisted Eglantine."

Shakspeare clearly distinguishes the Woodbine from the Eglantine.

"I know a bank whereon the wild Thyme blows,
"Where Ox-lip and the nodding Violet grows,
"O'er-canopied with luscious Woodbine,
"With sweet Musk-roses and with Eglantine^l."

The same Poet alludes to the use of this ramping shrub for forming Arbours.

"And bid her steal into the pleached bower
"Where Honeyfuckles ripened by the sun,
"Forbid the sun to enter"
"——— Beatrice who e'en now
"Is couched in the Woodbine coverture^m."

This shrub in German is *Specklilie*, *Geisslilie*, *Zaun-
gilgen*, *Waldgilgen*, *Baumlilie*, *Lilie unter den Dornen*,
Lilienfrucht, *Deutsche Geissblatt*, *Deutsche je langer je
lieber*, *Jerichorosen*, *Georgenrosen*, *Klein Gilgen Konfort*,
Alfranken, *Geschlungene Lonizere*, *Zaunling*, *Zaun-
kirschen*, *Waldrebe*, *Walwinde*, *Waldmeister*, *Wilde
Ranken*, *Mennikenskraut*. In Dutch, *Gewoone Kamper-
folie*, *Mammetjeskruid*. In Danish, *Gedeblad*, *Skovlilie*,
Loberose, *Lobelilie*. In Swedish, *Matlestrad*. In
French, *Le Chevrefeuille des bois*. In Italian, *Capri-
foglio*, *Madrefelva*, *Vincibosco*, *Legabosco*, *Periclimeno*.
In Spanish, *Madrefelva*, *Virginia*, *Periclimeno*. In
Portuguese, *Matrisylvia do Norte*.

7. Stem round, twining, hirsute, little branched. Branches opposite, round, two-leaved, flowering, very hirsute, spreading. All the leaves petioled, opposite, ovate, sharpish, quite entire, villose, pale beneath, an inch long, the upper ones smaller. Petioles deflex-spreading, hirsute, a little shorter than the branches. Flowers at the ends of the branches, terminating in pairs, sessile. Calyx very short. Corolla tubular, irregular, villose, red, an inch long. Stamens equal to the corolla. Anthers incumbent. Style the length of the corolla. Stigma headed, undivided.

Native of Japanⁿ.

8. Height three or four feet. Leaves small, the younger ones hirsute, quite entire, but plaited a little, so as to appear serrate. Stipules ovate-lanceolate. Bractes two dry scales and three transverse broad leaflets. Peduncles axillary, slender, an inch long, opposite. Calyx broadish. Corolla purple on the outside, white within, or quite white, pubescent. Berries black, a little oblong, containing three, five, and sometimes ten seeds^o.

Native of France, Switzerland, Austria, Silesia, Piedmont. It flowers in march, april and may. Cultivated in 1683^p.

The Japanese plant, which Thunberg in *Flora Japonica* took for this, is since made a new species by him, under the name of *L. flexuosa*^q.]

9. This grows about the same height with the preceding and fourteenth sort, and it bears a great resemblance to them in the branches; but the leaves are heart-shaped, and the berries are red, growing sometimes single, at others double, and frequently there are three joined together; they are about the same size with the preceding.

[The leaves are smooth, on short petioles. Involucre lanceolate: involucels obovate. Corolla pale flesh-colour, the upper lip three-parted, the middle segment bifid, the lower simple^r.

Professor Pallas describes it more particularly thus.—It is a tree frequently a fathom in height, but

^k Midf. night's dream, a. 4. sc. 1.

^l A. 2. sc. 4.

^m Much ado, a. 3. sc. 1.

ⁿ Thunberg.

^o Linn. syst. from Hall. emend. and Krock.

^p Hort. kew. from Sutherl. hort. 77. n. 2.

^q Lin. trans. 2. 330.

^r Linn. spec.

commonly less, rising with several trunks, often thicker than the wrist, spreading, branched very much from the bottom; covered with a brownish-gray, smoothish bark, cloven longitudinally. Branches knobbed, with a whitish-gray smooth bark, shooting off the epidermis. Shoots opposite, smooth, bearing both leaves and flowers. Leaves opposite, tender, bright glaucous green petioled, cordate-lanceolate, very smooth, except the edge which is ciliated with very tender hairs. Stipules none. Above the peduncles a wart-like gland, which on the woody branches is permanent, and puts forth buds. Peduncles from the upper axils of the leaves solitary, at a little distance from the petioles, opposite, making half a right angle with the shoot. Involucre of each pair of flowers six-leaved, the two outer leaflets almost the same length with the tube of the corolla and linear, the other four lanceolate, blunt and sub-erose at top, reddish. Germs inferior, perfectly sessile within the involucre. Calyx above the germ minute, five-toothed, the teeth blunt and erose, reddish. Corollas before they open parallel, club-shaped, of a deep rose colour, when open flesh-coloured, diverging; tube gibbous at the base from the nectary; border spreading, irregularly five-cleft, segments concave, more coloured on the outside, the three upper ones less deeply cut, broadish, upright; the lower ones narrower, cut to the tube, divaricating downwards. When the flower is imperfectly expanded, the three upper segments frequently, the two lower sometimes, are glued together. Stamens from the jaws of the corolla, shorter than the border; filaments pubescent at the base; anthers erect, oblong, four-grooved, yellow. Style a little shorter than the filaments, white, hairy, deciduous with the flower. Stigma fungus-shaped, green, bent back like a tongue, having commonly a similar lobule but smaller at the base. Berries distinct, scarlet, succulent, one of them often abortive. Seeds oblong, flat, yellowish.

In shady groves it varies with a white flower. In autumn the leaves put off their fringes and become quite smooth.

Native of Russia, but not beyond 55° of latitude. In the more southern parts it flowers in may, in the eastern and in gardens at Petersburg in june. With us it flowers in april, and the fruit is ripe in july. [It is frequented by the *Meloe vesicatoria*, and the insect is collected from this shrub for the Apothecaries. The berries are eaten by the common people, though they are nauseously bitter, and are apt to purge. The flowers have hardly any smell; the leaves are bitterish. The wood is very hard and solid, of a yellowish gray colour, beautifully veined, and used to make walking sticks and the handles of tools^s.

Cultivated in 1752, by Mr. Miller^t:] to whom the seeds were sent from the Imperial garden at Petersburg, to which they were conveyed from Tartary.

10. Fly Honeyfuckle rises with a strong woody stalk six or eight feet high, covered with a whitish bark, dividing into many branches. Leaves ovate, opposite, entire and covered with a short hairy down. The flowers come out on each side of the branches opposite, on slender peduncles, each sustaining two white flowers standing erect. The three lower segments of the corolla are narrow and reflex, the other two are broader and upright.

[Leaves opposite, three pairs on each branch, rather soft, and like cloth to the touch. Peduncles opposite, axillary. Corolla yellow, upper lip four-cleft, lower linear, entire. Filaments woolly^u. The corolla with us is usually a dirty white, but it is often yellowish, or dull purple on the outside, where it is also pubescent.

Berry inferior, spherical, crowned with the rudiment of the calyx, (red or black, full of a dark purple watery pulp), subtransparent, one-celled. Seeds six to twelve, placed without order or in a ring, subcartilaginous, hard, compressed a little or angular, red^x. Scopoli and Adanson say, that the berries have three cells, with two seeds in each.] Mr. Miller says that

^s Flora Rossica.

^t Hort. kew.

^u Withering.

^x Gartner.

they are red and clammy, joined at their base, and ripe in the beginning of September.

[Linneus says, that this shrub makes excellent hedges in a dry soil; that the clear parts between the joints of the shoots are used in Sweden for tobacco-pipes, and that the wood, being extremely hard, makes teeth for rakes, &c. Gmelin informs us that the Russians prepare an empyreumatic oil per descensum from the wood, which they recommend for cold tumours and chronical pains. Animals seldom touch the leaves. Birds eat the berries only in hard weather. They are reputed purgative and emetic.]

Native of the North of Europe, and even of the South of France, Italy, and Hungary. Common in Russia, especially the more northern parts, and in Siberia as far as the river Jenisea. Also in Kamtschatka, with black berries: and in Cochinchina, according to Loureiro. According to Withering, it is a native of England. It appears in all our plantations of shrubs, and was cultivated, according to Sutherland, in 1683^y. It flowers in May.]

11. This seldom rises more than three or four feet high, dividing into several spreading irregular branches. The flowers come out from the side of these on slender peduncles, each sustaining two white flowers, which are cut into five segments almost to the bottom.

[It differs from the preceding in having regular corollas, divaricated branches, and smooth leaves^z.

Native of the Pyrenean mountains and Siberia.—Cultivated in 1739, by Mr. Miller^a;] who received a plant of it from the Duke D'Ayen's garden at St. Germain's. He says that it grows also naturally in Canada; and that it flowers in April.

12. This has a short thick woody stem, which divides into many strong woody branches growing erect. Leaves petioled, entire, dark green above but pale underneath. Flowers upon very long slender peduncles, which come out opposite on each side of the branches, at the base of the leaves; they are red on the outside, but pale within, shaped like those of the Fly Honeyfuckle, but a little larger, and standing erect. They appear at the end of April, and are commonly succeeded by two ovate red berries, joined at the base, and having two punctures. They ripen at the beginning of August. Sometimes there is but one berry, which is frequently as large as a Kentish Cherry.

[The berry is thus described by Gærtner. It is on a long peduncle, ovate, red, composed of two berries, each of which is most manifestly three-celled: cells clothed with their proper membrane, and separate from the seeds all round, but sometimes obliterated when ripe. Seeds in each cell regularly two, and therefore twelve in the whole; but no more than two or three of them come to maturity, and these are large, subovate, thick, very smooth, pale straw-colour, on one side convex or irregularly gibbous, flat or somewhat concave on the other, shining. Because the berry is three-celled, and the seeds loose and shining, Adanson has separated this from the other species, under the name of *Jfica*, and Gærtner seems inclined to follow him. At this rate, we might form a genus of almost every species.]

Linneus remarks, that the leaves are smooth; the corollas without any spur, and irregular; the two upper segments of the calyx scarcely distinct.—Scopoli, that the leaves are shining underneath; the peduncles striated, a finger's length, with two bractes on them; the filaments hairy at the base, and the anthers of the same colour with the corolla, which according to him is red, but according to Linneus, yellow. Krocker says it is blood-red.

Native of the South of Europe. Cultivated by Gerarde in 1596^b.

In his Herbal, having figured *Lonicera nigra*, *Xylosteum*, *cærulea*, and this, he says that he has a plant of the *first* kind in his garden, but that he had not as yet seen the rest. Johnson names this *Cherry Woodbinde*.

13. Height about five feet; trunk covered with a whitish bark: branches spreading, red or hoary-testa-

ceous: branches long, slender, wand-like. Leaves opposite, approximating, on very short petioles, ovate-lanceolate, an inch broad, quite entire except that they are sometimes a little sinuated, nerved, smooth as is the whole shrub. Peduncles axillary, solitary, half an inch long, and therefore much shorter than in *L. nigra*, which this sort most resembles, upright. Germ crowned with two calyxes distinct, having the tube very short; and the teeth longer. Stipules two, setaceous-linear, scarce apparently ferrulate, under the germ, and nearly equal to it. Corolla irregular, red; tube funnel-form; lower segment bent down, simple, narrower, oblong; upper broad, four-lobed. Stamens a little longer than the corolla; anthers oblong, from erect incumbent, pale. Style curved in, simple. Fruiting peduncle erect. Berry twin-globular, dark blue, with two lanceolate bractes under it, and the rudiments of the calyxes at top. Seeds in both parts of the berry ten, greenish white, rounded, compressed. The wood is hard, weighty, like ivory, beautifully veined with green; much esteemed for walking sticks, which are sent to Petersburg.

Native of Caucasus. Called by the Russians *Tö-gustun* and by the Tartars *Tokus-tuun*, which signifies nine skins; this shrub every year casting its epidermis, which adheres copiously to the twigs^c.]

14. This seldom rises more than four or five feet high. The branches are slender, covered with a smooth purplish bark. The joints are distant, where leaves come out opposite, and sometimes there are two on each side. The peduncles are very short, each sustaining two white flowers, succeeded by blue berries single and distinct. The flowers appear in May (March or April), and the berries ripen in August.

[Height from three to five feet. Very much and irregularly branched from the bottom. Branches opposite, in the full-grown shrub smooth, fulvous, scarious all over with the rags and tatters of the epidermis. Wood very hard, beautifully veined with gray and pale yellow. At all the branchlets are opposite wooden stipules, transversely subconnate, seeming to arise from the permanent petioles of the fallen leaves. On the shoots of the year, from the axils of the leaves sharp buds spring, which the next year form new branchlets. The younger branchlets, especially when luxuriant, are ferruginous, and extremely hirsute with clustered hoary hairs. Leaves opposite, on short pubescent petioles, ovate or ovate-oblong, pubescent underneath, but becoming smooth with age. Peduncles axillary, solitary, nodding, smooth, two-flowered, and sometimes though seldom three-flowered. Germ subglobular, smooth, crowned with the calyxes which are very shortly toothletted, and accompanied by two setaceous hairy stipules, twice as long as the germ. Corollas pale (Linneus says, yellow), large, funnel-form, with a hairy tube, gibbous at the base on the outside with the nectary; border smooth, with ovate segments. When there is a third flower it has a slender tube and no nectary. Stamens shorter than the border of the corolla, with oblong erect pale anthers. Style simple, a little longer than the segments of the corolla, with a simple capitate stigma. Berries at first subglobular, when ripe oblong, large, dark blue, with a bitterish purple juice, and six or eight small, oblong, acute, yellow seeds. The purple juice stains paper of a strong colour, and might perhaps be useful in dyeing^d.

Native of Switzerland, Austria, Siberia as far as Kamtschatka, and in the islands adjacent to America.—Cultivated here in 1724^d.

15. This is smaller than *L. Xylosteum*, upright, with slender branches, straight, opposite, spreading, with a whitish-gray outer bark. Leaves fewer, opposite, petioled, hoary underneath. Peduncles terminating, between the last pair of leaves, the length of the petioles, bifid, sustaining on each two, four or five sessile flowers. Calyx none, but a rim crowning an inferior, cylindric striated germ. Corolla yellowish white, equal, small, bell-shaped, five-toothed. Sta-

^y Hort. kew. from hort. edinb. 77. n. 3.

^z Linn. spec.

^a Hort. kew.

^b Ibid.

^c Pallas.

^d Ibid.

^e Hort. kew. from Furber's catalogue, in Mill. dict.

mens the length of the corolla, with large twin anthers. Germ within the flower, prominent with a very short umbilicus, and a truncated stigma. Berry globular, large, ovate-depressed, convex on the outside, containing five, six or seven seeds. Not only in the desert of the Mongols in the Russian Empire, but in Dauria^f.]

16. Height about four feet, sending out many slender branches. Leaves ovate, hairy, opposite, on very short petioles. The flowers are produced in whorls round the stalk; they are of an herbaceous colour, and appear in august. The fruit, which is hollow, and shaped like a pottage pot, ripens in the winter. [The corollas are regular and bell-shaped. The fruit fleshy, globular, the form and size of the flowers of *Arbutus*, four-celled, containing cartilaginous roundish seeds. The flowers and fruits are axillary, and being in close clusters, Dillenius gave this shrub the name of *Symphoricarpos*. The leaves grow in ten pairs or more on a stalk, like pinnate leaves; they are somewhat glaucous underneath, being covered with a fine down. The fructification is not unlike that of *Cuscuta* in appearance, but not in structure^g.

Native of Virginia and Carolina. Cultivated in 1730. It flowers in august and september^h.

17. Branches round, smooth, compressed at top, somewhat villose, dilated a little under the leaves, and knobbed where they have fallen. Leaves opposite, on short petioles, subcoriaceous, three inches long, smooth, except that they have a few hairs on the midrib, nerved, veinless, abundance of small hairs in the axils of the leaves. Heads of flowers on short peduncles at the ends of the branchlets, six together, sessile, supported on each side by a petioled leaf, and surrounded by a very short, ovate, acute, villose, many-leaved involucre. Calyx rough-haired; segments linear-lanceolate, shorter than the corolla: which is villose on the outside, ash-coloured, the form of *Comfrey*. Capsule two-celled, crowned with the permanent calyx scarcely of this genus. Found by Sparrman at the Cape of Good Hope, where the Dutch call it *Buffelborn*ⁱ.

18. This is a low shrub, seldom rising more than three feet high. The stalks are slender and woody, and have a reddish-coloured bark. Leaves oblong, pointed, slightly ferrate, opposite. Flowers small, pale yellow, two or three on each division of the raceme. Berries oval, black, four-celled, with one hard seed in each cell. In England they are rarely formed, and never come to maturity.

The roots creep far under ground, and send out many stems: many of these which come up in the spring produce flowers the same year, so that there is generally a succession of them from may to september; the shoots of the former year flowering early, the side branches soon following, and then the young shoots. It is a native of North America, and was first brought to Europe from Acadie by Mons. Dierville a French surgeon, whence Tournefort gave it the name of *Diervilla*^k.—Mr. Miller cultivated it in 1739^l.

19. Native of Peru.

PROPAGATION AND CULTURE.

All the sorts of Honeyfuckle are propagated either by layers or cuttings. When by layers, the young shoots only should be chosen. They should be layed in the autumn, and by the following autumn they will have taken root, when they should be cut off from the plants, and either planted where they are to remain, or into a nursery to be trained up, either for standards, which must be done by fixing down stakes to the stem of each plant, to which their principal stalk should be fastened, and all the other cut off; the principal stalk must be trained to the intended height of the stem, then it should be shortened to force out lateral branches, and these should be again stopped to prevent their growing too long; by the constant repeating this as the shoots are produced, they may be formed into a sort of standard; but if any regard is had to their flowering, they cannot be formed into regular heads,

for by constantly shortening their branches, the flower-buds will be cut off, so that few flowers can be expected; and as it is an unnatural form for these trees, so there should be but few of them reduced to it, for when they are planted near other bushes, in whose branches the shoots of the Honeyfuckles may run and mix, they will flower much better, and have a finer appearance than when they are more regularly trained; therefore, when the plants are in the nursery, if two or three of the principal shoots are trained up to the stakes, and the others are entirely cut off, they will be fit to transplant the following autumn, to the places where they are to remain; for though the roots may be transplanted of a greater age, yet they do not thrive so well as when they are removed while they are young. When these plants are propagated by cuttings, they should be planted in september, as soon as the ground is moistened by rain. The cuttings should have four joints, three of which should be buried in the ground, and the fourth above the surface, from which the shoots should be produced. These may be planted in rows, at about a foot distance row from row, and four inches asunder in the rows, treading the earth close to them; and as the Evergreen and late red Honeyfuckles are a little more tender than the other sorts, if the ground between the rows where these are planted, is covered with tanner's bark, or other mulch to keep out the frost in winter, and the drying winds of the spring, it will be of great advantage to the cuttings; and if the cuttings of these sorts have a small piece of the two years wood at their bottom, there will be no hazard of their taking root. The plants which are raised from cuttings, are preferable to those which are propagated by layers, as they have generally better roots.

These plants will grow in almost any soil or situation, except the fourth, which will not thrive where it is too much exposed to the cold in winter: it thrives best in a soft sandy loam, and will retain its leaves in greater verdure in such ground than if planted in a dry gravelly soil, where in warm dry seasons the leaves often shrink, and hang in a very disagreeable manner; nor will those sorts which naturally flower late in the autumn, continue so long in beauty on a dry ground, unless the season should prove moist and cold, as those in a gentle loam, not too stiff or wet.

There are few sorts of shrubs which deserve cultivation better than most of these, for their flowers are very beautiful, and perfume the air to a great distance with their odour, especially in the mornings and evenings, and in cloudy weather, when the sun does not exhale their odour, and raise it too high to be perceptible; so that in all retired walks, there cannot be too many of these intermixed with the other shrubs. I have seen these plants intermixed in hedges planted either with Alder or Laurel, where the branches have been artfully trained between those of the hedge; from which the flowers have appeared dispersed from the bottom of the hedge to the top, and being intermixed with the strong green leaves of the plants which principally compose the hedge, they have made a fine appearance; but the best sorts for this purpose, are the Evergreen and long-blowing Honeyfuckles, because their flowers continue in succession much longer than the others.

These shrubs may also be propagated by seeds; but unless they are sown in the autumn soon after they are ripe, the plants will not come up the first year.

3. The Trumpet-Honeyfuckle is usually planted against walls or pales, to which their branches are trained; for they are too weak and rambling to be reduced to heads, and are liable to be killed in severe winters. This sort therefore should have a warm aspect, where it will begin to flower at the end of june, and there will be a succession of flowers till the autumn. [It may, however, be trained like the other Honeyfuckles, and will flower among other shrubs, in the south border of a plantation in a warm soil, till a winter more than ordinarily severe injures or kills it.] It is propagated by laying down the young branches, which will easily take root, and may be afterwards treated like the common Honeyfuckles.

^f Pallas.

^g Dillenius.

^h Hort. kew.

ⁱ Vahl and Linn. suppl.

^k Mill. fig.

^l Hort. kew.

[Mr. Miller treats of the above, under the old name *Periclymenum*: and of the upright Honeysuckles under *Lonicera*.]

These not being so beautiful, a few only should be admitted in plantations. They are all very hardy, and will thrive in a cold situation better than in a warm one; they love a moist soil, and will produce a greater quantity of fruit in that than in a dry one.

They may be increased either by seeds or cuttings. The seeds commonly lie in the ground a year before they vegetate. If they are sown in autumn, however, many will grow the following spring. The cuttings should be planted in autumn in a shady border, where they will put out roots the following spring; and in the autumn they may be removed into a nursery, to grow two years to get strength, after which transplant them where they are to remain.

18. *L. Diervilla*, [which Mr. Miller, following Tournefort, separates under the name of *Diervilla*] multiplies greatly by its spreading roots, sending up abundance of suckers. It loves a moist soil and shady situation, where cold will never injure it.

[*LONICERA*. See *Chiococcea*, *Halleria*, *Loranthus*, *Mitchella*, *Spigelia*, *Triosteum*.

LONTARUS. See *Borassus*.

LOOKING-GLASS PLANT. See *Heritiera*.

_____, Venus's. See *Campanula*.

LOOSA. See *Loasa*.

LOOSE-STRIPE. See *Anagallis* and *Lyfimachia*.

_____, Codded. See *Epilobium*.

_____, Spiked. See *Lythrum*.

LOPHANTHUS. See *Hyssopus*.]

LOPPING. It is very observable, that most old trees are hollow within, which does not proceed from the nature of the trees, but is the fault of those who have the management of them, who suffer the tops to grow large before they lop them, as the Ash, Elm, Hornbeam, &c. and persuade themselves that they may have the more great wood; but, in the mean time, do not consider that the cutting off great tops, or branches, endangers the life of a tree, or, at best, wounds it so, that many trees yearly decay more in their bodies, than the yearly tops come to; and at the same time that they furnish themselves with more great wood, they do it at the loss of the owner. And, indeed, though the Hornbeam and Elm will bear great tops when the body is little more than a shell, yet the Ash, if it comes to take wet at the head, very rarely bears more top after the body of the tree decays; therefore, if once these trees decay much in the middle, they will be worth little but for the fire, so that if you find a timber tree decay, it should be cut down in time, that the timber be not lost.

The Lopping of young trees, that is, at ten or twelve years old at most, will preserve them much longer, and will occasion the shoots to grow more into wood in one year, than they do in old tops at two or three. But when great boughs are ill taken off, it often spoils many a tree, for which reason they should always be spared, unless there is an absolute necessity. When they must be cut off, it should be close and smooth, and not parallel to the horizon, and cover the wound with loam and horse-dung mixed, to prevent the wet from entering the body of the tree.

When trees are at their full growth, there are several signs of their decay, as, the withering or dying of many of their top branches; or if the wet enters at any knot, or they are any-wise hollow, or discoloured, if they make but poor shoots, or if woodpeckers make any holes in them.

This Lopping of trees is only to be understood for pollard trees, because nothing is more injurious to the growth of timber trees, than that of Lopping or cutting off great branches from them; whoever will be at the trouble of trying the experiment upon two trees of equal age and size, growing near each other, to lop or cut off the side branches from one of them, and suffer all the branches to grow upon the other, will, in a few years, find the latter to exceed the other in growth every way, and this will not decay near so soon.

All sorts of resinous trees, or such as abound with a milky juice, should be lopped very sparingly, for they

are subject to decay when often cut. The best season for Lopping these trees, is soon after Bartholomew tide, at which time they seldom bleed much, and the wound is commonly healed over before the cold weather comes on.

LORANTHUS. (From *λωρος* a strap; and *ανθος*, a flower; the corolla being cut into straps.)

Lin. gen. n. 443. *Reich. n.* 478. *Schreb. n.* 600.

Vaill. art. par. 1720. *Jacqu. amer.* 97.

Lonicera. *Plum.* 37. *Gærtn. t.* 27.

Class. 6. 1. *Hexandria Monogynia*.

Nat. order of Aggregatæ. Caprifolia, Juss.

GENERIC CHARACTER.

CAL. Perianth of the fruit inferior: margin entire, concave—of the flower superior, or the margin entire, concave.

COR. Petals six, oblong, revolute, equal.

STAM. Filaments six, awl-shaped, fastened to the bases of the petals, the length of the corolla. *Anthers* oblong.

PIST. Germ oblong, between the two calyxes, or inferior. *Style* simple, the length of the stamens. *Stigma* blunt.

PER. Berry oblong, one-celled.

SEED oblong.

OBS. *L. europæus* has dioecous flowers; and *L. pentandrus* has half-five-cleft five-stamened flowers.

ESSENTIAL CHARACTER.

Germ inferior. *Cal.* none. *Cor.* six-cleft, revolute. *Stam.* at the tips of the petals. *Berry* one-seeded.

SPECIES.

[1. *Loranthus tetrapetalus*.

Lin. syst. 343. *suppl.* 211. *Forst. flor. austral. n.* 156.

Peduncles one-flowered, subsolitary, leaves ovate, obtuse, subsessile.

2. *Loranthus Scurrula*.

Lin. spec. 472. *Reich.* 2. 107.

Scurrula. *Lin. spec. ed.* 1. 107.

Viscum vitice innascens. Camell. luz. 3. n. 36. *Raii*

hist. 3. *app.* 3. n. 36. *Pet. gaz.* 1. 63. f. 8.

Peduncles one-flowered, heaped, leaves obovate.

3. *Loranthus uniflorus*.

Lin. spec. 1672. *syst.* 343. *Reich.* 2. 108. *Jacqu. amer.* 98. t. 69. *piet.* 51. t. 100.

Racemes quite simple.

4. *Loranthus glaucus*.

Thunb. prodr. cap. 58.

Peduncles axillary, one-flowered, leaves ovate, glaucous.

5. *Loranthus europæus*.

Lin. spec. 1672. *syst.* 343. *Reich.* 2. 108. *Jacqu.*

vind. 230. *austr.* t. 30. *Plenck. ic.* t. 248.

Racemes simple, terminating, flowers dioecous.

6. *Loranthus americanus*.

Lin. spec. 472. *syst.* 343. *Reich.* 2. 108. *amoen.*

5. 396. *Swartz. obs.* 132. *Jacqu. amer.* 97.

t. 67. *piet.* 50. t. 98. *Vaill. art.* 1722. p. 274.

Plum. gen. 17. *ic.* 166. f. 1. (*Lonicera*).

Racemes somewhat branched, cymed, flowers nodding, leaves ovate, difform.

7. *Loranthus emarginatus*.

Swartz. prodr. 58.

Racemes axillary, simple, leaves wedge-shaped, ovate, emarginate.

8. *Loranthus occidentalis*.

Lin. spec. 472. *Reich.* 2. 108. *amoen.* 5. 396.

n. 38. *Loefl. it.* 187. *Swartz. obs.* 133.

Scurrula 2. *Brown. jam.* 197.

Viscum latioribus & subrotundis foliis, flore purpureo.

Sloan. jam. 2. 92. t. 200. f. 2.

Racemes simple, flowers irregular.

9. *Loranthus loniceroides*.

Lin. spec. 473. *syst.* 343. *Reich.* 2. 109. *spec. ed.*

1. 175. *fl. zeyl.* n. 83. (*Lonicera*). *Pluk. phyt.*

t. 213. f. 5. (*Periclymenum*). *Rheed. mal.* 7. 55.

t. 29. (*Itti Canni*).

Flowers aggregate-capitate.

10. *Loranthus Stelis*.

Lin. spec. 473. *Reich.* 2. 109. *Loefl. it.* 87.

Forst. flor. austral. n. 157.

Racemes trichotomous, peduncles three-cornered, flowers equal.

11. *Loranthus parvifolius*.
Swartz. *prodr.* 58.
Peduncles axillary, trifid, pedicels one-flowered, leaves ovate, entire.
12. *Loranthus pauciflorus*.
Swartz. *prodr.* 58.
Peduncles trichotomous, shorter than the leaves, leaves obovate.
13. *Loranthus pentandrus*.
Lin. *syft.* 344. Reich. 2. 109. *mant.* 63.
Racemes simple, flowers five-cleft, leaves alternate, petioled.
14. *Loranthus falcatus*.
Lin. *syft.* 344. *suppl.* 211.
Racemes few-flowered, axillary, leaves linear, blunt, laterally-sickled, glaucous.
15. *Loranthus spicatus*.
Lin. *syft.* 344. Reich. 2. 109. *mant.* 63. Jacqu. *amer.* 97. t. 68. *piet.* 50. t. 99.
Spikes quadrangular.
16. *Loranthus cochinenfis*.
Lour. *cochin.* 195.
Peduncles many-flowered beaped, leaves acute.
17. *Loranthus pedunculatus*.
Jacqu. *amer.*
Racemes simple solitary, flowers in threes, peduncled.
18. *Loranthus sessilis*.
Jacqu. *amer.*
Racemes simple solitary, flowers in threes, sessile.

DESCRIPTIONS, &c.

These are mostly parasitical shrubs: the leaves thickish, often opposite, but sometimes alternate. Flowers axillary, sometimes but seldom terminating, corymbed or spiked, or on one-flowered pedicels; some five-petalled, five-stamened; some one-petalled, the petals being united at the base: in *L. europæa* they are dioecous. According to Jacquin, three alternate anthers, in *L. uniflorus*, are effete; in *L. pedunculatus* they have two appendices at the top, and are often barren. Jussieu suggests, that the genus might perhaps be divided, by restoring the name of *Lonicera* to such species as have six stamens, and giving that of *Loranthus* to those which have five^a. Some of these plants were named *Scurrula* by Browne; from *Scurra* a Parasite; on account of their drawing nourishment from other trees.

1. Leaves opposite, quite entire. There is a single flower on each side by the leaves, making four at each joint, and so along the whole stem. Native of New Zealand^b.

2. Leaves opposite, petioled, quite entire, smooth, a little broader on one side than on the other. Flowers axillary, three to six, each on its proper pedicel. Germs attenuated below. Native of China^c, and the Philippine islands.

3. Leaves suboval, blunt, with a small point, entire, very smooth, coriaceous, petioled, opposite, frequently irregular. Racemes axillary and terminating, solitary; pedicels one-flowered. Flowers small, inodorous. Calyx of the fruit trifid; segments ovate, concave, acute, upright. Petals purple, blunt, spreading very much, of the same length with the germ. Filaments half the length of the petals, three of them somewhat longer, commonly without anthers, but instead of them a colourless body like an anther, but without pollen. Berry cylindrical, flattened on both sides, with a dark rind, and a glutinous milky pulp. Native of St. Domingo, in woods, flowering in november and december^d.

4. Native of the Cape of Good Hope.

5. This has the stature of *Viscum album*. Calyx obsoletely six-toothed. Petals and stamens six. Germ inferior. Flowers male and female on separate plants. Berry yellow, containing one seed. Native of Austria, parasitical on oaks^e: also of Siberia^f.

6. Branches subdivided, leafy, smooth, pale green, brittle. Leaves petioled, opposite, entire, subcoriaceous, nerved, pale. Petioles short, compressed, smooth. Racemes subdivided, terminating, with three-

cornered branchlets; the last pedicels trifid, one-flowered. Flowers red. Calyx double: lower undivided, pitcher-shaped, small: upper, margin of the germ, entire. Petals six, very long, contiguous below, spreading above, revolute; before they are unfolded forming a slightly incurved corolla. Filaments fastened to the petals above the middle, filiform, purple. Anthers oblong, vertical, yellow. Germ ovate. Style filiform, the length of the corolla. Stigma blunt, pubescent. Berry ovate, one-seeded^g.

It ramps over the highest trees in Jamaica, Martinico, &c. especially the *Coccoloba grandifolia*, with the root adhering firmly to the bark like Mistleto. If a large bough, on which it grows, be cut off, the next day it withers and perishes^h.

7. Native of Hispaniola.

8. Branches divaricating, subdivided, loose, round, rugged, brittle. Leaves large, on short petioles, opposite, ovate-rounded, margined, spreading, nerved above, smooth, succulent, pale green. Racemes axillary, solitary, erect, shorter than the leaves, roundish, on very short thick peduncles; flowers sessile, minute, dark purple. Calyx superior, minute, undivided. Petals almost connate at the base; three a little shorter, upright, acute. Filaments shorter than the petals, and placed on the middle of them. Anthers three, ovate, yellow, fertile; three barren, hollowed on the sides for the fertile ones. Germ inferior, roundish, covered with the calyx, and margined. Style the length of the petals. Stigma simple, blunt. Berry roundish, viscid, one-seededⁱ.

Native of South America and the West-Indian islands. Carthagen, Jamaica, &c. on trees; flowering in april and may.

9. This has long flexuose branches. Leaves opposite, ovate-lanceolate, thick, petioled, quite entire, smooth, veined, blunty. The top of the peduncle bears an involucre with five lanceolate leaves, within which are three, four or five sessile flowers, tubular, with a five-cleft mouth, and lanceolate segments. Stamens five, with the filaments inserted into the segments of the petal. Style capitate. Berry under the calyx^k. Native of the East Indies.

Gartner has a species of this genus, which he names *Lonicera zeylanica*. He says, that it is not *Loranthus loniceroides*, which has the flowers sessile in a peduncled umbel; and that it does not agree with *Loranthus americanus*, which has spherical berries disposed in a cyme; whereas in this the berries are oval in a much lengthened raceme. The corolla is six-cleft, and it has six stamens. The embryo is inverted, and has only one cotyledon, which is almost as long as the albumen, subfusiform, solid, and without any vestige of a division. In the cavity of the albumen of old berries there is often a white pellucid crystallized resin like Camphor^l.

10. Native of South America, and the Society isles^m.

11, 12. Natives of Jamaicaⁿ.

13. Branches dilated at the leaves, which are of the same form with those of the Bay, with scarcely any nerves. Racemes axillary, solitary or in pairs, a little longer than the petioles. Corollas half-five-cleft. Stamens five, from the middle of the segments of the corolla; filaments shorter than the anthers, which are erect, and the length of the corolla. Native of the East-Indies^o.

14. Leaves sickle-shaped, with the edge verging downwards, quite entire, veinless, hoary. Flowers sickle-shaped, orange. Found by Koenig, growing on trees about Madras^p.

15. This branching shrubby plant grows on other shrubs. The root divides in two, surrounding the branch to which it fastens itself, and then uniting again; it there puts out fibres on every side, and runs along the branch frequently to a great length. Branches woody, diffused, brittle. Leaves quite entire, blunt, smooth, coriaceous, fat to the touch, petioled, oppo-

^a Jussieu gen.

^b Linn. *suppl.*

^c Linn. *spec.*

^d Jacquin.

^e Linn. *spec.*

^f Pallas, *it.* 1. 372.

^g Swartz.

^h Jacquin.

ⁱ Swartz.

^k Linn. *zeyl.*

^l Fruct. 1. 132.

^m Linn. and Forst.

ⁿ Swartz.

^o Linn. *mant.*

^p Linn. *suppl.*

sitate, with ascending veins or nerves almost all springing from the base; their figure varies, being ovate, oval, obovate or roundish. Spikes oblong, thick, square, four-grooved, axillary, solitary, not exceeding the leaves. Flowers small, inodorous, red, very many, deeply sessile in four longitudinal rows. In these the calyx of the fruit is only a little scale, with an irregular mouth. Petals half erect at the base, resemble a one-petalled corolla, at top they spread very much equally, and are double the length of the stamens. Germ small, immersed in the spike. Berry ovate-oblong, green with a red tip, and containing a milky glutinous juice. Native of Carthage in New Spain, in woods; flowering in April and May.

Swartz doubts whether the *L. spicatus* of Jacquin just described be different from *L. occidentalis* of Linneus (n. 8.); the leaves, manner of flowering and flowers being scarcely different, and Sloane's figure not unlike Jacquin's.

Jussieu suspects that the *Glutago* of Commerson may be the same with *L. spicatus* of Linneus. He describes it as a parasitical shrub; the calyx scarcely five-toothed, with two appendices at the base; corolla first tubular, then cloven at the side, and expanded into a flat strap (therefore like *Scævola*) five-cleft at top, five-stamened, with the antheriferous segments revolute; berry glutinous, containing one seed.

16. Stem woody, twisted, short, very much branched. Leaves ovate-lanceolate, quite entire, opposite, close, smooth, curved inwards, reflex. Flowers herbaceous, axillary. Calyx inferior, three-leaved, very small. Corolla superior, one-petalled; tube wide, hexagonal; border deeply six-parted, segments lanceolate-linear, opening elastically, revolute. Stamens six. Style longer than the stamens; stigma spheroidal. Berry between the calyx and corolla, yellowish red, crowned, containing one, ovate, six-grooved seed.

Native of Cochinchina, on the branches of trees in gardens.

17. Root as in *spicatus*. Branches shining, long, reclined. Leaves cordate-ovate, quite entire, with a short point, shining, coriaceous, petioled, opposite, two inches long, with veins from the midrib. Racemes axillary, shorter than the leaves, containing about twenty-one flowers; peduncle compressed, broad; partial peduncles three-flowered; the proper ones one-flowered. Flowers inodorous, small; calyx of the fruit ovate, concave, entire; petals white. Filaments half the length of the petals, three of them in alternate order having two roundish appendices. It happens frequently that there are no anthers, but cusped upright bodies in their place; and hence the flowers in this species are very frequently abortive.

Native of Carthage, in woods, especially in salt marshes.

18. This has the habit of the preceding, but the branches as in *L. spicatus*. Leaves ovate, an inch and half long. Flowers have no proper peduncles, but are placed on the thickened top of the partial peduncle. All the filaments are always antheriferous. Berries of a dusky greenish red colour. Native of Carthage, in woods.

Lords and Ladies. See *Arum*.

LOTE-TREE. See *Celtis*.

Loti arboris folio. See *Muntingia*.

Loti similis. See *Diospyros*.

Loto affinis. See *Anthyllis*, *Cassia*, *Ebenus*, *Medicago*, *Pforalea*.

Loto similis. See *Hedysarum*.]

LOTUS. (of Pliny. Λωτος of Theophrastus and Dioscorides. From λωτος, sweet. Linn. Perhaps, says Vossius, from λω volo, whence λωιον, melius, optatius. See Pliny, l. 13. c. 17. and l. 24. c. 2.—Lotos was a Nymph turned into a tree, to avoid the pursuit of Priapus. Ovid. metam. 9. 7. &c.)

Lin. gen. n. 897. Reich. n. 969. Schreb. n. 1212.

Tournef. t. 227. Gertn. t. 153. Juss. 356.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

^a Jacquin.

^c Obf.

^s Gen. 212.

^b Loureiro.

^u Jacquin.

GENERIC CHARACTER.

CAL. Umbel simple.

Perianth one-leaved, tubular, half-five-cleft: teeth acute, equal, erect; permanent.

COR. papilionaceous. Banner roundish, bent down; claw oblong, concave. Wings roundish, shorter than the banner, broad, converging upwards. Keel gibbous below, closed above, acuminate, ascending, short.

STAM. Filaments diadelphous simple and nine-cleft), ascending, with broadish tips. Anthers small, simple.

PIST. Germ columnar, oblong. Style simple, ascending. Stigma an inflected point.

PER. Legume cylindric, stiff and straight, stuffed, longer than the calyx, many-celled, two-valved.

SEEDS several, cylindric.

ESSENTIAL CHARACTER.

Cal. tubular. Wings converging longitudinally upwards. Legume cylindric, straight.

SPECIES.

* With few legumes, not forming a head.

1. Lotus maritimus. Sea Bird's-foot Trefoil.

Lin. spec. 1089. Syst. 690. Reich. 3. 564. Fl. suec. n. 676. Sauv. monsp. 188. Leyf. bal. 672. Krock. filef. n. 1218. Fl. dan. t. 800. Kniph. cent. 7. n. 45. Barth. act. 2. 346. Ger. prov. 512. 1. var.

L. filiquosa lutea filiquis pinnatis strictioribus & longioribus. Raii hist. 967.

L. maritima lutea filiquosa, folio pingui glabro. Magn. monsp. 165. Tournef. inst. 403.

Legumes solitary membranaceous, quadrangular, leaves smooth, bractes lanceolate.

2. Lotus filiquosus. Square-podded Bird's-foot Trefoil.

Lin. spec. 1089. Syst. 691. Reich. 3. 564. Gertn. fruct. 2. 336. Crantz. austr. 399. Jacqu. austr. 4. 32. t. 361. Pollich pal. n. 710. Hall. belv. n. 386. Krock. filef. n. 1217. Ger. prov. 512. n. 1. Villars dauph. 3. 413. D'Asso arag. n. 731.

Tetragonolobus Scandalida. Scop. carn. n. 938.

L. tetragonolobus. Riv. tetr. t. 79.

L. pratensis. Mill. dict. n. 10.—filiquosus luteus. Baub. pin. 332.—major & durior. Tournef. inst. 403. Segu. ver. 2. 90.

L. filiquosa lutea monspeliensis. Baub. hist. 3. 357. Raii hist. 967.

L. pratensis monspeliensis. Park. theat. 1100. 5. t. 1102. f. 5.—filiquosus. Clus. hist. 1. 244.

L. trifolia corniculata. Ger. 1028. 1. emac. 1198. 1.

L. trif. prat. filiq. monsp. Lob. ic. 2. 42.

Trifolium filiquosum. Tabern. hist. 904.

Legumes solitary membranaceous-quadrangular, stems procumbent, leaves pubescent underneath.

3. Lotus tetragonolobos. Winged Bird's-foot Trefoil.

Lin. spec. 1089. Reich. 3. 564. hort. ups. 220. cliff. 372. Kniph. cent. 5. n. 53. Curt. magaz. 151.

L. ruber. filiqua angulosa. Baub. pin. 332.

L. pulcherrima tetragonolobus. Camer. hort. 91. t. 26.

L. filiquosa flore fusco tetr. Baub. hist. Raii hist. 966.

L. fil. quadrata. Ger. emac. 1198. f. 3.

L. quadripinnatis filiquis. Park. theat. 1101. f. 2.

L. Best. exst. æst. 13. t. 4. f. 3. Riv. tetr. t. 80.

L. filiquosus rubro flore. Clus. pann. & hist.

Pisum quadratum. Park. parad. 338.

Legumes solitary, membranaceous-quadrangular, bractes ovate.

4. Lotus conjugatus. Twin-podded Bird's-foot Trefoil.

Lin. spec. 1089. Reich. 3. 565.

L. luteus filiqua angulosa. Boerb. lugdb. 2. 38.

Legumes conjugate membranaceous-quadrangular, bractes oblong-ovate.

[5. Lotus tetraphyllus. Four-leaved Bird's-foot Trefoil.

Lin. syst. 691. Reich. 3. 565.

Legumes solitary, leaves ternate, obcordate-wedge-shaped, stipule solitary similar, bractes one-leaved.]

6. Lotus edulis. Esculent Bird's-foot Trefoil.

Lin. spec. 1090. Syst. 691. Reich. 3. 565. hort. cliff. 370.

L. pentaphyllos filiqua cornuta. Baub. pin. 332.

L. edulis

- L. edulis cretica.* *Raii hist.* 967. *Park. theat.* 1100. 1.
L. oligoceros cret. lutea, fil. binis curvis propendentibus. *Mor. hist.* 2. 176. f. 2. t. 18. f. 5.
Trifolium corniculatum creticum. *Alp. exot. t.* 268.
 —f. *L. hieraz. edulis filiquosa.* *Baub. hist.* 2. 365.
Legumes subsolitary gibbous curved in.
 7. *Lotus peregrinus.* *Flat-podded Bird's-foot Trefoil.*
Lin. spec. 1090. *Reich.* 3. 565. *hort. cliff.* 372. *Sauv. monsp.* 188.
L. villosa. *Forfk. aegypt.* 71. n. 386.
L. filiquis geminis, peregrina. *Boerb. lugdb.* 2. 38.
Legumes subbinate linear compressed nodding.
 [8. *Lotus angustissimus.* *Narrow-podded Bird's-foot Trefoil.*
Lin. spec. 1090. *Reich.* 3. 566. *hort. cliff.* 372. *Sauv. monsp.* 188. *Ger. prov.* 513. n. 2. *Gartn. fruct.* 2. 337.
L. pentaphyllos minor hirsutus, filiqua angustissima. *Baub. pin.* 332. *Raii hist.* 968. *Garid.* 293.
L. corniculata, filiquis singularibus f. binis, tenuibus. *Baub. hist.* 2. 356.
L. cornic. minor pilosus. *Park. theat.* 1103. n. 11.
Legumes subbinate linear stiff upright, stem upright, peduncles alternate.
 9. *Lotus glaucus.* *Glaucous Bird's-foot Trefoil.*
Ait. hort. kew. 3. 92.
Legumes subbinate cylindrical smooth, leaflets somewhat wedge-shaped fleshy hoary, stipules leaf-form.
 10. *Lotus arabicus.* *Red-flowered Bird's-foot Trefoil.*
Lin. syst. 691. *Reich.* 3. 566. *mant.* 104. *Jacqu. hort.* 2. 72. t. 155. *Lour. cochinch.* 463. *Russ. alepp.* t. 14.
L. rosea. *Forfk. descr.* 140. n. 38.
Legumes cylindrical awned, stems prostrate, peduncles three-flowered, bractes one-leaved.
 11. *Lotus ornithopodioides.* *Claw-podded Bird's-foot Tr.*
Lin. spec. 1091. *Reich.* 3. 566. *hort. cliff.* 372. *ups.* 220. *Gartn. fruct.* 2. 337. *Sauv. monsp.* 188. *Ger. prov.* 513. n. 3. *Pallas it.* 2. 523.
L. filiquis ornithopodii. *Baub. pin.* 332. *Raii hist.* 970. *Tournef. inst.* 402.
L. peculiaris filiquosa. *Camer. hort.* 91. t. 25.
L. fil. arcuata. *Riv. tetr.* t. 76. f. 2.
Legumes subternate bowed compressed, stems diffused.
 12. *Lotus jacobæus.* *Dark-flowered Bird's-foot Trefoil.*
Lin. spec. 1091. *syst.* 691. *Reich.* 3. 567. *hort. cliff.* 372. *Mill. fig. t.* 168. *Kniph. cent.* 1. n. 54. *Comm. hort.* 2. 165. t. 83. *Curt. magaz.* t. 79.
Legumes subternate, stem herbaceous upright, leaflets linear.
 13. *Lotus creticus.* *Silvery Bird's-foot Trefoil.*
Lin. spec. 1091. *Reich.* 3. 567. *hort. cliff.* 372. *Pluk. phyt. t.* 43. f. 1. *Mor. hist.* 2. 177. 12. *Raii hist.* 969. 18.
Legumes subternate, stem suffrutescent, leaves silky shining.
 [14. *Lotus Dioscoridis.*
Allion. pedem. n. 1131. t. 59. f. 1. *Pona bald.* 552.
Stem upright branched, peduncles subbiflorous, legumes columnar ovate torose.
 15. *Lotus arboreus.* *Tree Bird's-foot Trefoil.*
Forst. flor. austral. n. 278.
Legumes quinate, leaflets obcordate, stem arboreous.
 ** *With many-flowered peduncles forming a head.*
 16. *Lotus hirsutus.* *Hairy Bird's-foot Trefoil.*
Lin. spec. 1091. *syst.* 691. *Reich.* 3. 567. *hort. ups.* 220. *cliff.* 332. *Sauv. monsp.* 188. *Ger. prov.* 513. 4. *Villars dauph.* 3. 414. *Allion. pedem. n.* 1132. *Kniph. cent.* 8. n. 62.
L. pentaphyllos filiquosus villosus. *Baub. pin.* 372. *Raii hist.* 968. *Tournef. inst.* 403. *Garid.* 293.
L. incana. *Riv. tetr.* t. 191.—f. *Oxytriphylum.* *Ger.* 1022. f. 7. *emac.* 1191. f. 7.
L. hæmorrhoidalis major. *Park. theat.* 1100. n. 8. 1102. f. 8.
L. polyceratos frutescens incana alba, fil. curtis crassioribus & brevioribus erectis. *Mor. hist.* 2. 177. f. 2. t. 18. f. 14.
Heads roundish, stem upright rough-haired, legumes ovate.
 [17. *Lotus græcus.* *Five-leaved Bird's-foot Trefoil.*
Lin. syst. 691. *Reich.* 3. 568. *mant.* 104.
L. belgradica. *Forfk. descr.* 215. n. 71.

- L. græca maritima*, folio glauco & veluti argenteo. *Tournef. cor.* 27.
Heads roundish, stem upright rough-haired, leaves quinate, legumes ovate.
 18. *Lotus rectus.* *Upright Bird's-foot Trefoil.*
Lin. spec. 1092. *syst.* 691. *Reich.* 3. 568. *hort. ups.* 221. *cliff.* 372. *Gartn. fruct.* 2. 337. *Sauv. monsp.* 188. *Ger. prov.* 513. n. 5. *Villars dauph.* 3. 414. *Kniph. cent.* 8. n. 63.
L. filiquosus glaber, flore rotundo. *Baub. pin.* 332. *Raii hist.* 968.
L. polyceratos frutescens hirsuta alba major latifolia, fil. tenuibus curtis erectis. *Mor. hist.* 2. 177. f. 2. t. 18. f. 13.
L. villosus altissimus, flore glomerato. *Tournef. inst.* 403. *Garid.* 294.
L. lybica. *Dalech.* 309. *Riv. tetr.* 192.
Trifolium rectum monspessulanum. *Baub. hist.* 2. 359.
T. hæmorrhoidale alterum minus. *Park. theat.* 1101. n. 9. 1102. f. 9.
Heads subglobular, stem upright even, legumes straight smooth.
 19. *L. Corniculata.* *Common Bird's-foot Trefoil.*
Lin. spec. 1092. *syst.* 692. *Reich.* 3. 568. *hort. cliff.* 372. *fl. suec. n.* 675. *Huds. angl.* 329. *Wither. arr. ed.* 3. 656. *Curt. lond.* 2. 56. 107. *Lightf. scot.* 411. *Relb. cant. n.* 548. *Sibth. oxon. n.* 647. *Fl. rust. t.* 53. *Hall. belv. n.* 385. *Gunn. norv.* 108. *Pallas it.* 1. 370. *Gmel. tub.* 230. *Pollich pal. n.* 711. *Krock. files. n.* 1219. *Neck. gallob.* 316. *Crantz. austr.* 400. *Scop. carn. n.* 937. *Villars dauph.* 3. 414. *Allion. pedem. n.* 1134. *Thunb. jap.* 291. *Schreb. spicil.* 27. *Kniph. cent.* 7. n. 44.
 α. *L. f. Melilotus pentaphyllos minor glabra.* *Baub. pin.* 332. *Riv. tetr.* t. 76.
L. corniculata glabra minor. *Baub. hist.* 2. 356. *Raii hist.* 967. *syn.* 334.
L. polyceratos fil. glabris. *Mor. hist.* f. 2. t. 18. f. 10.
Trifolium corniculatum. *Dod. pempt.* 573. 2.
T. filiquosum minus. *Ger.* 1022. 6. *emac.* 1190. 5.
Meliloti tertium genus. *Fuchf. hist.* 527.
Milk wort. *Andersf. essays.* 2. 420. t. 11.
 β. *L. pent. flore majore luteo splendente.* *Baub. pin.* 332. *Riv. tetr.* t. 76. f. 1.
Loti cornic. major species. *Baub. hist.* 355. *Raii hist.* 968. *syn.* 334.
 γ. *L. tenuifolius.* *Pollich pal.* 349. *Hall. belv.* 385. β. 2.
L. pent. frutescens, tenuissimis glabris foliis. *Baub. pin.* 332. *prodr.* 144. *Raii hist.* 968.
L. pent. minor, angustioribus fol. fruticosior. *Raii syn.* 334.
 δ. *L. corn. major, minus hirsuta.* *Raii syn.* 334. 4.
 ε. *L. corn. minor, fol. subtus incanis.* *Raii syn.* 334. 5.
 ζ. *L. glaberrimus.* *Wither. var.* 6.
Stems prostrate, heads of flowers flat, legumes cylindric spreading.
 20. *Lotus cytifoides.* *Downy Bird's-foot Trefoil.*
Lin. spec. 1092. *Reich.* 3. 569. *Allion. pedem. n.* 1136. *Barr. rar.* 71. t. 1031.
Heads halved, stem diffused very much branched, leaves tomentose.
 21. *Lotus Dorycnium.* *Shrubby Bird's-foot Trefoil.*
Lin. spec. 1093. *Reich.* 3. 569. *Crantz. austr.* 402. *Ger. prov.* 514. 7.
Dorycnium. *Lin. hort. cliff.* 371. *Hall. belv. n.* 384. *Allion. pedem. n.* 1137.
D. pentaphyllum. *Scop. carn. n.* 939.
D. suffruticosum. *Villars dauph.* 3. 416.
D. monspeliensium. *Lob. ic.* 51. *adv.* 389. *Tournef. inst.* 391.
D. hispanicum. *Clus. hist.* 100. *hisp.* 202. *Ger.* 1128. 2. *emac.* 1309. 2.
D. monspessulanum fruticosum. *Baub. hist.* 1. 2. 388. *Raii hist.* 969.
D. supposititium monspeliense & hispanicum. *Park. theat.* 360. 1.

Trifolium

LOT

Trifolium album angustifolium, floribus veluti in capitulum congestis. *Bauh. pin.* 329.

Ononis quinata. *Forsk. descr.* 130.

β. Dorycnium herbaceum.

Villars dauph. 3. 417. t. 41.

Heads leafless; leaves sessile quinate.

[22. Lotus medicaginoides.

Retz. obs. 2. 23. n. 74.

Legumes umbelled bowed, leaflets obcordate toothblotted.

23. Lotus oligoceros.

Scop. insubr. 14. t. 6.

Legumes binate round straight striated villose dotted with white.

DESCRIPTIONS, &c.

These are mostly herbaceous plants, more perennial than annual: some few woody at bottom, and one arboreous. Leaves ternate, petioled with sessile leaflets, and two large stipules, of the same form with the leaflets, but distinct from the petiole; hence the leaves have been called quinate, though they are properly so only in one species, besides Dorycnium. Peduncles solitary, axillary and terminating; in most having one leaf at top, and either few-flowered, or many-flowered in a head or umbel. Corollas mostly yellow, changing readily to blue. Dorycnium recedes in some degree from the other species: the peduncles are leafless and many-flowered, and the leaves digitately five-leaved. Lamark has referred it to Aspalathus^a.

The name Λωτος or Lotus is given by the ancients both to an herb and a tree, each different from the plants contained in this genus. The herb is a species of Nymphæa^b, and is joined by Homer with Smalage, as forming the green food of Achilles's horses.

Λωτον ερεπόμενοι ελεοθρεπτον τε σελινον^c.

The Lotus being so abundant in the Nile, and a plant so famous in Egypt, may suggest a presumption that Homer was an Egyptian, and transferred Egyptian ideas into Greece and Asia Minor. The dewy Lotus joins also with the Crocus and the Hyacinth to form a soft and thick genial couch for Jupiter and Juno.

Τοις δ'υπο Χθων δια φυν νεοθηλεα ποιην,
Λωτον δ'ερσηνλα, ιδε κροκον, ηδ'υακινθον
Πυκνον η μαλακον^d.

It was used also for making garlands^e.

The tree Lotus was no less famous than the herb. It gave name to a people, and is celebrated by Homer for extraordinary qualities^f. Virgil speaks of it with the Elm, the Willow, and the Cypress^g; and Theophrastus places it between the Cedar and the Cypress^h. It is commonly supposed to be the Zizyphus or Jujube-tree (Rhamnus Zizyphus, Linn.), or perhaps more probably the Nabca of the Egyptians, Rhamnus Spina Christi of Linneusⁱ.

1. Root perennial. Stems several, decumbent] slender, a foot and half long, [round, simple or with a few branches at the base, having stiffish hairs scattered over them, pressed close to the stem. Leaves ternate: leaflets obovate, fleshy, sessile, even, the edge towards the top having hairs scattered over it. Stipules ovate, acute, even, longer than the petioles, the same size with the leaves. Peduncles axillary, solitary, twice as long as the leaves, round, commonly one-flowered, seldom two-flowered. Bracte three-leaved, a little shorter than the calyx, the middle one longer than the others. Calyx oblong, even, hairy at the edge. Corolla large, yellow, with flesh-coloured veins on the middle of the banner underneath, the wings of a deeper yellow, keel short with a greenish tip. The legume has four longitudinal wings.

It differs from the third species, by its perennial root, by the smoothness and greater fleshiness of the leaves, by the floral leaflets being lanceolate and not like those on the stem, and by the calyxes being less deeply cut. The second sort has the stems a foot long, whereas in this they are scarcely more than a finger's length; the leaves and calyxes in that are a little hairy,

^a Jussieu.

^b Nymphæa Lotus, Linn.

^c Il. l. 3.

^d l. 14. 347.

^e Theocr. idyll. 18. Ovid. metam. l. 4.

^f Odyss. l. 9. See Pliny, l. 13. c. 17.

^g Georg. 2. 83.

^h Hist. l. 1.

ⁱ Martyn's note on Virg. Georg. 2. 84. p. 124.

LOT

in this they are smooth and fat as it were; the appearance also and place of growth are different^k.

Native of many parts of Europe, on the sea coast; as Sweden, Denmark, Silesia, the South of France, the County of Nice, &c. Ray found it at the mouth of the Tiber.—Cultivated by Mr. Miller, in 1759. It flowers from may to october^l.

2. This is distinguished from the preceding to which it is very nearly allied, by its procumbent stems, white pubescent, a foot long; its hairy leaves and calyxes. Leaves alternate, petioled: leaflets subsessile, cordate-obovate, blunt, terminated by a spinule, quite entire, bright green and smooth above, white and silky underneath. Stipules large, cordate. Flower solitary, terminating, large, pale yellow, subsessile, surrounded by lanceolate ternate leaflets. Banner roundish, blunt, entire, keeled, spreading: wings blunt, converging, shorter than the banner: keel shorter than the wings^m. Legume coriaceous, round, smooth, with a double narrow membranaceous wing not waved to each suture, many-celled, two-valved: partitions spongy-membranaceous, snowy white, permanent. Seeds about twenty-four, subglobular, slightly compressed, smooth, with dark streaks and dots in clusters on a pale yellow ground. Albumen none or very small. Embryo curved, yellow. Cotyledons ovate, thick, flattish. Plume none. Radicle inflex, centrifugalⁿ.

Native of the South of Europe, in moist meadows. I gathered it near Lancy, Vevay and Aigle, in may 1779.—Cultivated in 1683, by Mr. James Sutherland^o. Our Gerard calls it horned or coddled Claver. Parkinson, smooth coddled Trefoile of Mompelien.

Monf. Gerard and Leyser do not distinguish this from the preceding. Magnol, who first separated the sea from the meadow Lotus, says that the latter has smooth fat thick leaves, and narrower pods.]

3. Root annual. Stems several, decumbent, (upright) about a foot long, having at each joint a ternate leaf. Leaflets ovate. Stipules of the same shape. Peduncles axillary, alternate, from two to three inches long, each sustaining one (sometimes two) large red flower at the top, with three leaves just under the flower. [The wings are very dark purple appearing to be black at the end. Legume thick, with four broad undulating wings. Seeds subglobular, the size of a small pea, smooth, pale or livid purple, without spots^p.]

It flowers in june and july, and the seeds ripen in autumn. It was formerly cultivated as an esculent plant, for the green pods, which are said to be still eaten in some of our northern counties, but they are very coarse. This plant is now chiefly cultivated in flower-gardens for ornament. It is a native of Sicily, [where Ray found it on the hills above Messina: and was cultivated in 1596, by Gerard^q. Parkinson calls it Crimson-blossomed or square-coddled Pease. In Johnson's edition of Gerard's Herball it is named Square crimson-velvet Pease. Ray calls it Square Coddled Vetch. None of these authors speak of the pod's being esculent. Clusius says the seeds were frequently sent out of Italy under the name of *Sandalida*, which Adanson has adopted for the generic name of these winged Lotuses, and Scopoli for the trivial of the second species.

4. This agrees with the preceding in habit, age, leaves, hairiness and legumes; but differs in the corollas being only half the size; the legumes in pairs, with the wings entire and less waved or curled; and the leaves not embracing the stem at the base, but gaping on the opposite sides^r.]

The stems are branching and a foot long; the leaflets are acuminate; the corollas are yellow, and the legumes are near two inches in length. It flowers in july, and the seeds ripen in the autumn.

[Native of France about Montpelier., Cultivated in 1759, by Mr. Miller^s.

5. Stems filiform. Corolla yellow with the back of the banner dark purple. It is distinguished from all the other species by its solitary stipules and one-leaved bractes. The former are lanceolate-oblong, and the latter sometimes, but seldom two-leaved^t.

^k Linn. succ.

^l Hort. kew.

^m Pollich.

ⁿ Gærtner.

^o Hort. kew.

^p Gærtner.

^q Hort. kew.

^r Linn. spec.

^s Hort. kew.

^t Linn. syst.

In the Supplement, it is said to be a native of Majorca, if the plant there described be the same with that in *Système Vegetabilium*.]

6. This is an annual plant, with several trailing stalks, a foot long. At each joint is a ternate leaf with roundish leaflets. The flowers stand singly on long axillary peduncles: they are yellow and small; and are succeeded by thick pods, arched with a deep furrow on the outside.

[The plant is almost that of *L. tetragonolobus*. Stem subvillose. Leaves smooth. Stipules ovate. Peduncles long, with three ovate bractes, the length of the flower. Legumes like those of *Crotalaria*, ovate-oblong, gibbous, but with the dorsal suture straight.

Native of Italy and Candia. Mr. Ray says that he met with this, or one very like it about Naples and in Sicily. Mr. Miller, who cultivated it in 1759^x, had the seeds sent him from Nice. The pods are eaten in Candia, when young, by the poorer inhabitants^y. It flowers here in July, but the seeds do not ripen in cold summers.

7. This is an annual plant like the eleventh, but does not branch so much; the leaflets are rounder at their ends and smoother; the peduncles are shorter, and seldom sustain more than two flowers; they are succeeded by two very narrow pods about two inches long, and hanging downwards.

[Native of the South of Europe.] Mr. Miller says Spain and Portugal. [Cultivated here in 1713. It flowers in July^z.

8. Root weak, branched. Stems straight, numerous, a foot high, branched, reddish, beset with long whitish hairs; at each joint a ternate leaf; leaflets oblong, acute. Peduncles axillary, solitary, an inch or more in length, with a yellow flower or two at top, in hairy calyxes. Legumes generally one, very seldom two^a; slender, near two inches in length, obsoletely torulose where the seeds are: these are twenty or even twenty-three in number, spherical, pale sulphur-coloured, very smooth, shining like pearls, the size of a pins head^b.

Native of the South of France. Mr. Ray gathered it near Naples. Mr. Miller has confounded this with one of the varieties of *L. Corniculata*.

9. Native of Madeira, where it was found by Mr. Francis Masson. Introduced in 1777. It is biennial, and flowers from June to August^c.

10. Root perennial. Stems several, a foot and half high, scarcely pubescent. Leaves ternate, petioled: leaflets subpetioled, obovate, bluntish, somewhat hoary, almost smooth. Stipules almost of the same size and form with the leaflets. Petioles very short. Peduncles erect, two, three, or four-flowered, often twice or thrice as long as the leaves. Flowers pedicelled, nodding, pale rufescent, with red veins on the banner; wings including the keel. Teeth of the calyx awl-shaped, distant. Bracte at the base of the proper peduncles, one-leaved, upright, like the leaflets. It sleeps during the night with the flowers close to the common peduncle, the bracte over it, the leaflets and stipules converging. Legumes cylindric, smooth, awned.

Native of Arabia, where it was found by Forskahl, and in Surat by Brad^d. Introduced in 1773, by Chevalier Murray. It flowers from July to November^e.]

11. This is an annual plant, which sends up many stiff stalks from one to two feet high, dividing into many branches. Leaves ternate with two appendages or stipules. Peduncles axillary, two or three inches long, terminated by a cluster of yellow flowers.

[These sleep during the night with the bractes covering them. Stems even, from upright diffused. Leaves smooth, obovate or rhomb-shaped. Legumes three to five^f; linear-oblong, fiddle-shaped, compressed, torose or knobbed at the seeds; which are about fifteen, lens-shaped, shining, yellow or chestnut coloured, the same size with those in *L. filiquosus*^g.]

Native of Sicily. It flowers in July, and the seeds ripen in autumn. [Cultivated in 1683, by Mr. James

^x Hort. kew.

^y Bauh. hist.

^z Linn. mant.

^a From. Belon.

^b Gartner.

^c Hort. kew.

^d Gartner.

^e Hort. kew.

^f Hort. kew.

^g Linn.

Sutherland^h. It was found by Ray on the hills above Messina, and at Capo Passaro. By Gerard, Sauvages, &c. in Provence, and by Pallas in Siberia.]

12. Stem slender, woody, from two to three feet high, sending out many slender herbaceous branches. Leaves sessile, hoary; leaflets narrow, white. Flowers axillary from the upper part of the stem, four or five on very slender peduncles, of a yellowish deep purple colour. Pods taper, slender, little more than an inch long, containing five or six small roundish seeds.

[The leaflets are lanceolate-linear. Flowers from three to five together, the same colour as in *Antirrhinum triste*, or a very rich brown-purple. The petiolets are whiteⁱ.

Native of the Cape Verd islands. Cultivated in 1714, by the Dutchess of Beaufort at Badminton^k.]

It flowers all the summer and autumn, and many times great part of the winter. Mr. Miller says that he had the seeds from the Cape of Good Hope.

13. This rises with slender stems which require support, from three to four feet high, sending out a few side branches. At each joint is a neat silvery ternate leaf, with two appendages (or stipules). Peduncles axillary, from two to three inches long, sustaining heads of yellow flowers, which part in the middle, each head containing four or six flowers. These appear in May, June and July, and are succeeded by long taper pods filled with roundish seeds, which ripen in the autumn.

[It is a suffruticose weak plant, the whole of it silky with close-pressed hairs. Flowers usually, in threes. Legumes oblong, cylindric, pendulous^l.

Native of Spain and the Levant. Cultivated in 1696^m. Morison had seeds from Aleppo, which produced plants at Oxford, before 1680.

14. Root annual. Stems a palm and half in height, round. Stipules ovate-lanceolate, awned. Leaflets firm, thick, obovate, emarginate, on a petiole about the length of the leaves. Peduncles axillary, much higher than the leaves, with one leaf on them, commonly one-flowered, seldom two-flowered. Flowers yellow, small. Legumes erect, an inch long. Near Villafranca in the County of Nice, on the sea coastⁿ.

15. Native of New Zealand^o.]

16. This has a perennial stalk three feet high. When the roots are large, they frequently send up several of these stalks, especially if the old ones be cut down; they are hairy, and divide into several branches. Leaves ternate, hoary, with two stipules. Flowers in heads on long axillary peduncles. Calyxes very hairy. Corollas dirty white with a few marks of pale red. Pods short, thick, chestnut-coloured, containing several roundish seeds.

[Stems a foot high, hard and woody. Leaves covered with long hairs, distinct and decumbent. Corolla reddish white, in a reddish calyx. Legumes swollen, blackish, short, elliptic^p. Flowers fewer than ten in a head, larger than the leaflet^q.

John Bauhin says it is from half a yard to a yard in height, and Magnol observed it in a wood a yard and half high. Several of the species are very short in open situations, but are drawn up very much when they grow among bushes.

Native of the South of Europe, as the south of France, Italy, Sicily; also of the Levant. It was cultivated in 1683, by Mr. James Sutherland; and flowers from June to August^r.

It is called by Gerard Hoary Claver; and by Parkinson, Greater Pile Trefoil.

17. This is a middle species between the preceding and following, inasmuch that it is difficult to say which it approaches the nearest. Stem annual, but more spreadingly branched. Flowers white, less than in *hirsutus*, larger than in *rectus*. Legumes ovate.

This differs from all the rest in having quinate (not ternate) leaves; that is, five leaflets, besides the stipules; which are oblong, as in *L. hirsutus*, not cordate, as in *L. rectus*^s.

^h Hort. kew.

ⁱ Linn. spec.

^k Forster.

^l Linn.

^m Hort. kew.

ⁿ Villars.

^o Linn. mant.

^p Hort. kew.

^q Allione.

^r Hort. kew.

Native of the Levant; Greece, Arabia.]

18. This has a strong perennial root, from which arise many upright strong stalks, from three to four feet high, covered with a purplish bark, and towards the top sending out a few side branches. At each joint is a ternate leaf, with wedge-shaped leaflets, and at the base of the foot-stalk two heart-shaped stipules, sitting close to the branch. Leaflets hairy on their under side. Flowers at the end of the branches in almost globular heads, sitting close to the peduncle. Corolla pale flesh-colour, appearing in June. Pods almost an inch long, changing to a brown colour when ripe, and containing several roundish seeds, which ripen in September.

[Stem suffruticose, from two to three feet in height. Flowers whitish, numerous, in a horizontal bundle. Legumes more than twenty, whereas in *L. hirsutus* there are fewer than ten¹; they are cylindrical, obsoletely torulose at the seeds, black, the length of the human nail; and contain six or eight, small, globular, black seeds, which are not shining².]

Native of the South of Europe; observed in the South of France, Calabria, and Sicily, by Ray; in Aragon, by D'Assò; near Lyons, Turin, &c. by Morison; in the County of Nice, by Allione. Parkinson calls it Lesser Pile Trefoil.—It was cultivated in 1683, by Mr. James Sutherland³.]

Mr. Miller says, this has by some been supposed the Cytisus of Virgil, but without foundation; that cows and horses will eat it when green, but that he had not tried if they will feed on it when made into hay.

19. Root perennial, tapering, striking deeply into the earth. Stems several, slender, bluntly four-cornered, procumbent except where supported, as in meadows or among bushes, from six or seven inches, to a foot and half in length; varying even more in different soils and situation, and in the several varieties. I have now before me (August 17th, 1797) specimens from the same spot, some growing detached perfectly procumbent and only six inches long, other three feet and a half high, by having run up among bushes, which they do without either twisting or clasping by tendrils. Leaves ternate, petioled, one at each joint, the leaflets differing extremely in form, in the several varieties, from bluntly ovate to linear-lanceolate; those in the specimens before me are ovate, terminating in a short point, on very short pedicels, the middle one narrowing towards the base, so as to be almost wedge-shaped, they are smooth, and the common petiole is membranaceous. The stipules resemble the leaves, but they are more pointed, and are rather lanceolate than ovate. The flowers grow in flattened heads resembling umbels, on peduncles from two to three inches and a half in length, but on pedicels hardly a line long. There is a single sessile ternate leaf at the base of each head without any stipules; and sometimes there is only one leaflet or two: the number of flowers varies from three or four to twelve or thirteen; none of my specimens have more than six, very few more than four, and some only one or two. Calyx fringed with long soft hairs. Corolla, before it opens, of a bloody red on the outside, and of a yellowish green within; when expanded of a full yellow; all the petals are equal, and stand each on narrow separate claws; the banner bent back, and the wings oblong-ovate. Legumes smooth, spreading like the spokes of a wheel, or rather like the fingers, or bird's claws, and ending in a long straight point. Seeds many, sometimes more than twenty, small, somewhat kidney-shaped, and spotted⁴. I do not find that more than three or four pods in a head come to maturity.

Native of all parts of Europe, and also of Japan, in meadows, pastures, heaths, by road-sides, in hedges, among bushes, and in woods: flowering from June to August. The similitude of the stipules to leaves occasioned some of the old writers to call it *Lotus pentaphyllos*; Gerarde however calls it Small Coddled

Trefoil; and Ray, Bird's-foot Trefoil, which is the name now commonly retained. Withering calls it Bird's-foot Claver. In Yorkshire it is said to be called Cheefecake Grass, and in some other counties; Butterjags, and Crow-toes. It has been recommended for cultivation by Ellis under the name of Ladies Finger⁵, by which it is confounded with *Anthyllis Vulneraria*, a much inferior plant in rural economy; and by Dr. Anderson under the name of *Astragalus glycyphyllos*, or Milkwort, which is a strong-smelling sticky plant, that does not seem to be agreeable to cattle; though Linneus affirms that horses, kine, goats and sheep eat it.

In German it is named *Gebornie Schotenklee*, *Wilder Steinklee*, *Gelber sunsolatriger Klee*, *Guldner Klee*, *Gelbe Vogelwicke*, *Gelbe Schoten*, *Kleiner gelber Honigklee*, *Kleiner Hornklee*, *Hornwicke*, *Walzenkraut*, *Frauenfingerkraut*, *Unserer Lieben Frauen Schublein*. In Dutch, *Geboornde Klaveren*, *Gekroonde Meloten*, *Jufferfchoentjes*. In Danish, *Kierringtand*, *Krageklover*. In Swedish, *Karingetander*. In French, *Le Lotier corniculé*, *ou des prés*, *Trefle jaune*.

Mr. Miller has made three species out of this: 1. *Lotus corniculatus*; the common sort. 2. *L. angustissimus*, which he seems to have confounded with our eighth species. 3. *L. glaber*, variety γ of this.

The usual appearance of Common Bird's-foot Trefoil has been described above.

β . Has the stem more upright, a foot high, hardly angular. Leaves and especially the unexpanded heads with a good deal of woolliness. Leaves veined underneath. Stipules bluntly ovate or roundish, but terminating in a point⁶.

Scopoli distinguishes this specifically from the common sort, by the form of the leaves and bractes (or stipules). In that, as he affirms, the leaflets are ovate, and the stipules semicordate; in this, which he calls *Lotus major*, both leaves and stipules are lanceolate. But the stipules are not semicordate in our Common Bird's-foot Trefoil.

This greater variety is found in woods, moist meadows, hedges, and the sides of wet ditches.

γ . In this variety the stems are twice as long and narrow as in the common sort. The leaves and stipules are also very narrow, and almost linear. Legume narrower. It is more shrubby than the common. Corn fields and moist places. Near Worcester⁷.

δ . This resembles β , but is less hairy. The whole plant is downy. Mr. Doody found it in the fields behind Mother-Huffs.

ϵ . Leaves hoary underneath. Found in the chalk-pits at Greenhithe by Mr. Doody⁸.

ζ . Entirely without hairs. Stipules half-ovate. Filaments club-shaped. On the high grounds north of Marlborough in June⁹.

But Monf. Villars justly calls this species a *Proteus*, and remarks that he has seen individuals of the great hairy variety, that approached nearer to *Lotus hirsutus*, in appearance, than to many individuals of this species. Where plants are so given to change, it is easy, but dangerous to multiply species. I am surprised that Linneus, in distinguishing the first and second species, should mention that the appearance and place of growth are different, when the place of growth may probably occasion the difference in the appearance.

The flowers of Bird's-foot Trefoil become green when dried, in which respect they resemble those of Indigo¹⁰.]

Mr. Miller says, he has always observed, that cattle of all sorts avoid eating this plant, whilst the grass all round it has been eaten very bare. [But he ought to have remarked, that it is the designation of Providence, that whilst cattle crop the herbage, they generally leave the flowering stems untouched, otherwise many plants could not be propagated. When he goes farther indeed, and affirms] that he has cut the plant when young, and given it to various animals, but could never get them to eat it; [we can only say that more modern experience contradicts his experience, what-

¹ Villars. ² Gartner. ³ Hort. kew.
⁴ Curtis, Woodward Mss. Withering Fl. rustica.

⁵ Ellis, Chiltern and Vale Farming, 291. ⁶ Withering.
⁷ Linn. Wither. Ray. ⁸ Ray syn. ⁹ Withering. ¹⁰ Ibid.

ever it might be. Linneus's account is, that kine, goats and horses eat it, but that sheep and swine are not fond of it. On the contrary we are told that it is cultivated in Hertfordshire as pasturage for sheep. It makes extremely good hay; in moist meadows grows to a greater height than the Trefoils^f, and seems to be of a quality equal, if not superior to most of them. In common with several other leguminous plants, it gives substance to the hay, and perhaps contributes to render it more palatable and wholesome for cattle.

Dr. Anderson affirms, that as every species of domestic animal eats the Bird's-foot Trefoil, (or Milk-wort, as he calls it, having mistaken it for *Astragalus glycyphyllos*, a plant totally different in appearance, character and qualities;) in preference to every other plant, it seldom comes to flower in pasture grounds, unless where they have been saved from cattle for some time. What first recommended it to his notice, was the having observed it to grow and flourish in poor ground; as in the midst of a barren moor, where the soil was so poor that even heath could hardly grow: upon bare obdurate clays: in dry and barren sands. It certainly flourishes not only in these, but also in a chalky soil: and we may add, that on moors, heaths and downs hard stocked with sheep, we may observe the surface to be yellow with the flowers of this plant; which contradicts what Dr. Anderson asserts above, that it seldom comes to flower in pastures; without however confirming the assertion of Linneus, that sheep dislike it; or of Miller, that no cattle will eat it; for they devour the herbage, though they leave the flowering-stalks untouched, as we remarked above. Dr. Anderson's figure is not exact in the leaves, there being always three leaflets with two stipules, whereas he has never more than four, and frequently only two^g.]

20. This is a perennial plant, sending out from the root many stalks, which branch out their whole length. Leaves ternate, with two appendages or stipules, both covered with a woolly down. Flowers on short peduncles, four or six in a divided head; they are yellow and appear in July. Pods taper, with roundish seeds, ripening in autumn.

[Native of the South of Europe, on the sea coast. Cultivated in 1752, by Mr. Miller^h.]

21. This rises with weak shrubby stalks three or four feet high, sending out many slender branches, thinly set with small hoary leaves, having five leaflets, spreading like the fingers, and sessile. Flowers at the extremity of the branches in small heads. They are very small and white, appear at the end of June, or in July, continue to September, and are succeeded by short pods, containing two or three small round seeds.

[Native of the South of Europe. Cultivated before 1640, by Parkinsonⁱ.]

Vahl remarks, that there are many specimens in the herbariums of several botanists, so different, that they are probably distinct species.

Almost all the old writers, some of the moderns, and Linneus himself in his earlier works, made the *Dorycnium* a distinct genus. Monf. Villars says it forms a genus between *Lotus* and *Trifolium*, differing from the former in the shortness of its legume, its woodiness, its distinct and more regular leaves, its calyx and very small flowers. It would range better with the Trefoils, if it were not an absurdity to speak of a Trefoil with quinate leaves, and if that genus were not much loaded with species already. He makes two species of *Dorycnium*. 1. *D. suffruticosum*; with suffruticose, upright stems. 2. *D. herbaceum*, with a diffused, herbaceous stem. The first has woody stems, branched at bottom. Leaves narrow, oblong, whitish, as is the whole plant. Corolla white, except the keel, which is violet. Each peduncle has a simple leaf, a little below the flowers.—The second has the stems straight, round, villose, herbaceous, branching at their upper part; the branches very straight, and approximating to the stem, which is from two to three feet high. Leaves by fives, without any petiole, oblong, blunt, widening at the upper part, and ending in a

^f Withering.

^g Essays, vol. 2. 238, &c.

^h Hort. kew.

ⁱ Ibid.

rounded point. Flowers white and small as in the first, but double the number. Calyx a little more lengthened, ending in five points, that are more regular than in the first.

Native of Dauphiné about Grenoble, and of Savoy near Chambery.

This plant is uncommon and perhaps unknown. It has the habit and size of *Lotus rectus*, with the character of *Dorycnium*. Clusius's figure, copied by Lobel, John Bauhin, Parkinson, &c. may serve to represent this as well as the first. Dalechampius's also represents it, but the leaves are much too narrow^k.

22. Root annual. Stem prostrate, grooved, rough-haired. Leaves ternate, on long petioles, obcordate, toothletted, smooth, marked with lines. Stipules semisagittate, entire, with a two-toothed lobe at the base. Peduncles axillary, elongated, five or six-flowered, umbelled, with small yellow flowers. Legumes four to six, linear, bowed, torulose.

Native of Siberia, resembling *Medicago polymorpha* when in flower, but smaller, with the legumes of *Trigonella*. Doubtful whether it be of this genus, or a *Trigonella*^l.

23. Root annual. Stems from ascending upright, branched, villose, half a foot or more in height. Leaves ternate, obconical, the midrib ending in a spinule, pubescent. Stipules pedicelled, subovate, acuminate, villose, smaller than the leaves. Peduncles solitary from the upper axils, most frequently two-flowered, supported by a three-leaved bracte. Calyx villose, greenish yellow spotted with red, the middle tooth of the lower lip longer and larger, but the upper ones equal. Corolla yellow, not longer than the calyx: banner erect, subovate, marked with five red lines, the side ones usually two-parted and paler: wings longer than the keel, cohering at top, concave, elliptic, with a blunt earlet from one side of the base: keel sickle-shaped. Legume slightly sickle-shaped, an inch and half long. Seeds sometimes as many as twenty-two, round, yellow, lucid, separated by membranaceous partitions.

It approaches to *L. angustissimus*, but the stem is upright. It differs from *L. Corniculata* in the stems, floescence, life, &c. The legume also is not one-celled; nor are the seeds cylindric but spherical. The seeds were sent by Allioné. It flowers the beginning of July (in Italy) and perfects the seeds by the end of that month^m. This species should have been placed in the first division.

The determination of the foregoing species may be assisted by the following table, assisted by the specific characters.

	Perennial. 1. 2. 5. 10. 12. 13. 15 to 21.
	Biennial, 9.
	Annual. 3. 4. 6. 7. 11. 14. 22. 23.
Stem	Arboreous. 15.
	Frutescent or Suffrutescent. 12. 13. 16. 17. 18. 21.
	Herbaceous, the rest.
Leaves	Quinate. 17. 21.
	Ternate, with two stipules; the rest.
	Few. 1 to 15. { Square, winged. 1. 2. 3. 4. { Cylindric. 5 to 23.
Legumes	One. 1. 2. 3. 5. 6. 8. 9. 14. Some have sometimes 2.
	Two. 4. 7. 23.
	Three or Four. 10.
	Three to Five. 11. 12. 13.
	Five. 15.
Seeds	Many in heads. 16 to 22. Some not more than 4 or 5.
	Ovate. 1 to 4. 23.
	Cylindric. 5 to 22.
Corolla	Red. 3.
	Deep purple. 12.
	Reddish white. 16.
	Pale rufescent. 10.
	Whitish or pale Flesh-colour. 18.
	White. 17. 21.
	Yellow, in all the rest:]

^k Villars.

^l Retzius.

^m Scopoli.

PROPAGATION AND CULTURE.

1. 2. 4. 6. 7. 11. 20. These are propagated by seeds, which should be sown early in April upon an open bed or border exposed to the sun, where the plants are to remain: when they come up they must be thinned, leaving them near two feet asunder, and afterwards they must be kept clean from weeds, which is all the culture they require.

3. The Winged Pea is an annual plant commonly cultivated in flower-gardens for ornament. The seeds are sown in patches, five or six together, where they are designed to remain. If the seeds all grow, some of the plants may be pulled up, leaving only two or three in each patch, and afterwards they will require no other care but to keep them clean from weeds.

12. This is too tender to live abroad, the plants therefore are kept in pots, which in winter are placed in a warm airy glass-case or dry stove, but in summer are placed abroad in a sheltered situation. It may be easily propagated by cuttings during the summer season, and also by seeds; but the plants which have been two or three times increased by cuttings, are seldom fruitful. [The plants are subject to go off at once, and therefore new ones should be constantly raised, especially as this is a very beautiful sort, and almost always in flower.]

13. This also is too tender to live in the open air, and therefore must be treated like the preceding: It may be increased by seeds, sown on a bed of light earth in April. The plants will come up in about a month, and in another month will be fit to remove; when each should be put into a separate small pot filled with fresh light earth; placing them in the shade till they have taken new root: then they may be removed to a sheltered situation, where they may remain till autumn.

It may also be propagated by cuttings, planted during any of the summer months, upon a bed of light earth, covering them close with a bell or hand-glass, and screening them from the sun; in five or six weeks they will have taken root, when they must be inured to the open air, and soon after may be planted in pots, and treated in the same way as the seedling plants.

16. This is propagated by seeds in the same manner as the last sort: the plants will live through the winter in the open air in moderate winters, but it will be proper to keep one or two plants in pots to be sheltered in winter, lest those abroad should be destroyed by severe frost.

18. This sort may be cultivated for feeding cattle in the same manner as Lucerne. It rises easily from seeds, is very hardy, and will thrive on any light dry poor ground.

[19. Dr. Anderson sowed the Common Bird's-foot Trefoil with his ordinary hay-seeds. It grew the first season as tall as the great Clover, and was scarcely distinguishable from Lucerne, but by the slenderness of the stalk, and proportional smallness of the leaf. Like Lucerne, it is perennial, sends down a long root to a great depth, at first small, but becoming at length of a considerable size; so that it is several years before it attains its full perfection: but when once established, it remains many years in full vigour, and produces annually a great quantity of fodder. In autumn 1773, he cut the stalk from an old plant in an indifferent soil, and having dried it, found that it weighed fourteen ounces and a half. Like Lucerne it is never affected with the severest drought; but it does not resemble that plant in delicateness of constitution; as it thrives in the stiffest clays, and stands its ground among grass and weeds. The stalks die down entirely in winter, and do not come up in the spring till Clover begins to advance, so that it can never be of use but as a summer pasture. Neither does it advance very fast after it is cut down, or eat over, even in summer.

Dr. Anderson speaks of the larger variety, which he calls another species of Astragalus, with an erect stalk, that naturally grows upon dampish soils. He thinks it more likely to answer well for hay, the stalks being longer; but had no opportunity of

making particular observations on it, or of procuring the seeds^a.

Mr. Curtis justly remarks; whether this plant be deserving of the encomiums here bestowed upon it, the practical farmer must determine. There appears no reason, why seed might not be obtained from it; and it should seem that land not strong enough to bear Clover might be improved by the introduction of Bird's-foot Trefoil.

August 18th 1797. I gave a handful of it in full flower and seed to a working horse, who eat it greedily in preference to very good hay on which he was then feeding. A cow also in full pasture received it with seeming avidity.]

21. Dorycnium will live in the open air, if it be planted in a dry soil and warm situation. It is propagated by seeds, which will come up in any common border.

LOTUS. See [*Anthyllis*, *Aspalathus*,] *Celtis*, [*Coronilla*, *Cytisus*, *Diospyros*, *Ebenus*, *Indigofera*, *Liparia*, *Nymphæa*, *Ononis*, *Rhamnus*, *Trifolium*, *Trigonella*.

LOVAGE. See *Ligusticum*

——, Bastard. See *Laserpitium Siler*.]

LOVE-APPLE. See *Solanum Lycopersicum*.

[Love-lies-bleeding. See *Amaranthus cordatus*.

LOUICHEA. (From M. René Louiche Desfontaines.)

Lin. gen. Schreb. n. 1768. L'Herit. monogr. & Stirp. nov. 135. t. 65.

Class. 16. 2. Monadelphia Tetrandria: or, 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* common none.

Perianth proper one-leafed, four-parted: segments awl-shaped-acuminate, concave, unequal.

COR. none.

STAM. *Filaments* four, awl-shaped, slightly connate. *Anthens* roundish.

PIST. *Germ* superior, turbinate. *Style* filiform, bifid. *Stigmas* simple.

PER. none. *Calyx* closed, covering the seed.

SEEDS solitary, obovate, covered by a membranaceous aril.

REC. common peduncle-shaped, trichotomous, producing the flowers.

ESSENTIAL CHARACTER.

Rec. common peduncle-shaped, trichotomous, producing the flowers. *Per. proper* four-parted; segments concave, subulate-acuminate, irregular, growing together. *Cor. none. Filam.* four, connate, inserted into the receptacle. *Germ* superior. *Style* bifid. *Seed* single, arilled, within the calyx.

SPECIES.

1. *Louichea cervina*.

L'Herit. monogr. & Stirp. nov. 135. t. 65.

Camphorosina Pteranthus. Lin. syst. 166. mant. 41.

DESCRIPTION, &c.

This is an annual, very branching plant, a span high. Stem almost upright, round. Branches in whorls, the upper ones opposite, spreading very much; the lower ones prostrate, jointed, knobbed: branchlets in pairs from each axil. Leaves six, in whorls, the two outer opposite ones larger, the four inner from each side of the axils, the uppermost seldom only opposite, sessile, linear, quite entire, scarcely one-nerved, very smooth, thickish, bright green, the same colour on both sides, from six to eight lines in length, and one or two lines in breadth. Flowers terminating, coming out successively, sessile, close, the middle ones solitary, herbaceous, two or three lines broad.

See *Camphorosina*, from which it differs in habit, in having a common receptacle, and in the stamens, being monadelphous^b.

LOUSEWORT. See *Delphinium*, *Staphisagria*, and *Pedicularis*.

LUCERNE. See *Medicago*.

LUCINIUM. See *Amyris*.]

^a Essays, vol. 2. 242.

^b L'Heritier.

L U D

LUDWIGIA. (So named by Linneus, in honour of Christian Gottlieb Ludwig, Professor of Medicine at Leipzig.)
Lin. gen. n. 153. Reich. n. 161. Schreb. n. 204.
& vol. 2. p. 820. Gært. t. 31. Juss. 319.
 Class. 4. 1. Tetrandria Monogynia.
 Nat. order of *Calycanthemæ*.—*Onagræ*, Juss.

GENERIC CHARACTER.

- CAL.** *Perianth* one-leaved, four-parted, superior, permanent: *segments* lanceolate, spreading very much, length of the corolla.
COR. *Petals* four, obcordate, flat, spreading very much, equal.
STAM. *Filaments* four, awl-shaped, upright, short. *Anthers* simple, oblong, upright.
PIST. *Germ* four-cornered, covered with the base of the calyx, inferior. *Style* cylindrical, length of the stamens. *Stigma* obsoletely four-cornered, capitate.
PER. *Capsule* four-cornered, blunt, covered and crowned by the calyx, four-celled, four-valved: partitions opposite to the valves.
SEEDS numerous, small.
REC. columnar, membranaceous, four-winged: wings in the angles of the partitions, seed-bearing on each side.

ESSENTIAL CHARACTER.

Cal. four-parted, superior. *Cor.* four-petalled. *Caps.* inferior, four-cornered, four-celled. *Recept.* distinct from the axis of the fruit, bearing the seeds on each side.

SPECIES.

1. *Ludwigia alternifolia.* *Alternate-leaved Ludwigia.*
Lin. spec. 173. syst. 161. Reich. 1. 336. hort. upf.
30. cliff. 491. Gron. virg. 17. Trew. ebret. 2.
t. 2. Gært. fruct. 1. 158. Pluk. phyt. t. 412.
f. 1. & t. 203. f. 2. (Lyfimachia.)
Leaves alternate lanceolate, stem upright.
- [2. *Ludwigia oppositifolia.* *Opposite-leaved Ludwigia.*
Lin. syst. 161. Reich. 1. 336. fl. zeyl. n. 66.
L. perennis. Lin. spec. 173.
Leaves opposite lanceolate, stem diffused.
3. *Ludwigia repens.* *Creeping Ludwigia.*
Swartz. prodr. 33.
Leaves opposite ovate, peduncles solitary axillary, stem creeping.
4. *Ludwigia erigata.* *Upright Ludwigia.*
Lin. syst. 161. Reich. 1. 336. mant. 40.
Leaves opposite lanceolate, stem upright.]

DESCRIPTIONS, &c.

1. This is an annual plant, rising with an upright branching stalk a foot high. The flowers come out singly at the axils. Flowers small, on short peduncles. Corolla yellow.

[Capsule shorter than the permanent calyx, from a rounded base cubical, opening at the angles: partitions membranaceous, inserted on one side into the middle of the valves, on the other into the axis, not separating. Receptacle a compressed, fungose lamina or plate, fixed to the inner angle of each cell, covered on both sides with the seeds; which are ovate, smooth, somewhat shining, pale yellow^a.

Native of Virginia^b:] or according to Mr. Miller, of South Carolina, whence the seeds were sent him by Thomas Dale, M.D. [before 1752. It flowers in June and July^c.

2. Stems procumbent, a span long. Branches at the root, and scarcely any others. Leaves smooth, quite entire, striated, ending in the petioles. Flowers solitary, axillary. Corolla yellow, shorter than the calyx. Germ longer than the calyx. Capsule shorter by half than the leaves^d.—In Flora zeylanica the leaves are said to be *alternate*; the herb like *Lythrum hyssopifolium*, and the flower in the form of *Caryophyllus officinarum*. Native of the East-Indies.

3. This is an annual plant, native of Jamaica^e. See *Isnardia palustris*, which is the same.

4. This also is annual. Stem herbaceous, a foot high, brachiate, smooth. Leaves petioled, quite entire, smooth. Peduncles terminating, about three together, one-flowered; seldom axillary. Germs four-

^a Gærtner.
^c Hort. kew.

^b Linn. Gron. Hort. kew.
^d Linn. zeyl. ^e Swartz.

L U N

cornered, winged. Calyxes minute. Corolla scarcely visible. Capsule subcubical, with the four angles keeled. Native of the East-Indies^f.

Jussieu doubts whether this species belongs to the genus; the leaves being opposite, and the flowers terminating^g.]

PROPAGATION AND CULTURE.

The plants must be raised from seed in a hot-bed, in the spring, and treated as directed for *Amaranthus*. If they be not brought forward in the spring, they seldom produce good seeds in England.

[**LUDWIGIA.** See *Ammannia*, *Isnardia*, *Jussieua*.

LUFFA. See *Momordica*.

LUJULA. See *Oxalis*.]

LUNARIA: (So named from the form of the fruit, like a full moon.)

Lin. gen. n. 809. Reich. n. 873. Schreb. n. 1085.

Gært. t. 142. Tournesf. t. 105. Juss. 239.

Class. 15. 1. Tetradynamia Siliculosa.

Nat. order of *Siliquosæ* or *Cruciformes*.—*Cruciferae*, Juss.

GENERIC CHARACTER.

- CAL.** *Perianth* four-leaved, oblong: *leaflets* ovate-oblong, blunt, converging, deciduous, of which the two alternate ones are gibbous and bagged at the base.
COR. four-petalled, cruciform. *Petals* entire, blunt, large, the length of the calyx, ending in claws of the same length.
STAM. *Filaments* six, awl-shaped, four the length of the calyx, two a little shorter. *Anthers* from upright spreading.
PIST. *Germ* pedicelled, ovate-oblong. *Style* short. *Stigma* blunt, entire.
PER. *Silicle* elliptic, flat, entire, upright, very large, pedicelled, terminated by the style, two-celled, two-valved: *partition* parallel and equal to the valves, flat.
SEEDS some, kidney-shaped, compressed, marginal, in the middle of the silicle. *Receptacles* filiform, long, inserted into the lateral futures.

ESSENTIAL CHARACTER.

Silicle entire, elliptic, compressed-flat, pedicelled: valves equal and parallel to the partition, flat. *Cal.* with bagged leaflets.

SPECIES.

1. *Lunaria rediviva.* *Perennial Honesty.*
Lin. spec. 911. syst. 592. Reich. 3. 242. hort. cliff.
333. Gært. fruct. 2. 288. Mill. illustr. Retz.
obs. 1. 22. Hall. belv. n. 500. Scop. carn. n.
786. Crantz. austr. 18. Krock. files. n. 1043.
Villars dauph. 3. 307. Kniph. cent. 7. n. 46.
L. græca perennis. Best. eyf. vern. 1. t. 7. f. 2.
Viola lunaria major, filiqua oblonga. Baub. pin. 203.
Viola lunaris longioribus filiquis. Ger. 378. 2. emac.
464. 2. Raii hist. 788.—altera f. peregrina. Park.
par. 265. 2.
V. latifolia. Lunaria odorata. Clus. hist. 1. 297.
Leucoium lunatum perenne filiqua oblonga. Mor.
hist. f. 3. t. 9. f. 3.
Silicles lanceolate, root perennial.
2. *Lunaria annua.* *Annual Honesty.*
Lin. spec. 911. syst. 592. Reich. 3. 242. Krock.
files. n. 1044. Retz. obs. 1. 22.
L. græca annua. Best. eyf. vern. 7. f. 1.
L. major filiqua rotundiore. Baub. hist. 2. 881.
Viola latifolia. Dod. pempt. 161. Dalech. hist. 805.
V. lunaria major, fil. rotunda. Baub. pin. 203. Raii
hist. 787.
V. lun. f. Bolbonac. Ger. 377. emac. 464. Park.
theat. 1366.—vulgaris. Park. parad. 265. 1.
Leucoium lunatum annum, fil. compressa rotunda.
Mor. hist. f. 3. t. 9. f. 1.
Silicles roundish, root biennial.
3. *Lunaria ægyptiaca.* *Egyptian Honesty.*
Mill. dict. n. 3. fig. 1. 169.
L. Ricotia. Gært. fruct. 2. 289.
Ricotia ægyptiaca. Lin. spec. 912. syst. 593. Reich.
3. 243.
Cardamine ægyptiaca. Lin. spec. ed. 1. 656.
Silicles oblong pendulous, leaves superdecompound, with
trifid leaflets.

^f Linn. mant.

^g Gen.

DESCRIPTIONS, &c.

1. This is a very large plant. Root perennial, white. Stem from three to four feet high, upright, simple, channelled, green tinged with purple, hirsute. Lower leaves opposite, upper alternate, on long petioles, smooth or rough-haired, cordate, unequally serrate, nerved, acuminate, near a span long, and three or four inches wide. Flowers terminating, on long slender peduncles, often bifid and trifid. Calyxes of a white purple colour, and smooth. Petals purple, odorous. Silicles acuminate, an inch and half wide, three inches long, with the permanent style half an inch in length. They contain three, four or five roundish seeds fastened to the margin of the future by a thread. The flowers have two glands on each side between the longer stamens and the style, and one between the style and each shorter stamen^a. This circumstance accounts for the bagging of the perianth. Native of the South of France, Italy, Switzerland, Silesia, Austria, Hungary.—Cultivated by Gerarde in 1597^b.

2. Root biennial, knobbed. Stem smaller than the preceding, upright, branched, hirsute, round, half a yard high. Leaves rough-haired, the floral ones almost always opposite, sessile: stem-leaves petioled, much smaller than those of the preceding, cordate, dull green, serrate. Calyx purplish ash-colour, hirsute. Petals violet or blue-purple, inodorous. Style two lines long, permanent. Silicles broader, blunter, shorter. Seeds five or six^c.

Native of Germany. Cultivated in 1597, by Gerarde. They both flower in may and june^d.]

The seed-vessels, when full ripe, become transparent, and of a clear shining white like satin, whence this plant has acquired the name of *White-Satin*. The branches used to be dried and preserved to place in chimneys. [Gerarde says it is called in English Pennie-flower or Money-flower, Silver-plate, Prick-songwoort; in Norfolk Satin and White Satin, and among our women Honestie. This last name now most commonly obtains, and I presume is derived from the transparency of the seed-vessels, in which the whole may be viewed, without deceit.—In German it is named *Mondviole*, *Mondkraut*, *Silberblume*, *Silberblatt*, *Flittern*, *Atlas-blume*, *Waldriegel*. In Dutch, *Maankruid*, *Penningkruid*, *Zilverbloem*. In Danish, *Maaneviol*. In Swedish, *Manefoler*. In French, *la Lunaire*, *Satinée*, *Satin blanc*, *Passe-satin*, *Medaille*, *Herbe aux lunettes*, *Bulbonac* (from its stromous or glandular root.) In Italian, &c. *Lunaria*.

Gærtner regards these two species as one, and asserts that there is no true distinction between them besides duration; that the colour of the calyx and corolla, or the odour of the flowers is nothing; and that Linneus's specific difference from the situation of the leaves is fictitious.

He describes the Silicle as very large, elliptic, attenuated at top into the style, at bottom into the peduncle, compressed, flat, two-celled, two-valved: partition like paper, white, parallel to the valves. Receptacle intervalvular, filiform, emitting on both sides towards the centre umbilical threads, fastened to the septum. Seeds few, two or three, seldom four in each cell, large, ovate-kidney-shaped, compressed like a lens, with a broad membranaceous rim, at first reddish, then brown, with very minute dots on them.

If the species be distinct, they are certainly very nearly allied, and have been confounded. According to Linneus, the root of the first is perennial; the flowers odorous; the leaves alternate except the lowest, and more rough-haired. In the second, the root is biennial; the flowers inodorous; the stem hirsute; the leaves opposite, at least in the cultivated plant: but he questions whether it be so always. He makes the latter a native of Scania; but it appears that it is the former which was found there. Gerarde, I know not by what mistake, says that they are found wild about Pinner, Harrow, Watford and Hornchurch. Johnson does not correct him: but Parkinson says, he

could never certainly be assured of it; and no one, that I have heard, has found them since.

Monf. Villars is of opinion that the lengthened pointed form of the fruit, is sufficient, independent of the duration, villose calyx, &c. to distinguish the first species from the second, which is that most commonly cultivated in old flower-gardens.

I have a seedling plant of this now (Aug. 21. 1797) before me, which has seven full-grown leaves on it, and two young ones springing from the centre. The former are of an oblong cordate form, from six to seven inches long, and five inches wide near the base, light green, villose on the upper surface, and rough-haired along the veins of the lower surface, which are very prominent; the edge is rather crenate than serrate: the petioles are seven or eight inches long, very rough-haired, and channelled.

A plant of the second year, now in full seed, is five feet high; the stem round, somewhat flexuose, quite simple, having no branches but those which produce the flowers; white pellucid hairs are scattered over it, and it is spotted with brownish purple towards the bottom. The root-leaves are gone, having left only the withered petioles. The stem-leaves are solitary, alternate, cordate-oblong, almost sagittate, drawn to a point, pale green, villose, the midrib and principal veins rough-haired, the edge unequally serrate, with larger and smaller serratures alternately: the lowest leaves are nine inches in length, and six in breadth where the petiole is inserted, which is three inches long: but this gradually shortens to about the middle of the stem, and then the other leaves to the top are sessile: the uppermost leaf (or two) is even jagged. From each axil to within a foot of the bottom comes out a single flowering stalk; the lower ones near a foot long, with a few leaves on them, like the stem-leaves, but smaller, sometimes opposite, but more frequently alternate; these have but few flowers on them: the upper flowering-stalks are shorter, have no leaves, but more flowers: and a bunch or spike of flowers terminates the whole. Silicles alternate, broad-elliptic, an inch and half long, an inch and quarter broad, on pedicels above an inch and half in length; the permanent style three eighths of an inch long. The number of seeds is uncertain, from two or three to six or seven, but some of these are generally abortive. I do not discern any traces of that attenuation of the filicle which Gærtner speaks of.

Mr. Miller has given the specific differences right, from the filicles; but in his descriptions he has reversed them;] ascribing large roundish pods to *L. rediviva*, and longer narrower pods to *L. annua*, which he says also has larger flowers, and of a lighter purple colour.

3. This is an annual plant, with a smooth branching stalk little more than a foot high. Leaves unequally pinnate: leaflets differing in size and form; some almost entire, others cut at their extremities into three parts; they are smooth, and of a lucid green. The flowers stand each upon pretty long slender peduncles, which come out from the side, and also at the end of the branches, in loose small clusters; they are of a purple colour, and are succeeded by oblong compressed pods, which hang downward, and when ripe are of a *feuille-mort* colour.

[Silicle ovate-oblong or rhomb-elliptic, flattened like a leaf, two-celled, two-valved: partition parallel to the valves, thin almost as a cobweb, generally glued fast to the valves when the seed-vessel is ripe, so that it escaped Linneus and others, who accordingly supposed the fruit to be one-celled. Seeds in each cell one or two, subcordate, or deeply emarginate at the umbilicus, compressed, somewhat rugged to the touch, obsoletely margined, brown.

There being certainly a partition in the filicle, this species ought not to be separated from *Lunaria*, since there is such a conformity in the fructification, although the outward habit be peculiar, and very different from the others^e.]

Native of Egypt. It flowers here in june and july;

^a Krockner, Scop. Villars.

^b Hort. kew.

^c Krockner.

^d Hort. kew.

^e Gærtner.

the seeds ripen the beginning of september, and the plants decay soon after.

[It was cultivated in 1757, by Mr. Miller^f.]

PROPAGATION AND CULTURE.

1. 2. These are propagated by seeds sown in the autumn. Those sown in the spring often miscarry, or lie a long time in the ground. They will grow in almost any soil, but love a shady situation; and require only to be kept clean from weeds. If the seeds be permitted to scatter, the plants will rise without farther care; and if they be left unremoved, they will grow much larger than those which are transplanted.

3. Sow the seeds in an open border, where they are to remain: if they be sown soon after they are ripe, the plants will come up in the autumn, and live through the winter, in a sheltered situation: these will flower early the following summer, whereby ripe seeds may be obtained: they may also be sown in the spring. Keep them clean, and thin them where they are too close. If the seeds be permitted to scatter, these also will come up without care.

[LUNARIA. See *Alyssum*, *Medicago*, *Marchantia*, *Of-munda*, *Rumex*.

LUNGWORT. See *Pulmonaria*.

————, Cow's or Bullock's. See *Verbascum*.

LUNULARIA. See *Marchantia*.

LUPINASTER. See *Trifolium*.]

LUPINUS (of Pliny and other Latin writers. From lupus, quod lupinâ naturâ terram voret; on account of its exhausting quality. Or rather απο της λυπης, whence Virgil calls Lupines tristis lupini, the bitterness of this pulse contracting the muscles, and giving a sorrowful appearance to the countenance. Vossius.)

Lin. gen. n. 865. Reich n. 939. Schreb. n. 1176. Gært. t. 150. Tourn. t. 213. Juss. 354.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bifid.

COR. papilionaceous. Banner cordate-roundish, emarginate, bent back at the sides, compressed. Wings subovate, almost the length of the banner, not fastened to the keel, converging below. Keel two-parted at the base, sickle-shaped upwards, acuminate, entire, the length of the wings, narrower.

STAM. Filaments ten, united, somewhat ascending, distinct above. Anthers five, roundish, and as many oblong.

PIST. Germ awl-shaped, compressed, villose. Style awl-shaped, ascending. Stigma terminating, blunt.

PER. Legume large, oblong, coriaceous, compressed, acuminate, one-celled.

SEEDS several, roundish, compressed.

OBS. The calyx is different in the several species.

ESSENTIAL CHARACTER.

Cal. two-lipped. Anthers five oblong, five roundish. Legume coriaceous.

SPECIES.

1. *Lupinus perennis*. Perennial Lupine.

Lin. spec. 1014. syst. 655. Reich. 3. 439. Mill. fig. t. 170. f. 1. Kalm. itin. 3. 96. engl. ed. 2. 155. Gron. virg. 172. 104. Curt. magaz. 202.

L. cæruleus minor perennis virginianus repens. Mor. hist. 2. 87. f. 2. t. 7. f. 6. Raii hist. 908.

Calyx alternate, without appendices, upper lip emarginate, lower entire.

2. *Lupinus albus*. White Lupine.

Lin. spec. 1015. syst. 655. Reich. 3. 440. hort. cliff. 499. upf. 209. mat. med. 171. Gært. fruct. 2. 325. Villars dauph. 3. 424. Ludw. et. t. 191. Blackw. t. 282. Kniph. cent. 4. n. 43.

L. sativus flore albo. Baub. pin. 347. Clus. hist. 2. 218.

L. sativus. Ger. 1043. 1. emac. 1217. 1. Raii hist. 906.—albus. Park. parad. 335. 1. theat. 1074. 1. Mor. 2. 7. 3.

L. flore albo. Riv. tetr. t. 25.

Calyx alternate, without appendices, upper lip entire, lower three-toothed.

^f Hort. kew.

3. *Lupinus varius*. Small blue Lupine.

Lin. spec. 1015. syst. 655. Reich. 3. 440. hort. cliff. 499. upf. 367. Willich. in nov. act. nat. cur. 4. 115. Kniph. cent. 7. n. 47. Gært. fruct. 2. 324.

L. sylvestris. Dod. pempt. 530. Allion. pedem. n. 1233.—flore cæruleo. Baub. pin. 348.

L. sylv. flore purpureo, semine rotundo vario. Baub. hist. 2. 291. Tourn. inst. 392.

L. flore cæruleo vel rubro. Riv. tetr. t. 27.

L. fl. cær. Ger. 1043. 3. emac. 1217. 3.

L. minimus cærul. Park. theat. 1074. 3. Raii hist. 907. 4.

L. sativus major. Best. syst. æst. 13. t. 3. f. 1.

Calyx half-whorled, appendicled, upper lip bifid, lower slightly three-toothed.

4. *Lupinus hirsutus*. Great blue Lupine.

Lin. spec. 1015. syst. 655. Reich. 3. 440. hort. cliff. 499. upf. 209.

L. lanuginosus latifolius humilis, flore cæruleo purpurascente, stoloniferus. Shaw. afr. 393.

L. peregrinus major f. villosus cæruleus major. Baub. pin. 348. prodr. 148. Raii hist. 907. 2. Mor. 2. 7. 5.

L. exoticus hirsutissimus. Baub. hist. 2. 289.

L. cæruleus maximus. Park. parad. 335. t. 337. f. 1.

L. major flore cæruleo. Ger. emac. 1217. f. 4.

Calyx alternate appendicled, upper lip two-parted, lower three-toothed.

5. *Lupinus pilosus*. Rose Lupine.

Lin. syst. 655. Reich. 3. 440.

L. peregrinus major, flore vario. Herm. ludgb. 386.

Calyx in whorls appendicled, upper lip two-parted, lower entire.

6. *Lupinus angustifolius*. Narrow-leaved blue Lupine.

Lin. spec. 1015. syst. 655. Reich. 3. 441. Gært. fruct. 2. 325. Kniph. cent. 4. n. 46. Knorr. del. 2. t. L. 7.

L. angust. cæruleus elatior. Raii hist. 908.

L. flore cær. minore. Riv. tetr. t. 28.

Calyx alternate appendicled, upper lip two-parted, lower entire.

7. *Lupinus luteus*. Yellow Lupine.

Lin. spec. 1015. syst. 656. Reich. 3. 441. hort. cliff. 499. upf. 209. Gært. fruct. 2. 325. Sauv. monsp. 215. Krock. files. n. 1157. Kniph. cent. 4. n. 47. Curt. magaz. 140.

L. sylvestris, flore luteo. Baub. pin. 348. Riv. tetr. t. 26.

L. flore luteo. Ger. 1043. 2. emac. 1217. 2. Park. parad. 336. 4. theat. 1074. Raii hist. 908.—semine compresso vario. Baub. hist. 2. 291.

L. luteus. Mor. 2. 7. 4.

Calyx in whorls appendicled, upper lip two-parted, lower three-toothed.

[8. *Lupinus cochinchinensis*. Single-leaved Lupine.

Lour. cochinch. 429.

Calyx appendicled in spikes, upper lip bifid, lower three-toothed, leaves simple, oval.

9. *Lupinus africanus*.

Lour. cochinch. 429.

Calyx appendicled five-cleft, peduncles many-flowered terminating, leaves ternate lanceolate, stem shrubby diffused.

10. *Lupinus trifolius*.

Cavan. hisp. 43. n. 65. t. 59.

Calyx five-toothed, legumes in spikes upright, leaves ternate ovate, stem herbaceous.

DESCRIPTIONS, &c.

These are mostly herbaceous, annual plants. The leaves digitate, with stipules at the base of the petiole. Flowers in terminating spikes, either placed alternately, or in a sort of whorl; some naked, others bracted^a. The first species is perennial; the ninth shrubby. The leaves are simple in the eighth, ternate in the ninth and tenth species. The flowers are white in the second sort, flesh-coloured in the fifth, yellow in the seventh, eighth and ninth, in the rest blue.]

^a Jussieu.

1. This

1. This has a perennial creeping root, from which arise several erect channelled stalks a foot and a half high, sending out two or three small side branches, garnished with digitate leaves, composed of from five to ten or eleven narrow spear-shaped leaflets, which join at their base, and stand upon very long foot-stalks, having a few hairs on their edges. The flowers grow in long loose spikes, which terminate the stalks, and are placed without order on each side; they are of a pale blue colour, and on short peduncles. These appear in June, and the seeds ripen in August, which are soon scattered if they are not gathered when ripe; for after a little moisture, the sun causes the pods to open with elasticity, and cast out the seeds to a distance all round.

[Linneus says that the leaves consist of eight lanceolate blunt smooth leaflets; and that the flowers are placed alternately in very long racemes, commonly two together from one point, each on its proper pedicel. According to Miller, the number of leaflets varies much, and the flowers are either in pairs, or else three or four from the same joint.

It is a native of Virginia and other parts of North America: and was cultivated in the botanic garden at Oxford in 1658.

Kalm informs us that Perennial Lupine is abundant in the woods in New Jersey, and that he has often found it thriving on very poor sandy fields, and on heaths, where no other plants would grow. The flowers, which commonly appear there in the middle of May, make a fine show by their purple hue. He was told that the cattle would eat these flowers very greedily, but found that they were not fond of this plant when they had any thing else. Horses, indeed, eat the flowers, but left the stalk and leaves; and if cattle eat the plant in the spring, it was from necessity. However he is of opinion that the Perennial Lupine might be tried on dry sandy heaths, and that means might be found to make it palatable to cattle.]

2. This has a thick upright stalk about two feet high, dividing towards the top into several smaller hairy branches. Leaves digitate, composed of seven or eight narrow oblong leaflets, joining at the base; they are hairy, of a dark grayish colour, and have a silvery down. The flowers are produced in loose spikes at the end of the branches; they are white and sessile. Legumes straight, hairy, about three inches long, containing five or six seeds, [which are roundish, flattened like a lens, extremely smooth and even, perfectly white without any spots, smaller than most of the others. The umbilicus or navel has a prominent ring.] It flowers in July, and the seeds ripen in the autumn. It grows naturally in the Levant, and is cultivated in some parts of Italy, as other pulse, for food. [Also in the south of France, in poor dry extensive plains, as a meliorating crop, to be ploughed in, where no manure is to be had, and the ground is too barren for clover or other better plants^b. With us it is used only among other annuals in the flower-garden, and was thus cultivated by Gerarde in 1596. ^c He says, it is named in English, Garden or tame Lupine, and of some, after the German name, *Figbeane*.

Ray, who has described this plant very well, remarks that the leaves, which are not unaptly named *digitate* by Jungius, have the sides contracted at night, and hang down, being bent back to the petiole^d. This was a phenomenon before the time of Linneus very little attended to. He also observed the cultivation of the Lupine in Tuscany, not only for food, but for improving the land by ploughing it in; a practice continued from the time of the ancient Romans, as may be seen by consulting Pliny and Columella.]

3. This is an annual plant, with a firm, straight, channelled stalk near three feet high, divided towards the top into several branches. Leaves digitate, composed of five, six, or seven oblong (or linear) leaflets, which join at their base, and are hairy. The flowers are produced in spikes at the end of the branches, standing round the stalk in half whorls; they are of a light blue colour. [Legumes ovate, thick, flattened a

little, villose, swelling where the seeds are, in a manner four-celled: partitions cellular-membranaceous, becoming obsolete, or wearing out when ripe. Seeds solitary, (two; or seldom more in all) large, irregularly round, beaked above the navel by a short knob, flattish on both sides, marked in the middle with a broad ferruginous spot^e. From which circumstance, I presume, and not from the corolla, Linneus derived the trivial name. Linneus, indeed, says the corolla is red, John Bauhin that it is purple, Rivinus that it is blue or red. With us it is blue. Native of the South of France, Spain, Italy and Sicily. It flowers in July, and was cultivated by Gerarde in 1596^f.]

4. This is an annual plant, which rises with a strong, firm, channelled stalk from three to four feet high, covered with a soft brownish down, dividing upward into several strong branches, garnished with digitate leaves, composed of nine, ten, or eleven wedge-shaped hairy leaflets, which are narrow at their base where they join the foot-stalk, but enlarge upward, and are rounded at the top where they are broadest; the foot-stalks of the leaves are three or four inches long. The flowers are placed in whorls round the stalks above each other, forming a loose spike, which proceeds from the end of the branches. They are large, and of a beautiful blue colour, but have no scent. They appear in July, and the seeds ripen in autumn. The pods are large, almost an inch broad, and three inches long, inclosing three large roundish seeds, compressed on their sides, very rough, of a purplish brown colour.

There is a variety with flesh-coloured flowers, commonly called Rose Lupine. It differs only in the colour of the flower, but that difference is permanent. [See the next species.

In its wild state this plant has quinate leaves, on long petioles; the leaflets are spatulate: the flowers blue: the legumes, and the whole plant clothed with long close ferruginous hairs. The flowers are often lateral^g.

The native place of this species is given very differently; by Linneus, Arabia, the islands of the Archipelago and Spain. Miller says it is supposed to be a native of India. Parkinson reports, that it is thought to come from beyond Persia, in Caramania. In the Kew catalogue it is assigned to the South of Europe and the Levant. It was cultivated here in 1629^h.

5. This has the stature of the preceding. It is a hairy plant. The corollas are pale flesh-colour, with the middle of the banner red. Leaves lanceolate, bluntishⁱ. Native of the South of Europe. Cultivated by Mr. Miller in 1731. It flowers in July and August^k.]

6. This has much the appearance of the third sort, but the stalks rise higher; the leaves have more leaflets, and stand upon longer foot-stalks; the leaflets are blunt; and the seeds are variegated. [According to Linneus, the leaflets are linear, and the flowers are blue.

Ray describes it as resembling the third sort, but more upright, and much taller, being eighteen inches high, and as tall as the white or cultivated Lupine. Leaflets narrow, commonly nine, blunter at the end than in the other sorts, so as to have the appearance of being truncate.—Seeds ovate-globular, equally turgid all round, dusky ash-coloured variegated with dusky branching spots, and whitish dots fewer in number; they are smooth, and smaller than all the rest. Navel obsolete^l.

Native of Spain and Sicily. Cultivated in 1731, by Mr. Miller^m. Mr. Ray informs us, that the seeds were sent to him from Cadiz; it is probable, therefore, that he cultivated it before 1686.]

7. Stem a foot high, branching. Leaves digitate, composed of seven, eight or nine narrow hairy leaflets, near two inches long. Flowers yellow, odorous, in loose spikes at the end of the branches, composed of several (six or seven) whorls, with spaces between them, (and about five flowers in each) terminated by three

^e Gærtner.^f Hort. kew.^g Linn.^h Hort. kew. from Park. par.ⁱ Linn. syst.^k Hort. kew.^l Gærtner.^m Hort. kew.^b Villars.^c Hort. kew.^d Hist. 907.

er four flowers, sitting close at the top; these are succeeded by ovate flattish hairy pods, about two inches long, standing erect, and inclosing three, four or five roundish seeds, a little compressed, yellowish white, variegated with dark spots.

[According to Krocker, the stem is upright, from a foot to eighteen inches high. Leaves on very long petioles; (near three inches in length:) leaflets nine, oblanceolate-linear, quite entire, divided by a thick nerve. Lower lip of the calyx trifid, the segments linear. Bractes of the whorls ovate, concave, blunt, upright.]

Native of Sicily (and Silesia) flowering in June and July. [Cultivated by Gerarde in 1596ⁿ.

8. Stem herbaceous annual roundish upright striated two feet high, with ascending branches. Leaves emarginate smooth whitish alternate. Flowers yellow, terminating, in spikes. Legume oblong turgid bluntly three-cornered tailed smooth, containing several orbicular uncinated seeds. Native of Cochinchina and Bengal.

9. Stem shrubby, three feet high, with diffused branches. Leaves smooth, on alternate petioles. Flowers yellow. Native of the eastern coast of Africa^o.

10. Stem simple, a foot high, angular, somewhat rugged at the angles. Leaves alternate, crenate-toothed, glaucous beneath, somewhat rugged at the nerves, two opposite subsessile, the third petioled; the petiole an inch and half long, blunt beneath, channelled above, running down the stem which it marks with grooves. Stipules awl-shaped, fixed on each side to the base of the petiole. Flowers blue, in short axillary spikes. Calyx short, subvillose, hemispherical; the upper teeth very short, divaricating, the three lower longer, the middle one more produced. Banner of the corolla ovate plaited: wings shorter, concealed within it: keel almost equal to it, compressed, parted at bottom, with capillary claws. Legume upright, ending in a horned point, one-celled, many-seeded, with three grooves at the back. Seeds subovate; subreniform, a little compressed. Native of Mexico. Cultivated in the royal garden at Madrid, before 1791. It flowers there in Julyⁿ.]

PROPAGATION AND CULTURE.

These plants are cultivated for ornament in the borders of the flower-garden, where they are sown in patches with other annuals in the spring, where they are to remain; thinning them where they are too close, and keeping them clean from weeds.

To have a succession of flowers, the seeds may be sown at different times, viz. in April, May and June, but the seeds of those only which are first sown will ripen.

1. The first sort only is perennial. This, however, is propagated by seeds as the former, which should be sown where the plants are to remain; for although the root is perennial, yet it runs so deep into the ground that it cannot be taken up entire; and if the root is cut or broken, the plant seldom thrives well after. I have traced some of the roots of this plant, which have been three feet deep in the ground in one year from seed, and spread out as far on every side, so that they must have room, therefore the young plants should not be left nearer than three feet asunder. If this plant is in a light dry soil, the roots will continue several years, and produce many spikes of flowers; and although the usual season of flowering is in June and July, yet when rain falls in August, fresh stalks arise from the roots, which flower at the end of September, or beginning of October.

2. The seeds of the second sort were formerly used in medicine; and are sometimes eaten in Italy, but they are bitter, and are accounted hard of digestion.

This and the small blue Lupine (n. 3.) are frequently sown in Italy, to manure the ground, especially that which is intended for vineyards. They plough them into the ground as soon as they begin to flower.

4. 5. These are generally late in ripening the seeds, so that unless the autumn prove warm and dry, they do not ripen; therefore the best way to have good

ⁿ Hort. kew.

^o Loureiro.

ⁿ Cavanilles.

seeds, is to sow them in September close to a warm wall on dry ground, where they will live through our ordinary winters; and these plants will flower early the following summer, so there will be time for the seeds to ripen before the rains fall in the autumn, which frequently causes the seeds to rot which are not ripe. If a few of the seeds of both are sown in small pots the beginning of September, and when the frosts begin, the pots are removed into a common hot-bed frame, where they may be protected from hard frost, but enjoy the free air in mild weather, the plants may be thus secured in winter; and in the spring they may be shaken out of the pots, preserving the earth to their roots, and planted in a warm border, where they will flower early, and produce very good seeds.

All the sorts of Lupines make a pretty appearance when they are in flower, but the yellow sort is preferred for its sweetness, though the flowers of this are of short duration, especially in warm weather; therefore the seeds should be sown at several times, that there may be a succession of flowers through the season, for they will continue flowering till they are stopped by hard frost; and those which come in the autumn to flower, will continue in beauty a longer time than the early ones. If some of the seeds are sown in the autumn on a warm border, the plants will often live through the winter, and flower early in the spring.

[Lupulo similis. See *Urtica*.

LUPULUS. See *Dalechampia*, *Gouania*, *Humulus*.]

LUTEOLA. See *Datisca* and *Refeda*.

[LUTUM. See *Refeda*.

LYCHNANTHUS. See *Cucubalus*.]

LYCHNIDEA. See [*Buchnera*, *Erinus*,] *Phlox*, *Selago*.

LYCHNIS (of Pliny. *Λυχνίς* of Theophrastus and Dioscorides. From *λυχνος*, *lucerna*, a lamp. The cotton of the leaves having been used to make wicks; or the flowers being of a flame-colour; or perhaps because the capsule is shaped like a lamp: but all this is conjecture.)

Lin. gen. n. 584. Reich. n. 636. Schreb. n. 796.

Gertn. t. 130. Tournef. t. 175. Juss. 302.

Class. 10. 4. Decandria Pentagynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. Perianth one-leafed, oblong, membranaceous, five-toothed, permanent.

COR. Petals five: claws the length of the calyx, flat, margined: border often cloven, flat.

STAM. Filaments ten, longer than the calyx, alternately shorter, each of these fixed to a claw of each petal. Anthers incumbent.

PIST. Germ subovate. Styles five, awl-shaped, longer than the stamens. Stigmas reflex against the fun, pubescent.

PER. Capsule approaching to an ovate form, covered, one, three or five-celled, five-valved.

SEEDS very many, roundish.

OBS. *L. dioica* has the sexes distinct, and the capsule one-celled, ten-valved at the tip.—In *L. chalcidonica* it is also one-celled, but five-valved at the tip.

L. Viscaria has undivided petals, and a five-celled capsule.

L. quadridentata varies with three, four and five styles.

L. alpina has four styles. (Six and more. Villars.)

The greater part of the species (1 to 4, 10 to 12) is one-celled.

ESSENTIAL CHARACTER.

Cal. one-leafed, oblong, even. Petals five, with claws, and a subbilid border. Caps. five-celled. (in most one-celled. G.)

SPECIES.

1. *Lychnis chalcidonica*. Scarlet *Lychnis*.

Lin. spec. 625. Syst. 435. Reich. 2. 395. hort. cliff.

174. upf. 115. Gertn. fruct. 2. 229. Gmel. fib.

4. 144. Thunb. jap. 188. Mor. hist. f. 5. t. 21.

f. 14. Ger. 380. emac. 466. Curt. magaz. 257.

2. *L. hirsuta*, flore coccineo, major. Bauh. pin. 203. Raii hist. 992.

L. chalcid. flore simplici miniato. Park. parad. 253. t. 255. f. 3.

- Flos constantinopolitanus. *Dod. pempt.* 178. *Besl. exst. astriv.* 9. t. 5. f. 1.
Single-flowered Scarlet Lychnis.
β. *L. hirsuta*, flore candido, major. *Tournef. inst.* 334.
Single-flowered Blush Lychnis.
γ. *L. chalced.* flore pleno miniato f. aurantiaco. *Boerb. lugdb.* 1. 211.
Double-flowered Scarlet Lychnis.
Flowers fascicled fastigate.
2. *Lychnis Flos cuculi.* Red-flowered Meadow Lychnis.
Lin. spec. 625. *syst.* 435. *Reich.* 2. 395. *hort. cliff.* 174. *fl. succ.* n. 408. *Huds. angl.* 199. *Wither. arr. ed.* 3. 432. *Curt. lond.* 1. 33. *abr. t.* 4. *Lightf. scot.* 239. *Relb. cant.* n. 336. *Hall. belv.* n. 921. *Scop. carn.* n. 528. *Pollich. pal.* n. 438. *Leers. herb. born.* n. 349. *Neck. gallob.* 202. *Villars dauph.* 3. 638. *Krock. files.* n. 698. *Gmel. fib.* 4. 145. *Fl. dan.* t. 590. *Kniph. cent.* 11. n. 65. *Weigel. fl. pomer.* n. 292.
α. *Caryophyllus pratensis.* *Tabern.* 291.—flore laciniato simplici f. *Flos cuculi.* *Baub. pin.* 210.
L. prat. flore lacin. simpl. *Mor. hist.* 2. 537. f. 5. t. 20. f. 8.
L. plumaria sylvestris simplex. *Park. parad.* 253. *Raii hist.* 1000. *syn.* 338. *Pct. brit.* t. 56. f. 6.
Armerius sylvestris. *Dod. pempt.* 177.
A. pratensis. *Ger.* 480. 1. 2. *emac.* 600. 1.
Flos cuculi. *Trag.* 403. *Lonic.* 1. 171. 1.
Cuculi flos, Odontites quibuldum. *Baub. hist.* 3. 347.
Odontites Plinii. *Clus. hist.* 1. 292. 2.
Single red-flowered Meadow Lychnis.
β. Single white-flowered Meadow Lychnis.
Armoraria prat. flore albido elegantiori. *Phyt. brit. & Merr. pinn.*
γ. *L. caule erecto, calycibus striatis acutis, petalis dif-*
fectis. *Mill. fig.* 114. t. 170. f. 2.
L. plumaria multiplex. *Park. parad.* t. 255. f. 5.
Armoraria pratensis flore pleno. *Ger. emac.* 600. 3.
Phyt. brit. & Merr. pin.
Odontites flore pleno. *Clus. hist.* 1. 293. 1.
Double red-flowered Meadow Lychnis.
Pctals quadrifid, fruit roundish one-celled.
- [3. *Lychnis alpestris.*
Lin. syst. 435. *suppl.* 244. *Retz. obs.* 5. 4. n. 62.
Alfina alpina glabra, fol. reflexo. *Pluk. phyt.* t. 75. f. 5.
Pctals four-cleft crowned, leaves recurved.
4. *Lychnis quadridentata.*
Lin. syst. 435. *Reich.* 2. 396. *Scop. carn.* n. 519.
Silene quadrifida. *Lin. spec.* 602. *Jacqu. austr.* 2. t. 120.
Cucubalus quadrifidus. *Lin. spec. ed.* 1. 414.
L. alpina, &c. *Scgu. veron.* 3. 186. t. 5. f. 1.
L. saxatilis, &c. *Till. pif.* 106.
L. viscosa angustifolia major. *Baub. pin.* 205.
Pctals four-toothed, stem dichotomous, leaves smooth re-
curved.
5. *Lychnis coronata.* Chinese Lychnis.
Lin. syst. 435. *Thunb. jap.* 187.
L. grandiflora. *Jacqu. ic. collect.* 1. 149. *L'Herit. stirp. nov.* 2. t. 18.
Smooth, flowers axillary and terminating solitary, petals
lacinated.]
6. *Lychnis Viscaria.* Viscous Lychnis or Catchfly.
Lin. spec. 625. *syst.* 435. *Reich.* 2. 396. *fl. succ.* n. 409. *Huds. angl.* 199. *Wither. arr. ed.* 3. 433. *Lightf. scot.* 239. *Hall. belv.* n. 927. *Scop. carn.* n. 529. *Pollich. pal.* n. 439. *Gmel. fib.* 4. *Villars dauph.* 3. 638. *Krock. files.* n. 699. *Fl. dan.* t. 1032. *Kniph. cent.* 12. n. 69.
L. sylvestris viscosa rubra angustifolia. *Baub. pin.* 205. *Park. theat.* 637. f. 6. *Raii hist.* 1000. *syn.* 340. *Pct. brit.* t. 57. f. 3.
L. viscosa sylv. præcox flore incarnato. *Mor. hist.* f. 5. t. 20. f. 6.
L. sylvestris 4. *Clus. hist.* 1. 289. 2.
L. sylv. purpurea. *Tabern.* 294.
Odontidi f. Flori cuculi affinis Lychnis sylvestris. *Baub. hist.* 3. 348. 2.
Muscipula angustifolia. *Ger. emac.* 601. 3.

- β. *Floribus plenis.* Catchfly with double flowers.
Pctals nearly equal.
7. *Lychnis alpina.* Alpine Lychnis.
Lin. spec. 626. *syst.* 435. *Reich.* 2. 397. *fl. succ.* n. 410. *Hall. belv.* n. 922. t. 17. *Allion. pedem.* n. 1591. *Villars dauph.* 3. 639. *Fl. dan.* t. 65.
Silene lapponica. *Lin. lapp.* n. 185. *Hall. belv. ed.* 1. 376. t. 7.
L. pyrenaica umbellifera minima. *Tournef. inst.* 338.
Pctals bifid, flowers four-styled.
- [8. *Lychnis læta.* Small Portugal Lychnis, or Champion.
Ait. hort. kew. 2. 118.
Pctals bifid, flowers solitary, leaves linear-lanceolate
smooth, calyxes ten-keeled.]
9. *Lychnis fibrica.* Siberian Lychnis.
Lin. spec. 626. *syst.* 435. *Reich.* 2. 397.
Pctals bifid, stem dichotomous, leaves somewhat rough-
haired.
10. *Lychnis diurna.* Rose-flowered Lychnis, or Wild Red Champion.
Sibth. oxon. n. 424.
L. dioica. *Lin. spec.* 626. *syst.* 436. *Reich.* 2. 397. *hort. cliff.* 171. *fl. succ.* n. 411. *Curt. lond.* 2. 32. *Lightf. scot.* 240. *Hall. belv.* n. 923. *Gmel. fib.* 4. 137. *Neck. gallob.* 201. *Scop. carn.* n. 530. 2. *Pollich. pal.* n. 440. β. *Leers. herb. born.* n. 350. *Allion. pedem.* n. 1592. *Krock. files.* n. 700. *Kniph. cent.* 11. n. 64. *Weigel. fl. pomer.* n. 294. A.
L. dioica mas. *Huds. angl.* 199.
L. dioica diurna. *Wither. arr. ed.* 3. 431.
L. rubra dioica. *Villars dauph.* 3. 639.
L. sylvestris f. aquatica purpurea simplex. *Baub. pin.* 204. *Tournef. inst.* 335.
L. sylv. rubello flore. *Lob. obs.* 181. 2. *Ger. emac.* 469. 1. *Raii hist.* 994. *syn.* 339. *Pet. brit.* t. 57. f. 6.
L. sylv. flore rubro. *Park. theat.* 630. 2.
L. sylv. purp. *Dod. pempt.* 171. 1.—simplex. *Mor. hist.* 5. 21. 23.
Cucubalus. *Lin. lapp.* n. 182.
Melandrium Plinii genuinum. *Clus. hist.* 1. 294. 1.
Ocymastrum rubrum. *Tabern.* 299.
Ocymoides purpureum. *Baub. hist.* 3. 343. *Camer. epit.* 739.
β. *L. purpurea multiplex.* *Baub. pin.* 204. *Ger. emac.* 472. 1.
Double Rose-flowered Lychnis.
Flowers dioecous, capsules one-celled roundish.
11. *Lychnis vespertina.* White-flowered Lychnis, or Wild White Champion.
Sibth. oxon. n. 425.
L. dioica β. *Lin. spec.* 626. *Reich.* 2. 398. β. *Relb. cant.* n. 337. *Hall. belv.* n. 923. β. *Scop. carn.* n. 530. 1. *Pollich. pal.* n. 440. α. *Allion. pedem.* n. 1592. B. *Krock. files.* n. 700. β. p. 78. *Fl. dan.* t. 792. *Berg. phyt.* 2. 23. *Plenck. ic.* 355.
L. dioica foemina. *Huds. angl.* 199. β.
L. dioica vespertina. *Wither. arr. ed.* 3. 431. var. 2.
L. alba dioica. *Villars dauph.* 3. 640. *Weig. fl. pomer.* 294. B.
L. alba. *Mill. dict.* n. 4.
L. sylvestris alba simplex. *Baub. pin.* 204. *Tournef. inst.* 335. *Garid.* 296.
L. sylv. flore albo. *Ger. emac.* 470. f. 8. *Park. theat.* 630. 1. *Raii hist.* 994. *syn.* 339. *Pet. brit.* t. 57. f. 5.
L. sylv. hirsuta alba simplex. *Mor. hist.* 5. 21. 21.
Cucubalus. *Lin. hort. cliff.* 170.
Ocymoides album. *Baub. hist.* 3. 342.—majus. *Matth.* 997. *Dalech.* 682.
β. *L. alba multiplex.* *Baub. pin.* 204. *Ger. emac.* 472. 2.
Double White-flowered Lychnis.
Flower dioecous, capsules one-celled conical.
12. *Lychnis apetala.*
Lin. spec. 626. *syst.* 436. *Reich.* 2. 398. *fl. succ.* n. 412. *Gmel. fib.* 4. 137. *Fl. dan.* t. 806.
Cucubalus. *Lin. lapp.* n. 181. t. 12. f. 1.
Calyx inflated, corolla shorter than the calyx, flowers her-
maphrodite, one or two on the stem.

DESCRIPTIONS, &c.

1. [The single Scarlet Lychnis has a perennial root: stems three feet high, upright, stiff, round, jointed, hairy: at every joint two large leaves of a brownish green colour: flowers terminating, in a large flat-topped tuft, consisting of several bundles. Corolla of a scarlet or bright red orange colour, varying to white, bluish, and variable, that is, pale red, growing paler till it becomes almost white, (var. β .); petals broad at the end and emarginate.—Capsule clothed with the membranaceous calyx, striated with ten villose nerves, ovate, narrowing downwards, smooth, one-celled, opening into five parts at the top. Receptacle columnar, cylindrical, free, grooved and excavated, naked. Seeds numerous, angular-kidney-shaped, rugged with acuminate tubercles in rows, ferruginous^a.

Native of Russia, and Japan. Cultivated in 1596, by Gerarde^b. In his time it was common in almost every garden; but he does not mention any of the varieties. Parkinson in 1629, and Johnson in 1633, have the varieties; but the latter says, that “the white and bluish single and the double one are not to be found but in the gardens of our prime Florists.”

These authors call it Flower of Constantinople, Champion of Constantinople, Flower of Bristow, and Nonesuch; it seems to have lost these names, and to be known generally by the name of Scarlet Lychnis. The French call it *Lychnide de Calcedoine*, *Croix de Jerusalem* ou de *Malte*. The Italians also name it *Croce di Cavaliere*; the Spaniards *Cruces de Jerusalem*; and the Portuguese *Cruz de Malta*.]

γ . The variety with double flowers is a valuable plant, the flowers are very double, and of a beautiful scarlet colour. This has a perennial root, from which arise two, three, or four stalks, according to the strength of the roots; these in rich moist land, grow upwards of four feet high; the stalks are strong, erect, and hairy. They are garnished the whole length with spear-shaped leaves fitting close to the stalks, placed opposite; and just above each pair of leaves, there are four smaller leaves standing round the stalk. The flowers are produced in close clusters fitting upon the top of the stalk; when the roots are strong, the clusters of flowers will be very large, and make a fine appearance. They appear the latter end of June, and in moderate seasons continue near a month in beauty. The stalks decay in autumn, and new ones arise in the spring.

2. [Root perennial, brownish white, subacrid. Stems from one to three feet high, upright, somewhat angular and grooved, swelled at the joints, purplish. Linneus remarks, that they are procumbent, and become upright at the time of flowering. Stem-leaves opposite, connate, lanceolate, keeled, upright, smooth. Peduncles opposite, with one generally between them. Calyx ten-angled, of a deep purple colour. Corolla pink or purplish red, varying sometimes to white; the border of the petals dividing into four segments, of which the two outer are shorter and narrower; the claws have two small spear-shaped teeth at the top. Capsule one-celled, the mouth having five teeth which turn back. Seeds flattish, rugged, of a brown ash-colour^c.

Native of most parts of Europe in moist meadows: flowering in May and June.

This plant has a variety of names in English, as Meadow Pink, Wild Williams, Cuckow Flower, Ragged Robin, Crow-flower. Parkinson calls it feathered wild Champion; Gerarde, Crowe flowers, wilde Williams, marsh Gilloflowers, and Cockowe Gilloflowers; Ray, Meadow Champion; to Mr. Curtis Meadow Lychnis seems most eligible. Several plants have the name of Cuckow-flower from their appearing about the same time with that bird. Gerarde says the true Cuckow-flower is *Cardamine pratensis*. Shakespeare's Cuckow-buds are of yellow hue, and probably *Ranunculus* or Crowfoot. Orchis, Arum and Oxalis or Wood-forrel are all called by some after the Cuckow. Goats, sheep and horses are said to eat it; but it seems generally agreed that none of our domesticated quadrupeds are fond of it. The beauty of the

^a Gærtner.

^b Hort. kew.

^c Curtis.

flowers entitles it to a place in the gardens of the curious^d.]

γ . The variety with double flowers is frequently cultivated in flower-gardens for ornament. It only differs from the single in the multiplicity of the petals, and is commonly known by the title of Double Ragged Robin. [Some call it, says Parkinson, the Fair Maide of France. It is sometimes found wild in England, as near Bungay in Suffolk by Mr. Woodward.

3. Root perennial. Stems a span high, upright, smooth. Leaves linear-lanceolate, smooth. Flowers in a dichotomous panicle. Calyx smooth, with blunt teeth. Petals white, the length of the calyx. Styles four or five. Capsule longer than the calyx^e. Native of Switzerland and Austria.

4. Stems a span high, with the upper joints viscid. Leaves lanceolate, an inch long. Calyx viscid, three lines long, with headed villose hairs on it, ten-streaked, bluntly toothed. Petals white, emarginate, with a tooth on each side above the middle, border four-lobed, spreading, the middle lobes larger and rounded, the lateral ones acute; segments of the earlets blunt, ovate. Germ on a columnar receptacle. Capsule one-celled, six-valved, with a linear receptacle. Seeds compressed, kidney-shaped (to fifty) rufous, with the edges lacerate-ciliate. Styles four or five^f, very seldom three. Native of Austria.

5. The whole plant is smooth. Stem simple round upright, a foot high. Leaves opposite, embracing, oblong-ovate, acute, entire, an inch or a little more in length. Flowers aggregate, about three, sessile. Calyx ten-angled. Petals gashed, crenate-multifid. Filaments the length of the tube of the corolla, filiform. Germ superior. Styles five, much shorter than the tube of the corolla^g. Native of China and Japan. Introduced in 1774, by John Fothergill, M.D. It flowers in June and July^h.]

6. This has long, narrow, Grass-like leaves, which come out from the root without order, sitting close to the ground; between these come up straight single stalks, which in good ground rise a foot and half high; at each joint of the stalk come out two leaves opposite, of the same form as the lower, but decreasing in their size upwards; under each pair of leaves, for an inch in length, there sweats out of the stalk a glutinous liquor, which is almost as clammy as birdlime, so that ants and other insects which happen to light upon these places, or attempt to creep up to the flowers, are fastened to the stalk, whence this plant has the title of Catchfly. The stalk is terminated by a cluster of purple flowers, and from the two upper joints come out on each side of the stalk a cluster of the same flowers, so that the whole forms a sort of loose spike. These appear in the beginning of May, and the single flowers are succeeded by roundish seed-vessels, which are full of small angular seeds ripening in July.

[Root perennial, yellowish on the outside, white within. Stem round not grooved, smooth. Leaves connate, upright, ciliate at the base, lanceolate-acuminate, quite entire, with a red tip, three inches long, three lines wide, bright green, smooth. Flowers terminating in close whorls all together forming a spike; others come out from the axils on long peduncles. Very small lanceolate red bractes separate the flowers; which are seven lines or somewhat more in diameter. Calyx purple, swelling, viscid, with ten red streaks. Petals entire, sometimes slightly waved about the edge and emarginate at the top, bright red-purple, with white claws, almost half an inch long, and three lines wide, having two appendices at the throat. Capsule conical, five-celled. Seeds kidney-shaped, rugged.—It varies with white flowers: and is sold in foreign countries for *Centaurium minus*ⁱ.

Native of most parts of Europe, in dry and mountainous pastures, especially among bushes. In Britain it is rare. Llwyd and Tancred Robinson found it in Wales. Thomas Willifell upon the rocks in Edinburg Park. And Mr. Crowe near Croyden, in Surrey. It

^d Curtis.

^e Linn. suppl.

^f Scopoli.

^g Thunberg.

^h Hort. kew.

ⁱ Pollich, Krockner, Haller.

flowers in may and june. In English it is named, narrow-leaved Catchfly or Limewort, Red German Catchfly, Catchfly Cuckow-flower, and Viscous Lychnis.

7. Root perennial. Root-leaves in a tuft, linear, slightly keeled, acute, smooth, thickish, somewhat channelled, subciliate at the base. Stem a finger, half a foot or a span in height, simple, round, upright, having four or five joints flatted a little at top. Stem-leaves narrow, pointed, upright, somewhat rugged; the uppermost membranaceous. Flowers collected into a thyrse or corymb, on three-flowered very short peduncles. Bractes between the flowers subdiaphanous. Calyx pale, with blunt concave claws. Petals purple, cloven half way, sharp, without any crown. Anthers red. Germ roundish. Styles four or five. It resembles the preceding species very much, but is not viscous^k. It is only half the size; the petals are not entire, but cloven. The pistils, which are often six and even more, are shorter than the petals before the flowers open, but during the time of flowering lengthen gradually till they become longer than the petals^l.

Native of the Alps in Europe, and Siberia. Cultivated in 1768 (1759) by Mr. Miller. It flowers in april and may^m.] Mr. Miller says the beginning of june, and that the seeds ripen in august.

[In the Kew catalogue it is marked as biennial. Allione says it is perennial: that the calyx is inflated; petals deeply cut, with the coronal scales linear: styles five, longer than the flower.

8. This is an annual plant, native of Portugal. Introduced in 1778, by Edward Gray, M.D. It flowers in julyⁿ.]

9. Root perennial, from which arise many narrow leaves sitting close to the ground. Stalks a foot high, dividing into branches by pairs. Flowers from the division of the branches, and at the top of the stalks. Petals white. Capsules roundish. Seeds small, angular.

[This has the stature of *S. rupestris*, but the root is perennial, the leaves are less smooth, and the five styles distinguish the plant. Native of Siberia^o. Cultivated by Mr. Miller in 1759.

10. Root perennial, the thickness of the little finger, white, of a slightly acrid and bitter taste, furnished with numerous fibres. Stalks several, upright, from one to three feet high, round, hirsute, jointed, purple; the joints swelled; the uppermost branches forked. Leaves opposite, connate, ovate-acuminate, hirsute, slightly nerved. Calyx hairy, striated, purple, five-teethed; in the female more turgid. Petals purple, obcordate: at the bottom of the lamina or broad spreading part are two or four small upright white blunt appendices. Germ ovate, surrounded by a nectary at the base. Capsule one-celled, with ten teeth at the mouth. Seeds gray, somewhat rugged.

Native of many parts of Europe, in moist shady ditches, by the sides of hedges, and sometimes in woods, flowering in may and june^p.

Johnson in Gerarde calls this plant Red or Rose wild Campion; Parkinson, Red Wild Campion; and Ray, Red-flowered Wild Campion.]

β. A variety of this with double flowers is cultivated in gardens by the name of Red Batchelor's Buttons. It is an ornamental plant, and continues long in flower.

11. The White Wild Campion was regarded as a distinct species from the preceding or Red by all the old Botanists. Linneus supposed them to be only varieties, and he has been followed by most modern botanists; by several however with marks of doubt. I am not for multiplying species; and the less so, because this rage which prevailed so much at the beginning of this century, seems to be recurring at the end of it. In this case however I must own it was always my opinion that the Red and White Lychnis differed specifically. I had indeed almost given up my opinion to Linneus's superior authority and judgement; but finding on examination that I am supported by

several good judges, I have ventured to separate them.

The two plants agree in most points of the above description, they certainly correspond in structure, both have male and female flowers on separate roots, and both are sometimes found with hermaphrodite flowers^q. There are many circumstances however in which they differ, whether sufficiently or not to constitute different species, let others determine from more accurate examination or from culture.

Mr. Miller, who regards them as distinct species, informs us that] the stalks of this are branched out much more than in the Red, the leaves are longer and more veined, the flowers stand singly upon pretty long peduncles, and are not produced in clusters as in the Red, it is very hairy, the calyx is more swollen, and it flowers a month after the Red.

Ray observes, that in the Red the stems are weaker and more flaccid than in the White.

Dr. Withering remarks, that in the White the petals on the male plant have the laminae divided down to the claws, but in the female they are only cloven half way down. Whether this may be the case in the Red, I have not an opportunity of observing, that not growing in the country where I now am, and authors not having remarked the circumstance.

Allione follows Linneus, Haller, Scopoli, &c. in not separating this from the preceding. He thinks however that they are specifically different, because he observes that the Red grows only in mountainous and watery places, and that it is not so much branched and caespitose as the White.

Krocker reports, that in Silesia the plant with white flowers is entirely different from that which has red: the stem being higher, more diffused, suberect; the leaves longer but narrower, less hirsute, with whitish veins; the joints of the stalk bigger; calyxes in the male cylindrical, in the female ventricose, in both longer than in the Red, whitish, with ten green veins; the claws of the petals longer, the petals themselves white, with white appendices or earlets; anthers ash-coloured; styles white: this is common in fields &c., that only on mountains.

But the late lamented Dr. John Sibthorp is the first among the moderns who has dared to give them as distinct species; having remarked that in the Red Lychnis the capsules are roundish, and that its scentless flowers stand open through the day; whereas the White has conical capsules, and its odoriferous flowers open only towards evening. Hence his specific characters, and elegant trivial names: both which I have adopted.

The colour, with other circumstances relative to the two plants, led Mr. Curtis to suspect that they are not varieties but distinct species, and he remarks that cultivation and farther attention to them will probably enable him to speak of this with more certainty. Mr. Robson, having cultivated both, he is satisfied they are distinct species, though both liable to change the colour of their flowers to flesh-colour^r.

To all this we may add that the Red and White affect different situations, and are never found promiscuously. The White is frequent in fallow fields, sometimes so plentifully as to make them appear at a distance quite white; but the Red is never found there. The White seems to prefer dry soils, and the Red moist ones. The former is very common in Sweden, not so the latter. No one ever saw the Red Campion in the County of Cambridge, though the White is common there, and the Red no less common in some of the neighbouring counties. Mr. Lightfoot says, the rocks in the island of Ailsa are covered with the red-flowered only. According to Krocker, the White is very common in Silesia on the borders of fields, but the Red is found only in the mountainous parts. So also says Allione, that the Red occurs in wet shady places and springs at the foot of the Alps; but that the White is every where common in the plains by hedges, ditches and highways. And Pollich, that the White is every where on banks, among bushes, by

^k Linn. Suec. & syst.

^l Villars.

^m Hort. kew.

ⁿ Ibid.

^o Linn. spec.

^p Curtis.

^q Withering.

^r Ibid.

walls and among rubbish; the Red in woods and hedges. And Villars, that the Red occurs on the Alps and mountains by the sides of streams; differing from the White not only in colour and place, but in having the upper leaves coloured, and the calyx villose without any distinct veins. The White is found in stony places, by way sides, in low situations; its calyx is thicker, harder, almost cartilaginous, covered with veins forming a kind of net.

There are several varieties of the White Campion. 1. With purple or bluish-coloured flowers. Mr. John Templeton of Orange Grove near Belfast informs me, that a White female Campion brought into his garden, having red males not far distant, but no white ones, produced offspring with bluish-coloured flowers.—2. With quadrifid petals.—3. With hermaphrodite flowers. Both red and white indeed are subject sometimes to this variation. Many authors mention it, but it does not seem to occur very frequently. Linneus says, *rarius hermaphrodita*: I found it only once, namely on the sixth of June 1765, near Cambridge, among other plants which had male and female flowers distinct. The germ was of the usual size, full of seeds; the pistils were very short, the anthers four times as large as in the common male flowers, with the pollen of a dusky purple colour. Though I had not the good fortune to exhibit the monster, as Linneus did in the year 1752, to above an hundred pupils, *ne de existentia ejus quis dubitet*, yet I shall hope to meet with the credit of the candid; though Leers says that he never had the good fortune to see it.]—4. With double flowers, cultivated in gardens by the name of Double White Batchelor's Buttons. An ornamental plant in the flower-garden, though it does not make so good an appearance as the Double Red.

12. [Root fibrous. Stem single, upright, a span high, entire, having three or four joints, scarce apparently rugged. Leaves opposite, linear-lanceolate, the upper ones shorter and narrower; at the root are four leaves, from two neighbouring joints. A single flower terminates the stem, nodding horizontally. Calyx ovate, inflated, with ten brown hispid raised lines, and a five-toothed blunt mouth, almost closed. Petals oblong; claws three-cornered flat, upright; border scarcely any, emarginate, dusky, shorter by half than the calyx. Stamens shorter than the calyx, but rather longer than the corolla. Germ oblong. Styles five, a little longer than the stamens, but shorter than the calyx. Capsule cylindrical, oblong, a little attenuated in the middle, blunt, concealed within the calyx, one-celled.

Although it be very distinct and constant, with hermaphrodite flowers, yet there is no doubt but that it owes its origin to *L. dioica*.

Native of the mountains of Lapland and Siberia. In the latter it occurs with several flowers on the stem*. Cultivated by Mr. Miller in 1759.]

Mr. Miller has another sort, which he calls *L. lusitana*, it having been introduced from Portugal by John Browning, Esq. of Chelsea, Master in Chancery, a great cultivator of exotic plants, before 1759. He thinks it probably a variety of one with single flowers that is wild in that country, and that it approaches nearest to the Double Ragged Robin. It is perennial, with many oblong narrow leaves sitting close to the ground. It divides into separate heads, like *L. Viscaria*, and from each of these comes out an upright stalk nine inches high, dividing at top by pairs, and from the middle of each division comes out a slender peduncle two inches long, with one double purple flower at the top, the petals of which are much jagged, and the calyx marked with deep purple stripes; there are other peduncles from the axils, sustaining one or two flowers.—May not this be a variety of *L. læta*, n. 8.

PROPAGATION AND CULTURE.

1. Single Scarlet Lychnis is easily propagated by seeds, which should be sown on a border exposed to the east, in the middle of March. The plants will appear in April, when if the season is dry, they should be re-

* Leers.

† Linn. lapp.

* Linn. spec.

‡ Linn. succ.

freshed with water two or three times a week. By the beginning of June the plants will be fit to remove, when there should be a bed of common earth prepared to receive them; into which they should be planted at about four inches apart, observing to water and shade them till they have taken root; after which time they will require no other care but to keep them clean from weeds till the following autumn, when they should be transplanted into the borders of the pleasure-garden, where they are to continue. The summer following these plants will flower and produce ripe seeds, but the roots will abide several years, and continue to flower. This sort flowers in June and July, and the seeds ripen in autumn. It may also be propagated by off-sets, but as the seeds ripen so freely, few persons trouble themselves to propagate the plants any other way.

γ. Double Scarlet Lychnis is propagated by slips taken from the roots in autumn; but as this is a slow method of increasing the plants, the best way to have them in plenty, is to cut off the flower-stalks in June before the flowers appear, which may be cut into small lengths, each of which should have three or four joints, which should be planted on an east border of soft loamy earth, putting three of the joints into the ground, leaving one eye just level with the surface; these must be watered, and then covered close with bell or hand-glasses, so as to exclude the outward air, and shaded with mats when the sun shines hot upon them. The cuttings so managed will put out roots in five or six weeks, when they must be exposed to the open air, and in very dry weather they should be now and then refreshed with water, but it must not be repeated too often, nor given in large quantities, for too much moisture will cause them to rot. These will make good plants by the following autumn, when they may be transplanted into the borders of the pleasure-garden, where they will flower the following summer.

Some people who are covetous to have their plants flower, suffer the stalks to remain till the flowers are decayed, and then cut them off to plant; but by that time the stalks are grown hard, so but few of them succeed, and those which do, will not be near so good plants as those which are planted earlier; therefore it will be better to sacrifice the flowers of some roots for this purpose. These plants delight in a soft, rich, loamy soil, not too moist or stiff, in which they will thrive and flower very strong, but they do not care for much dung, which very often causes the roots to canker and rot, so that in the rich dunged lands about London, they do not thrive well. As these plants grow tall, they should be planted in the middle of large borders, and not crowded with other plants, for their roots extend to a large distance; so if they are incommoded by other roots, it will stint their growth.

I have not seen any double flowers of the two other varieties, but have been informed that there are of both the white and the flesh-colour with double flowers in some of the French gardens. These make a variety, but are not so beautiful as the scarlet, so are not much esteemed.

2. The single Meadow Lychnis is not kept in gardens, though by no means destitute of beauty; but the variety with very double flowers is propagated for ornament. It is commonly known by the name of Double Ragged Robin, and is increased by slipping the roots in September.

6. Viscous Lychnis or Red German Catchfly was formerly cultivated in flower-gardens, but since the variety with double flowers has been produced, the single one has been neglected. It may however be propagated in plenty by parting the roots in autumn, at which time every slip will grow; or if the seeds are sown in the same manner as is directed for the first sort, the plants with single flowers may be raised in plenty. This delights in a light moist soil and a shady situation.

β. The double flowering has not been known forty years in the English gardens, but it is now so common as to have excluded that with single flowers; it differs only from that in the doubleness of the flowers. As this never produces seeds, it can only be propagated by parting and slipping the roots; the best time for this

this is in autumn, at which time every slip will grow. If this be performed in september, the slips will have taken good root before the frost, and will flower well the following summer; but if they are expected to flower strong, the roots must not be divided into small slips, though for multiplying the plants, it matters not how small the slips are. These should be planted on a border exposed to the morning sun, and shaded when the sun is warm till they have taken root. If the slips are planted in the beginning of september, they will be rooted strong enough to plant in the borders of the flower-garden by the middle or latter end of october. The roots of this multiply so fast, as to make it necessary to transplant and part them every year; for when they are let remain longer, they are very apt to rot. This requires the same soil and situation as the single.

7. 9. These are propagated by seeds, and also by parting the roots. They must have a moist soil and shady situation. The roots may be parted, and the plants removed in autumn. The seeds may be sown upon a shady border in march, keeping the ground moist in dry weather. When the plants are of a size to remove, transplant them into a shady border, where they may remain to flower.

10, 11. The double varieties of Red and White Wild Campions, commonly called Red and White Batchelor's Buttons, are ornamental plants, and continue long in flower. They are propagated by slips, planted the beginning of august in a shady border of loamy earth, where they will take root in six weeks or two months, and may then be transplanted into the borders of the flower-garden. These roots should be annually removed, otherwise they frequently rot: and young plants must be propagated by slips to supply the decay of the old roots, which are not of very long duration. The Red thrives best in a soft loamy soil, and in a shady situation, where it has only the morning sun.

The Double White Batchelor's Button does not make so good an appearance as the Red. This will thrive in a drier soil, and a more open exposure.

Portugal Lychnis is increased by slips, in the same manner as these, but coming from a warm country, it is impatient of cold, and will not live through the winter in an open border, nor does it thrive well in a pot. It succeeds best when planted close to a south wall in dry undunged earth, or brick rubbish; for in rich or moist ground the roots presently rot, as they do also when they are watered.

LYCHNIS. See *Agrostemma* [*Cerastium*, *Cherleria*, *Cucubalus*, *Frankenia*, *Gypsophila*, *Holosteum*, *Plumbago*] *Saponaria*, *Silene*, [*Velezia*.

LYCHNI-SCABIOSA. See *Knaulia*.

LYCHNITIS. See *Amellus* and *Verbascum*.

LYCHNOIDES. See *Arenaria*, and *Phlox*.

LYCH SIMILIS } See *Sideroxylon*.]

LYCIOIDES }

LYCIUM. (Λύχνιον of Dioscorides. Supposed to be so called from its being a native of Lycia.)

Lin. gen. n. 262. Reich. n. 273. Schreb. n. 343. Gartn. t. 132. Juss. 126. Jasminoides. Niff. in act. gall. 1711.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Luridæ*.—*Solanææ*, Juss.

GENERIC CHARACTER.

CAL. Perianth subquinquefid, obtuse, erect, very small, permanent.

COR. monopetalous; funnel-form. Tube cylindric, spreading, incurved. Border five-parted, obtuse, spreading, small.

STAM. Filaments five, awl-shaped, from the middle of the tube, shorter than the corolla, closing the tube with a beard. Anthers erect.

PIST. Germ roundish. Style simple, longer than the stamens. Stigma bifid, thickish.

PER. Berry roundish, two-celled.

SEEDS several, kidney-form. Receptacles convex, affixed to the partition.

ESSENTIAL CHARACTER.

Cor. tubular, closed at the throat by the beard of the filaments. Berry two-celled, many-seeded.

SPECIES.

- [1. *Lycium japonicum*. Japan Box-thorn.
Lin. syst. 228. Thunb. jap. 93. t. 17. Curt. magaz. 361.
L. foetidum. Lin. suppl. 150. syst. 228. 5.
L. indicum. Retz. obs. 2. 12. n. 21. & 5. 2. n. 33.
Unarmed, leaves ovate nerved flat, flowers sessile.
2. *Lycium barbatum*.
Lin. syst. 228. Thunb. prodr. cap. 37.
L. inerme. Lin. suppl. 150.
Unarmed, leaves ovate smooth, branches flexuose, flowers panicled.]
3. *Lycium afrum*. African Box-thorn.
Lin. spec. 277. syst. 228. Reich. 1. 525. hort. cliff. 57. upf. 47. Murr. in comm. gott. 1779. p. 12.
Trew. Ebr. 4. t. 24. Kniph. cent. 11. n. 66.
Mill. fig. t. 171. f. 1. Plenck. ic. 127.
Jasminoides africanum, Jasmini aculeati foliis & facie.
Niff. act. 1711. 420. t. 12. Dill. gen. 159. Mich. gen. 224. 3.
β. L. falcifolium. Mill. dict. n. 3.
Rhamnus alter, foliis falcis, flore purpureo. Baub. pin. 477.
R. alter Clusii hist. 109. Lob. ic. 180.—flore purp.
Ger. emac. 1334.
R. 1. alter. Dod. pempt. 754.
Rhamni primi Clusii species altera. Baub. hist. 1. 32.
Park. theat. 1005. n. 3. 1006. f. 3. Raii hist. 1592.
Thorny, leaves linear fascicled, branches stiff.
- [4. *Lycium ruthenicum*.
Lin. syst. 228. Murr. in comm. gott. 1779. p. 2. t. 2.
Thorny, leaves linear fascicled, branches hanging down.
5. *Lycium tetrandrum*.
Lin. syst. 228. suppl. 150. Thunb. prodr. cap. 37.
Thorny, leaves ovate obtuse, branches angular, corollas four-cleft.
6. *Lycium boerhaaviaefolium*. Glaucous-leaved Box-thorn.
Lin. syst. 228. suppl. 150.
L. heterophyllum. Lin. syst. 228. Murr. in comm. gott. 1783. p. 6. t. 2.
Ehretia halimifolia. L'Herit. stirp. nov. 45. t. 23.
Jasminoides spinosum fol. rotund. flor. subcæruleis
Lilac spirantibus. Duham. arb. n. 5.
Thorny, leaves ovate quite entire acute glaucous, flowers panicled.
7. *Lycium barbarum*. Willow-leaved Box-thorn.
Lin. spec. 277. syst. 228. Reich. 1. 525. mant. 341. Murr. in comm. gott. 1779. p. 12. Kniph. cent. 9. n. 62. Trew. Ebr. 33. t. 68. Gertn. fruct. 2. 242. Thunb. prodr. cap. 37.]
L. halimifolium. Mill. dict. n. 6.
Jasminoides aculeatum humile, halimi minoris folio, fructu per maturitatem flavescens. Mich. gen. 224. t. 105. f. 1.
Style the length of the stamens.
β. L. chinense. Mill. dict. n. 5. Chinese Box-thorn.
L. barbarum. Lour. cochinch. 133.
Jasminoides sinense, halimi folio longiore & angustiore.
Duham. arb. 1. 306. t. 121. f. 4. Burm. ind. 59.
Style longer than the stamens.
Thorny, leaves lanceolate, branches loose, calyxes bifid.
- [8. *Lycium europæum*. European Box-thorn.
Lin. syst. 228. Reich. 1. 526. mant. 47. vir. cliff. 14.
Jasminoides aculeatum, falcis folio, flore parvo ex albo purpurascens. Mich. gen. 224. t. 105. f. 1.
Rhamnus spinis oblongis, flore candicante. Baub. pin. 177. Raii hist. 1592.
R. 1. Clus. hist. 109. Dod. pempt. 754.—flore albo.
Ger. emac. 1334.
R. 2. Monsp. f. 1. Clus. Park. theat. 1005. n. 2. 1006. f. 2.
Thorny, leaves oblique, branches flexuose round.
9. *Lycium tataricum*. Tartarian Box-thorn.
Pall. ross. 1. 78. t. 49. Murr. in comm. gott. 4.
Au Rhamnus altera species. Clus. hist. 109.
Thorny, leaves linear fascicled, branches supine.

10. *Lycium capsulare*.
Lin. spec. 278. *yst.* 228. *Reich.* 1. 526. *amoen.* 4. 308.
Thorny, leaves lanceolate thin smooth, peduncles and calyxes pubescent, pericarps capsular.
11. *Lycium cinereum*.
Thunb. prodr. cap. 37.
Thorny, leaves lanceolate smooth, branches spinose, peduncles very short.
12. *Lycium horridum*.
Thunb. prodr. cap. 37.
Thorny, leaves obovate fleshy smooth, branches spinose, peduncles very short.
13. *Lycium cochinchinense*.
Lour. cochinch. 134.
Unarmed, leaves oblong blunt, cymes terminating.

DESCRIPTIONS, &c.

1. This shrub is scarcely a fathom in height, very much branched, upright. Branches and branchlets scattered, round, slender or filiform, ash-coloured, smooth, spreading, drooping at top. Leaves opposite, subsessile, attenuated below, blunt with a point, quite entire, smooth, spreading, dark green above, half an inch long: there are clusters of many smaller leaves in the axils. Flowers on the branchlets from a cluster of leaves, sessile, upright, solitary or aggregate, deciduous. Calyx much shorter than the corolla, smooth, five-toothed. Tube of the corolla greenish-white, a line in length: segments of the border ovate, pale flesh-colour, a little shorter than the tube; the opening of which is closed with villose hairs. Filaments fastened to the tube longitudinally below the opening. Anthers oblong, standing a little, white. Germ superior. Style capillary, white, the length of the corolla. Stigmas two, seldom three, oblong, whitish, villose. It varies with double flowers^a.

It occurs twice in *Syst. veget.* In the Supplement it was named *foetidum*, Kæmpfer and Koenig having reported that the bruised leaves smell like dung; which is not true of this shrub, but of a tree called by the Dutch *Strunthout*^b.

It is described by Retzius from Koenig's specimens. It is made a distinct genus under the name of *Serissa*, by L'Heritier called *Buchozia*, and by Loureiro *Dysoda*.

Native of Japan; Thouin found it in China, and Koenig in Madeira^c. Introduced in 1787, by Monf. Cels. It flowers here most part of the Summer^d. In Japan, from april to november. This small handsome shrub is planted frequently for hedges in Japan^e.

2. Native of the Cape of Good Hope, where it was found by Thunberg. This stands in the Supplement under the name of *L. inerme*. Mr. Miller has one (n. 9.) with the same name; but his is a Chinese plant.

3. This rises with irregular shrubby stalks ten or twelve feet high, sending out several crooked knotty branches, covered with a whitish bark, and armed with long sharp spines, upon which grow many clusters of narrow leaves; these thorns often put out one or two smaller on their sides, which have some clusters of smaller leaves upon them; the branches are garnished with very narrow leaves an inch and a half long, and at the base of these come out clusters of shorter and narrower leaves. The flowers come out from the side of the branches, standing upon short foot-stalks; they are of a dull purple colour. The berry is of a yellowish colour when ripe, inclosing several hard seeds. This usually flowers in june and july, and the seeds ripen in the autumn; but frequently a few flowers come out in all the summer months.

[Stem straight, rigid. Flowers very dark purple. Berries globular, very dark red^f.

Native of the Cape of Good Hope, where sheep feed on it.—Cultivated in 1712, by the Dutchess of Beaufort^g.]

^a Thunberg.

^d Hort. kew.

^b Retzius, fasc. 2.

^c Thunberg.

^e Linn. suppl.

^f Linn.

^g Hort. kew.

β. This has many irregular shrubby stalks, which rise eight or nine feet high, sending out several irregular branches, covered with a white bark, and armed with pretty strong thorns; the leaves are narrow at bottom, growing broader upward, and are of a pale green colour. The flowers come out from the side of the branches; they are of a purplish white colour and small, and make no great appearance. This sort flowers in june and july, but rarely produces any seeds in this country. The leaves remain till winter, when they fall off.

It is a native of the South of France, Spain and Italy, in hedges.

[4. This is a shrub of about six feet high, if measured to the tips of the pendent branches: the stems are many, branching almost immediately from the root; branches long, dependent, or procumbent, unless supported; of the thickness of a tobacco-pipe, round, spinose, leafless; decomposed from about the middle, where they shoot into smaller branchlets, which are spiny, very spreading, and leafy towards their tips. Leaves fasciculated, growing by fives and sometimes by nines, or more, juicy, linear, glaucescent, obtuse at margin and tip, attenuated towards the base. Flowers two or four together, outwardly pale, and of a greenish-purple; within purple, with a pale throat, marked by fifteen deeper streaks: stamens longer than the corolla; anthers sulphur-colour, oblong, incumbent.

5. This resembles *L. afrum* very much, inasmuch that it may be doubted whether its fleshiness and the prevalence of the number four in the fructification, make it a distinct species. Found at the Cape of Good Hope by Thunberg^h.

6. Stem upright, round, branched, full of chinks ash-coloured. Branches alternate, spreading, smooth. Spines axillary, solitary, spreading very much, awl-shaped, shorter than the petiole. Leaves alternate, spreading, from twelve to twenty lines long, from eight to fifteen lines wide. Petioles one third of the length of the leaves, spreading very much, round, pale purple. Panicle leafy, from the end of the shoots, racemed at top. Flowers peduncled, upright, white. Bracte small, linear, acute, under each peduncle. Corolla blue, smelling very sweet: tube straight, longer than the calyx; segments of the border ovate, sharpish, spreading or reflex. Filaments upright, longer than the corolla, inserted at the base of the tube, closing the tube with a viscid beard. Anthers roundish, acuminate, two-celled, peltate, white. Germ superior, ovate, with a conical tip, and a tubercle on each side of the base. Style the length of the stamens. Stigma varying; headed, or oblong subbivalve, or bifid acute subreflex, green. Berry placed on the calyx, globular, fleshy, two-celled, two-seeded, yellow. Seeds solitary, bony, three-toothed at the base, gibbous on one side, flatish on the other, two-celled. It has the flowers of *Lycium*, with bearded stamens; but the fruit of *Ehretia*, with bony, three-toothed, two-celled seeds, but only two in number. It varies with waved leaves.

Native of Peru, where it was found by Dombey; Jos. Jussieu introduced it many years since into the Paris garden, where it flowers in summer and autumn, but seldom produces berriesⁱ. Introduced here in 1780, by Monf. Thouin^k.

7. This is a weak shrub, nodding and decumbent unless supported. Bark of the branches whitish. Flowers from each bud from two to five, each on its proper peduncle. It differs from all the other sorts, in having the mouth of the calyx two-lobed, or sometimes three-lobed. Border of the corolla spreading, with the throat pale streaked with black, and purple or pale red within. Four stamens the length of the whole corolla, the fifth shorter. Berries ovate, yellow^l, or vermillion red, fleshy, with a longitudinal depressed streak on each side, smooth, shining, two-celled: partition fleshy, narrow, corresponding with the outer groove. Receptacle ovate-globular, fleshy,

^h Linn. suppl.

ⁱ L'Heritier.

^k Hort. kew.

^l Linn. spec. and mant.

excavated, red, intimately connate with the partition. Seeds about twelve in each cell, roundish, compressed, with small raised dots on them, whitish^m.

Native of Europe, Asia and the Cape of Good Hope. Cultivated in 1709, by the Dutchess of Beaufort. It flowers from may to octoberⁿ.]

L. barbarum (n. 4.) of Miller is that which was brought from Africa by Dr. Shaw. It has a shrubby stalk seven or eight feet high, sending out several irregular branches, armed with strong spines, and furnished with short thick leaves. The flowers, which come out from the side of the branches, are small and white. They appear in july and august but do not produce seeds in England.

L. halimifolium (n. 6.) of Miller, to which he attributes the synonym of Duhamel, here given under the Chinese variety, is given by Reichard as a synonym to *L. barbarum*. Miller says, it is a native of China, whence the seeds were brought to the Paris garden, and thence sent to him by Bernard de Jussieu.—The stalk is four or five feet high, sending out many irregular branches, covered with a very white bark, and armed with a few short spines. Leaves about three inches long, and one inch broad in the middle, alternate, pale green. The flowers appear in june and july, and are succeeded by small round berries that ripen in the autumn, when they are as red as coral.

β. *L. chinense* (n. 5.) of Miller rises with weak irregular diffused branches to a great height; requiring support: some of these branches have in one year been upwards of twelve feet long. The lower leaves are more than four inches long, and three broad in the middle; they are of a light green and a thin consistence, placed without order on every side the branches. As the shoots advance in length, the leaves diminish in size, and towards the upper part they are not more than an inch long, and a quarter of an inch broad; they sit close to the stalks on every side. The flowers come out singly at every joint towards the upper part of the branches, on short slender peduncles: they are of a pale colour with short tubes; the brims are spread open broader than either of the former sorts, and the style is considerably longer than the tube of the corolla.

It flowers in august, september and october, and retains its leaves till november. It is a native of China, whence the seeds were brought to England a few years before (1759), and being raised in several gardens, by some were thought to be the Thea.

[Loureiro, who observed it about Canton, describes it to be four feet high, cespitose, upright, with rising branches, and straight solitary scattered prickles. Leaves lanceolate, quite entire, smooth, in clusters or scattered. Flowers purple, solitary, axillary, on a long reflex peduncle. Calyx upright, trifold with one segment two-toothed. Stamens as long as the corolla, closing the throat with a dense beard. Berry small, red, ovate, two-celled, containing many seeds.—The Chinese use a decoction in wine, or an infusion in water, of the berries as a tonic, analeptic and cephalic.

8. This differs from *L. barbarum* in being able to stand upright without assistance; in having the leaves, though lanceolate as in that, not flat but oblique or flexuose; the branchlets flexuose, not rendered angular by a line running down from the petiole; the surface not smooth but subtomentose; and finally, spines from every bud. It differs from *L. afrum* in having lanceolate leaves, and round flexuose branchlets.

Native of the South of Europe^o: as Spain, Portugal and the South of France, observed by Clusius; and by Ray about Montpellier and Florence, flowering both in march and autumn. Clusius says they eat the tender shoots in Spain, with oil and vinegar: and Micheli, that it is used for hedges in Tuscany, where they call it *Spina da corone di crocifissi*; supposing it, in common with several other prickly shrubs, to be that which afforded the crown of thorns to our Saviour

^m Gærtner.

ⁿ Hort. kew.

^o Linn. mant.

before his crucifixion.—It was introduced in 1780, by Peter Simon Pallas, M.D.^p

9. This is an elegant shrub, on account of the whiteness of the branches, rods or twigs, which are many, a foot or eighteen inches long or more, branched, ascending. Spines alternate, awl-shaped, rigid, spreading, white or yellowish, surrounded with leaves and flowers at the base. Leaves sessile, fleshy, blunt. Flowers from the upper part of the twigs among the leaves, two or three to each spine, on short peduncles. Calyx bell-shaped, widish, subbilabiate, the upper lip trifold, the lower bifid. Tube of the corolla white, a little crooked at top, spreading out into a purple border with blunt segments: anthers simple, incumbent. Style inflex at top, with a simple stigma. It varies with four and six stamens, and the same number of segments in the corolla. Berries the size of a Currant, black and succulent. Seeds most frequently ten, kidney-form. It differs from *L. europæum*, to which it bears great affinity, in size, and both the colour and form of the flower.

Native of Tartary about the Volga; in the deserts of Turcomannia and Hyrcania, especially in sandy soils replete with nitre. When out of flower it bears great resemblance to *Nitraria*, except that it is more thorny. Gmelin observed a dwarf and very thorny variety in the sands near the Caspian sea^q. Is not this the species said in the Kew catalogue to have been introduced by Pallas; the learned professor having, as he informs us, taken it originally to be *L. europæum*?

10. This is said by Linneus to be a native of Mexico, on the authority of Miller: but we do not find it among his species.

Miller has set down ten species, which we are at a loss to make out satisfactorily. The first, third and eighth seem to be the *afrum*. The fourth, fifth and sixth belong to *barbarum*. The second and seventh are inhabitants of the Cape, and may be the *afrum* or varieties of it: but why the second should have the name of *italicum* I am at a loss to imagine.] *L. inerme* (n. 9.) was raised by him from Chinese seeds, and was for many years taken for the Tea-tree, till it produced flowers. It rises with a strong woody stalk six or seven feet high, sending out many smooth branches, covered with a brown bark, and having no thorns. Leaves lanceolate, three inches long, and near three quarters of an inch broad, alternate, on short petioles; they are of a deep green, and continue all the year. The flowers are white, and have not been followed by seeds. [May not this be the same with the cochinchinense of Loureiro? *L. cordatum* (n. 10.) is *Arduina bispinosa*.

11, 12. Natives of the Cape of Good Hope^r.

13. This shrub is four feet high, almost upright, branched. Flowers white, in peduncled cymes. Border of the corolla reflex. Stamens nearly equal to the corolla, with many hairs filling up the tube of the corolla. Berry roundish, two-celled.

Native of Cochinchina, in woods^s.]

PROPAGATION AND CULTURE.

1. 2. 3. 5. 6. 11. 12. These plants may be increased by seeds, cuttings or layers. If by seeds, they should be sown in the autumn soon after they are ripe; for if they are kept out of the ground till spring, they seldom come up the first year. If the seeds are sown in pots, the pots should be plunged into some old tan in the winter, and in very severe frost covered with Peas-haulm or straw, but in mild weather should be open to receive the wet; in the spring the pots should be plunged into a moderate hot-bed, which will soon bring up the plants; these must be inured to bear the open air as soon as the danger of frost is over, and when they are three inches high, they may be shaken out of the pots, and each planted in a small separate pot, filled with loamy earth, and placed in the shade till they have taken new root, when they may be removed to a sheltered situation, where they may remain till the autumn; then they should be either removed into the green-house, or placed under a hot-bed frame

^p Hort. kew.

^q Pallas.

^r Thunberg.

^s Loureiro.

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to shelter them from hard frost; for these plants being too tender to live in the open air in England, they must be kept in pots and treated in the same way as Myrtles, and other hardy green-house plants; but when the plants are grown strong, there may be a few of them planted in the full ground in a warm situation, where they will live in moderate winters, but in hard frosts they are commonly destroyed. If the cuttings of these plants are planted in a shady border in July, and duly watered, they will take root, and may then be treated in the same way as the seedling plants.

This is the common mode of increasing them, for some never produce seeds in England.

4. 8. 9. Are hardy plants, and may be increased by cuttings or layers.

7. Is also increased by cuttings, planted in the spring, before they begin to shoot, in a border exposed to the morning sun. These should not be removed till the autumn, when they may be planted to cover walls, for the branches are too weak to support themselves.

β. Increases fast by its creeping roots; and the cuttings will take root as freely as Willows.

Several of these shrubs from China and the Cape will bear the open air in a warm situation and dry soil, when they have once acquired strength; except in very severe winters: especially if the roots be covered with litter, and the branches with mats.

[LYCIUM. See *Arduina*, *Barleria*, *Berberis*, *Carissa*, *Ceanothus*, *Celastrus*, *Gmelina*, *Randia*, *Rhamnus*, *Sideroxylon*.

LYCOCTONUM. See *Aconitum*.

LYCOGALA. See *Mucor*.

LYCOPERDASTRUM. } See *Lycoperdon*.

LYCOPERDOIDES. }

LYCOPERDON. (So named by Tournefort, from *λυκος*, *lupus*, & *περδω*, *pedo*; *q. lupi crepitum diceret*.)

Lin. gen. n. 1217. Reich. n. 1333. Schreb. n. 1683. Tournef. t. 331. Mich. t. 97. Vaill. bot. par. 16. 4.—10. Bovista. Dill. Lycoperdoides. Mich. t. 98. Lycoperdastrum. Mich. t. 99. Geaster. Mich. t. 100. Carpobolus. Mich. t. 101.

Class. 24. 6. Cryptogamia Fungi.

Nat. order of Fungi or Mushrooms.

GENERIC CHARACTER.

Fungus roundish, fleshy, firm: becoming powdery and opening at the top. Seeds fixed to filaments connected with the inner coat of the plant.

SPECIES, &c.

Only eleven species are enumerated in Murray's edition of *Systema Vegetabilium*. Dr. Withering has twenty-five British Species in the third edition of his *Arrangement*. And some of Linneus's species are disposed of under other genera. Thus the most interesting of the number, *L. Tuber*, with the other solid *Lycoperdons*, is separated, and made a distinct genus, under its old name of *Tuber*.

These singular Fungi are distinguished and described by Dr. Withering: and are figured by Micheli, Batarra, Batsch, Schæffer, Sterbeck, Schmidel, Bulliard, Bryant, Dickson, Smith, Sowerby, Bolton, Blackstone, Dillenius, Vaillant; in the *Flora Danica*, Ray's *Synopsis*, *Philosophical Transactions*, &c. There is also an elaborate dissertation on the British Stelated *Lycoperdons* by Mr. Woodward, in the second volume of the *Transactions of the Linnean Society of London*.

LYCOPERSICON. See *Solanum*.

LYCOPODIODES. See *Lycopodium*.

LYCOPODIUM. (*Λυκου ποδς*, *Wolf's-foot*, *Wolf's-claw Moss*.)

Lin. gen. n. 1185. Reich. n. 1302. Schreb. n. 1615. Dill. musc. 441. Selaginoides. Dill. musc. 460. Lycopodioides. Dill. musc. 462. Selago. Dill. musc. 435.

Class. 24. 1. Cryptogamia Miscellaneæ.

Nat. order of Musci or Mosses.

GENERIC CHARACTER.

Frustrifications in the axils of the scales digested into oblong imbricate spikes, or of the leaves themselves, sessile.

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Capf. kidney-shaped, two-valved, elastic, many-seeded: Veil none.

SPECIES, &c.

Twenty-nine species are enumerated in *Syst. veget.* by Murray. Only six of these are natives of Britain. They are figured by Dillenius and others.

LYCOPSIS (of Pliny. *Λυκοψις* of Dioscorides. From *λυκος* a wolf, and *οψις* the face. The corolla being ringent, and having the appearance of a grinning mouth.)

Lin. gen. n. 190. Reich. n. 202. Schreb. n. 250.

Gærtn. t. 67. Juss. 131. Echioides. Dill. gen. 3.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*. *Borragineæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: segments oblong, acute, spreading; permanent.

COR. one-petalled, funnel-form. Tube cylindric, from curved bent. Border half-five-cleft, blunt. Throat closed with five convex prominent converging scales.

STAM. Filaments five, very small, at the bending of the tube of the corolla. Anthers small, covered.

PIST. Germs four. Style filiform, the length of the stamens. Stigma blunt, bifid.

PER. none. Calyx very large, inflated.

SEEDS four, longish.

OBS. The essence of the genus consists in the curvature of the tube of the corolla.

ESSENTIAL CHARACTER.

Cor. with the tube bent in.

SPECIES.

1. *Lycopsis vesicaria*. Bladder-podded wild Bugloss.

Lin. spec. 198. syst. 188. Reich. 1. 399. hort. cliff. 44. upf. 35. Kniph. cent. 1. 55. Krock. filef. n. 290.

Echioides flore pullo. Riv. mon. 11.

Buglossum procumbens annuum, pullo minimo flore.

Mor. bist. 3. 439. f. 11. t. 26. f. 11.

B. ann. pullo flore min. vesicarium. Raii bist. 495. 7. Leaves quite entire, stem prostrate, fruiting calyxes inflated pendulous.

2. *Lycopsis pulla*. Dark-flowered wild Bugloss.

Lin. spec. 198. syst. 188. Reich. 1. 400. Gærtn. fruct. 1. 327. Jacqu. austr. 2. 53. t. 188. Krock. filef. n. 289.

Echium sylvestre lanuginosum. Bauh. pin. 254.

E. pullo flore. Clus. bist. 2. 164. Ger. emac. 802.

f. 3. Park. theat. 415. f. 4. Raii bist. 495.

Buglossum sylvestre majus nigrum. Bauh. pin. 256. Leaves quite entire, stem upright, fruiting calyxes inflated pendulous.

3. *Lycopsis ægyptia*. Egyptian Wild Bugloss.

Lin. syst. 189.

Leaves quite entire rugged, stems ascending, fruiting calyxes inflated pendulous.

4. *Lycopsis variegata*. Variegated Wild Bugloss.

Lin. spec. 198. syst. 189. Reich. 1. 400. hort. upf. 34. cliff. 44. Kniph. cent. 6. n. 57. Zan. bist. 37.

Lycopsis cretica. Riv. mon.]

Anchusa cretica. Mill. dict. n. 7.

Buglossum creticum verrucosum. Stiff. bot. t. 57.

B. annuum humile, bullatis fol. flore cæruleo eleganter variegato. Mor. bist. 3. 439. f. 11. t. 26. f. 10.

B. lusitanicum bull. foliis. Mor. prælod. Raii bist. 495. 9.

Leaves repand toothed callous, stem decumbent, corollas drooping.

5. *Lycopsis arvensis*. Small wild Bugloss.

Lin. spec. 199. Reich. 1. 400. fl. lapp. n. 77. suec. n. 167. hort. cliff. 44. Hudf. angl. 82. Wither. arr. ed. 3. 231. Curt. lond. 5. 49. 336. Lightf. scot. 135. Relb. cant. n. 154. Gron. virg. 20. Fl. dan. t. 435. Hall. belv. n. 605. Pollich pal. n. 182. Gunn. norv. n. 498. Neck. gallob. 102. Krock. filef. n. 291. Villars dauph. 2. 460. Kniph. cent. 3. n. 61.

Echioides. Riv. mon. t. 7. f. 2. Dill. app. 100.

Buglossum minus sylvestre. Bauh. pin. 256. Blackw. t. 234. Park. theat. 765. 3. Mor. bist. f. 11. t. 26. f. 8.

Buglossia

- Buglossa sylv. Dod. pempt. 628.—minor. Ger. emac. 799. f. 3. Raii hist. 494. syn. 227.
 Echium. Fuchs. 269.—f. Borago sylvestris. Baub. hist. 3. 581.
 Leaves lanceolate hispid, flowering calyxes upright.
 6. Lycopsis bullata. Bladdery-leaved wild Bugloss. Cyrill. neap. 1. 34. t. 11. f. 3.
 Leaves lanceolate-ovate hispid bladdery, stem procumbent.
 7. Lycopsis orientalis. Oriental wild Bugloss. Lin. spec. 199. Reich. 1. 401.
 Buglossum orientale angustifolium, flore parvo cæruleo. Tournef. cor. 6.
 Leaves ovate quite entire rugged, calyxes upright.
 8. Lycopsis virginica. Virginian wild Bugloss. Lin. spec. 199. Reich. 1. 401. Gron. virg. 140.
 Leaves linear-lanceolate clustered tomentose soft, stem upright.

DESCRIPTIONS, &c.

1. Root annual. It resembles the next species very much, but the stem is prostrate, the root not creeping or abiding, the habit smaller and less villose, the corollas small and brown^a. Stem angular, hirsute, solid, weak, a long span or more in length. Leaves an inch and half or two inches long, half an inch wide, sessile, lanceolate, pubescent, with a short soft hoary wool. Flowers axillary, from the top of the stem and branches, in swelling hirsute striated calyxes, on short peduncles: corolla very small, scarcely appearing out of the calyx. As the flower withers, the calyx swells very much into a sort of bladder^b.

Native of the South of Europe, in dry hilly situations. It flowers in June and July. Introduced in 1770, by Mons. Richard^c.

2. Root creeping, perennial (or rather biennial). Stem upright, branched. Leaves rough. Calyxes also rough. Corolla small, dark blackish purple. More villose than the preceding^d.

Gærtner considers the seeds of this natural order as nuts. They are four in number (except when some are abortive) in every calyx. These are middle-sized, crustaceous, ovate-acuminate, oblique incumbent on their umbilicus, obsoletely netted-wrinkled above, grooved on the sides with parallel streaks, straw-coloured, one-celled, valveless: aperture of the umbilicus very wide, above the base of the nut, on the inner side. Seeds solitary, that is one within each cell or crust, ovate-acuminate, turgidly lenticular, dark or black-brown.

Native of Germany and Austria, in dry pastures, flowering in May and June: with us in June and July. Introduced in 1785, by William Pitcairn, M. D.^e

3. This plant in reality appears to be the *Asperugo ægyptiaca* of Linnæus. Spec. Pl. edit. 2.]

4. This is a low trailing annual plant, the branches seldom extending more than six inches, and thinly set with small spear-shaped warted leaves, half surrounding the stalk. Flowers small, bright blue, collected into small bunches at the extremity of the branches.

[Native of the county of Nice, and the island of Candia, on the walls of the city.

It varies with red flowers, elegantly streaked with white. Sir George Wheeler found a variety of it on mount Hymettus near Athens^f.

5. Root annual, simple, fibrous, whitish. It is an extremely harsh, rough and bristly plant. Stems thick, cylindrical or slightly angular, upright, hispid, a foot or more in height, branched for the most part at top only. Leaves sessile, lanceolate (sometimes almost linear and sometimes almost ovate,) bluntish, hispid with hairs issuing from small papillæ, palest on the under side, veinless, waved, somewhat toothed and rolled back at the edge. Flowers in spikes, all one way, sessile and turned backward. Bractes resembling the leaves. Calyx hispid; segments oblong or lanceolate, almost the length of the corolla. Corolla sky-blue, border slightly divided; scales closing the throat small, white and hairy. The fruiting calyx closes till the seeds grow blackish, and then opens.

^a Krock. ^b Ray. ^c Hort. kew. ^d Krock. ^e Hort. kew. ^f Itin. l. 6. 415. Ray hist.

Seeds large, nearly black, with a netted-wrinkled surface; and a little pointed. Receptacle marked with four round dots hollowed out^g.

The corolla varies, like many others of this colour, to red and white. When the plants grow on dung-hills, the leaves are often an inch and half broad.

Native of most parts of Europe, in corn fields; especially where the soil is sandy, and on dry banks. It flowers from May to July, as Mr. Curtis says: from June to September, according to Dr. Withering and Mr. Hudson.

It has lately been recommended as a remedy against the Anthrax or corrosive ulcer commonly called a Carbuncle, by laying the bruised plant on the tumour; but I find it difficult to persuade myself that such a plant can have any efficacy in such a disease.

6. Root annual, simple. Stems clustered, nine inches or a foot high, round, hispid, purple, procumbent. Root-leaves numerous, lanceolate-ovate; hispid, dark green with prominent white bladders. Stem-leaves sessile, somewhat stem-clasping, with a few teeth, acuminate. Flowers several at the extremity of the stem. Calyx erect, hispid, ferruginous. Corolla at first purple, then blue. It differs from the preceding in having the leaves constantly bladdery. Common on waste grounds about Naples; flowering from February through the whole summer^h. It is probably not specifically different from the preceding.

7. This is an annual plant, a native of the Levant.

8. A perennial plant, native of Virginia, by way sidesⁱ.

PROPAGATION AND CULTURE.

See ANCHUSA. They are hardy plants, will generally rise from scattered seeds, and do not bear transplanting well.

LYCOPSIS. See *Asperugo*, *Echium*, *Myosotis*.]

LYCOPUS. (From *λυκος* and *πους*, Wolf's-foot.)

[Lin. gen. n. 33. Reich. n. 36. Schreb. n. 44. Tourn. t. 89. Juss. 111.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Verticillatæ*. *Labiatæ*, Tourn. Juss. &c.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, half-five-cleft: segments narrow, acute.

COR. one-petalled, unequal. Tube cylindrical, the length of the calyx. Border four-cleft, blunt, spreading: segments almost equal: upper broader, emarginate; lower smaller.

STAM. Filaments two, commonly longer than the corolla, inclining to the upper segment. Anthers small.

PIST. Germ four-cleft. Style filiform, straight, the length of the stamens. Stigma bifid, reflex.

PER. none. Calyx containing the seeds in its bottom.

SEEDS four, roundish, retuse.

ESSENTIAL CHARACTER.

Cor. four-cleft, with one division emarginate. Stam. distant. Seeds four, retuse.

SPECIES.

1. *Lycopus europæus*. Water Horehound.

Lin. spec. 30. syst. 67. Reich. 1. 56. fl. suec. n. 31. hort. cliff. 11. Hudf. angl. 9. Wither. arr. ed. 3. 20. Curt. lond. 3. 2. 201. Lightf. scot. 79. Relb. cant. n. 19. Hall. belv. n. 220. Pollich pal. n. 27. Gmel. sib. 3. 248. Neck. gallob. 14. Scop. carn. n. 29. Crantz. austr. 327. Allion. pedem. n. 63. Villars dauph. 2. 390. Krock. files. n. 41. Kniph. cent. 5. n. 54. Sabb. hort. rom. 3. t. 53. Berg. phyt. 2. 153.

L. palustris glaber. Tournef. inst. 191. Raii syn. 236. Pet. brit. t. 32. f. 5.

Marrubium palustre glabrum. Baub. pin. 230.

M. aquaticum. Baub. hist. 3. 318. 2. Ger. emac. 700. 1. Raii hist. 535.—palustre. Park. theat. 1230. 1.

M. aquaticum. Dod. pempt. 595. 2.

Pseudo-Marrubium palustre. Riv. mon. 22.—aquaticum vulgare. Mor. hist. f. 11. t. 9. f. 20.

Sideritis. Matth. 1002. Dalech. hist. 1117.

Leaves sinuate-ferrate.

^g Curtis.

^h Cyrillo.

ⁱ Linn. spec.

LYC

2. *Lycopus virginicus*. *Virginian Water Horehound*.
Lin. spec. 30. *Reich.* 1. 56. *Gron. virg.* 8.
Leaves equally ferrate.
3. *Lycopus exaltatus*. *Lofty Water Horehound*.
Lin. syst. 67. *suppl.* 87.
L. fol. in profundas lacinias incis. *Tournef. inst.*
191.
Leaves pinnatifid-ferrate at the base.

DESCRIPTIONS, &c.

1. Root perennial, creeping. This plant has the square stalks, opposite leaves, inflorescence, flowers and seeds of the natural order *Verticillatæ*; differing only in having two stamens, whence it is separated in the artificial system of Linneus from its congeners, with which this, as well as *Verbena*, might be united: Dr. Withering having remarked, that it is not uncommon between the two stamens to find two shorter filaments without anthers; and that he once found them with anthers.

Stems commonly from one to three feet in height (I have now, Sept. 1. 1797, a specimen before me upwards of four feet high,) upright, the sides deeply channelled, rough-haired at the corners, branched from the bottom. Branches opposite, brachiate, axillary, almost erect, the lower ones reaching almost as high as the main stem. Leaves ovate, ovate-oblong, or almost lanceolate, pointed, sessile, somewhat wrinkled, slightly hirsute, dark green above, pale green beneath, the midrib and veins very strong, the edge cut with deep ferratures; many of the leaves of the main stem, especially the lower ones, pinnatifid at the base; these are five inches long and two broad; the upper ones and those on the branches are from three to four inches in length, and not pinnatifid, but simply ferrate. Flowers small, many together, disposed in dense whorls, at each joint, from the axils of the leaves, almost from top to bottom of the branches, and in the main stem great part of the length. Calyx hirsute, divided into five (sometimes four) unequal awned clefts. Corolla white with a tinge of purple, somewhat hairy or villose within; the upper segment slightly notched, the lower dotted with purple. Filaments first bent in, then straight: anthers somewhat crescent-shaped and whitish. Germ set upon a yellow glandular receptacle. Seeds brown, shining, subtriangular, outwardly flattish, impressed with a subcordate line in the middle; inwardly the middle running out to a point, and the sides somewhat rolled in.

The leaves vary, in being more or less hairy, and more or less divided. *Mor.* 11. 9. 21. *Barr.* 154. and *Pluk.* 45. 1. represent the variety with jagged leaves. *Leers* (n. 23.) mentions a variety, with all the flowers female, or without stamens. It is common in most parts of Europe in meadows, and on the banks of streams and ponds: flowering from July to September. In some meadows it abounds so much as to be noxious. Cattle appear not to touch it; and its root being of the creeping kind, renders it difficult of extirpation. It dyes black, and gives a permanent colour to linnen, wool and silk. Gypsies are said to stain their skin with it^k.

Adanson mentions the two barren filaments. Scopoli remarks its evident affinity to *Mentha* or Mint. Pollich that there are sometimes eighty-two flowers in a whorl, with lanceolate bractes under them. His description is a very good one: and so is Ray's in his history.

This common plant, which on trial might probably be found useful to dyers, is called by all English writers *Water Horehound*. In German it is *Wolfsfuß*, *Wasserandorn*, *Sumpfsandorn*, *Bruchandorn*, *Wiesenandorn*, *Weiberandorn*, *Wolfebein*, *Sparrsaden*, *Zigengerkraut*, *Gliedkraut*, *Christusflanze*. In Dutch, *Wolfspoot*. *Waterandoorn*. In Danish, *Vandmarru*. In Swedish, *Vargfot*. In French, *Marrube aquatique*, *Licope*, *Patte de Loup*. In Italian, *Licopo*.

2. Native of Virginia. The leaves are lanceolate and very finely ferrate^l.

3. Stem the height of a man, branched, angular, rugged. Leaves deeply ferrate, the lowest ferratures

^k Curtis, Withering, Linn. succ.

^l Gron.

LYS

deeper, so as to be almost pinnatifid at bottom, with subferrate segments. Corollas four-cleft, white, the segments dotted with red, the uppermost emarginate, the lowest broader. Stamens two distant. Anthers twin, red.

Native of Italy^m.

I have not seen it, but by the description I cannot discover any essential difference between this and the first. Size is nothing.

LYGÆUM. (From *Λυγος*, *Vitex*, *virga*, *flagrum*; a pliant plant, rod, or whip.)

Lin. gen. n. 70. *Reich. n.* 76. *Schreb. n.* 99.

Juss. 33. *Loefling.*

Class. 3. 1. Triandria Monogynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. *Spathe* one-leaved, convolute, ovate, acuminate, opening downwards, permanent.

COR. in pairs, placed on the germ, equal all ways.

Glume of the corollet two-valved: outer valve convex, oblong, acute, smaller; inner linear, narrow, twice as long, bifid, acute.

STAM. (to each) *Filaments* three, very slender, flattish, long. *Anthers* linear.

PIST. *Germ* common to both, hirsute, inferior to the corollas. *Style* simple, flattish, long. *Stigma* simple.

PER. *Nut* oblong, extremely hirsute, two-celled, not opening.

SEEDS solitary, linear-oblong, convex on one side, flattish on the other.

ESSENTIAL CHARACTER.

Spathe one-leaved. *Cor.* two on the same germ. *Nut* two-celled.

SPECIES.

1. *Lygeum Spartum*. *Rush-leaved Lygeum*, or *Hooded Matweed*.

Lin. spec. 78. *syst.* 103. *Reich.* 1. 145. *Loefl.*

it. 285. *t.* 2. *D'Affo arag. n.* 42.

Spartum herba, alterum. *Clus. hist.* 2. 220. *f.* 2.—

alterum Plinii. *Ger.* 38. 2. *emac.* 48. 2.—Plinii

alterum mollius. *Park. theat.* 1198. 2.

Gramen sparteum secundum, panicula brevi folliculo inclusa. *Bauh. pin.* 5.

G. spart. 2 *Clusio*. *Bauh. hist.* *Raii hist.* 1259. 2.

Native of Spain, in clayey fields. It is very useful there for making baskets and ropes, and also for filling their paillasses or lower matrasses. They call both this and *Stipa tenacissima*, which is used for the same purposes, by the name of *Esparto*ⁿ. It flowers there in March; with us, in May and June. It was introduced in 1776, by Messrs. Kennedy and Lee^o.

LYGISTUM. See *Petefia*.

LYME-GRASS. See *Elymus*.

LYSIMACHIA. (King *Lyfimachus*, says Pliny, found this herb, which has its name from him.)

Lin. gen. n. 205. *Reich. n.* 219. *Schreb. n.* 269.

Gertn. t. 50. *Tournef. t.* 59. *Juss.* 95.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Rotaceæ. *Lyfimachia*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, acute, erect, permanent.

COR. one-petalled, wheel-shaped. *Tube* none. *Border* five-parted, flat: *divisions* ovate-oblong.

STAM. *Filaments* five, awl-shaped, opposite to the divisions of the corolla. *Anthers* acuminate.

PIST. *Germ* roundish. *Style* filiform, the length of the stamens. *Stigma* obtuse.

PER. *Capsule* globular, mucronate, one-celled, ten-valved (five-valved, G.)

SEEDS very many, angular. *Receptacle* globular, very large, dotted (free, G.)

OBS. In some species the stamens are united at the base.

L. *Linum-stellatum* has a five-cleft corolla, and a five-valved fruit.

ESSENTIAL CHARACTER.

Cor. wheel-shaped. *Caps.* globular, mucronate, ten-valved (five-valved. *Rec.* free. *Seeds* with a ventral navel opposite to the embryo, G.)

^m Linn. suppl.

ⁿ D'Affo.

^o Hort. kew.

* With many-flowered peduncles.

1. *Lyfimachia vulgaris*. Common Loofe-strife.
Lin. spec. 209. *syft.* 195. *Reich.* 1. 419. *fl. lapp.* n. 81. *succ. n.* 175. *vir. cliff.* 415. *hort. cliff.* 50. *Huds. angl.* 86. *Wither. arr. ed.* 3. 237. *Curt. lond.* 5. 2. 288. *Lightf. scot.* 138. *Relb. cant.* n. 162. *Hall. herb. n.* 630. *Scop. carn. n.* 214. *Neck. gallob.* 110. *Pollich pal. n.* 199. *Leers herborn. n.* 140. *Krock. files. n.* 301. *Villars dauph.* 2. 463. *Fl. dan. t.* 689. *Kniph. cent.* 7. n. 49. *Sabb. hort.* 2. t. 41, 42. *Blackw. t.* 278. *Plenck. ic.* 83.
L. lutea. *Bauh. hist.* 2. 901. *Ger.* 386. 1. *emac.* 474. 1. *Fuchs.* 492. *Trag.* 183. *Best. cyst. astriv.* 10. t. 6. f. 3. *Raii hist.* 1021. *syn.* 282.—major. *Bauh. pin.* 245. *Tournef. inst.* 141. *Garid.* 300.—*vulgaris.* *Park. theat.* 544. 1.—*communis.* *Clus. hist.* 2. 50. 2.
Lyfimachia. *Matth.* 949.
Lyfimachium luteum. *Dod. pempt.* 84.
Blattariæ affinis planta major, flore luteo. *Mor. hist.* f. 5. t. 10. f. 14.
Panicked, racemes terminating.
2. *Lyfimachia Ephemerum*. Willow-leaved Loofe-strife.
Lin. spec. 209. *syft.* 195. *Reich.* 1. 419. *Murr. in comm. gott.* 1782. p. 9. t. 2.
L. Otani. *D'Affo arag.* 22. n. 168. t. 2. f. 1.
L. falcifolia. *Mill. dict.* n. 6.
Ephemerum spurium Lobellii. *Obs.* 191. *Rob. ic.*
Racemes terminating, petals obovate spreading, leaves linear-lanceolate sessile.
- [3. *Lyfimachia stricta*. Upright Loofe-strife.
Ait. hort. kew. 1. 199.
L. bulbifera. *Curt. magaz.* 104.
Racemes terminating, petals lanceolate spreading, leaves lanceolate sessile.]
4. *Lyfimachia dubia*. Purple-flowered Loofe-strife.
Ait. hort. kew. 1. 199.
L. atropurpurea. *Lin. syft.* 195. *Reich.* 1. 420. *Murr. in comm. gott.* 1782. p. 6. t. 1.
L. Ephemerum. *Mill. dict.* n. 4.
L. spicata purpurea minor. *Buxb. cent.* 1. 22. t. 33.
Racemes terminating, petals converging, stamens shorter than the corolla, leaves lanceolate petioled.
5. *Lyfimachia thyrsiflora*. Tufted Loofe-strife.
Lin. spec. 209. *syft.* 195. *Reich.* 1. 420. *fl. lapp.* n. 82. *succ. n.* 176. *hort. cliff.* 52. *Huds. angl.* 86. *Wither. arr. ed.* 3. 237. *Engl. bot.* 176. *Gmel. fib.* 4. 87. n. 36. *Fl. dan.* 517. *Gunn. norv.* n. 82. *Hall. herb. n.* 631. *Pollich pal. n.* 200. *Krock. files. n.* 302. t. 37. *Weber spicil.* 8.
L. lutea altera. *Clus. hist.* 2. 53. f. 1, 2.—*flore globofo.* *Ger. emac.* 475. f. 3. *Park. theat.* 544. 3. *Raii hist.* 1022. *syn.* 283.—*flore quasi spicato.* *Bauh. hist.* 2. 904. 2.
L. bifolia, flore globofo luteo. *Bauh. pin.* 245.
Lyfimachium aquatile. *Dod. pempt.* 607. 1.
Racemes lateral peduncled.

** With one-flowered peduncles.

6. *Lyfimachia quadrifolia*. Four-leaved Loofe-strife.
Lin. spec. 210. *syft.* 196. *Reich.* 1. 420. *Gron. virg.* 20. *Pet. gaz.* t. 2. f. 5. *Pluk. mant.* t. 333. f. 1. (*Anagallis*).
Leaves in fours, peduncles in fours one-flowered.
7. *Lyfimachia punctata*. Dotted Loofe-strife.
Lin. spec. 210. *syft.* 196. *Reich.* 1. 421. *hort. cliff.* 52. *Gmel. fib.* 4. 86. n. 35. *Jacqu. austr.* 4. t. 366. *Scop. carn. n.* 215. *Krock. files. n.* 304. *Allion. pedem. n.* 342.
L. quadrifolia. *Mill. dict.* n. 10.
L. lutea 2. *Clus. hist.* 2. 52. f. 2.—*minor.* *Ger. emac.* 474. f. 2. *Park. theat.* 543. n. 2.—*fol. nigris punctis notatis.* *Bauh. pin.* 245. *Raii hist.* 1022.
Blattariæ affinis, fol. nigris, &c. *Mor. hist.* 5. 10. 15.
Leaves in fours subsessile, peduncles in whorls one-flowered.
8. *Lyfimachia ciliata*. Ciliated Loofe-strife.
Lin. spec. 210. *syft.* 196. 5. β . *Reich.* 421. 5. β . *Wach. ultr.* 390. *Walzb. hort.* 32. t. 12.
Petioles ciliated, flowers drooping.

9. *Lyfimachia Linum-stellatum*. Small Loofe-strife.
Lin. spec. 211. *syft.* 196. *Reich.* 1. 421. *hort. upf.* 37. *Sauv. monsp.* 130. *Allion. pedem. n.* 343. *Gertn. fruct.* 1. 229.
L. annua minima polygoni folio. *Tournef. inst.* 141. *Garid.* 301.
Linum minimum stellatum. *Bauh. pin.* 214. *prodr.* 107. *Magn. monsp.* 163. t. 162. *Raii hist.* 1076.
Centunculus fol. oppositis. *Ger. prov.* 306.
Chamælinum stellatum. *Park. theat.* 1336. n. 11.
Calyxes exceeding the corolla, stem upright very much branched.
10. *Lyfimachia nemorum*. Wood Loofe-strife, or Pimpernel.
Lin. spec. 211. *syft.* 196. *Reich.* 1. 421. *hort. cliff.* 52. *Huds. angl.* 86. *Wither. arr. ed.* 3. 237. *Curt. lond.* 5. 18. 328. *Lightf. scot.* 138. *Hall. herb. n.* 628. *Fl. dan.* 174. *Neck. gallob.* 108. *Villars dauph.* 463. *Allion. pedem. n.* 344. *Krock. files. n.* 303.
Anagallis lutea. *Ger.* 494. f. 3. *emac.* 618. f. 4. *Raii hist.* 1024. *syn.* 282.—*flore luteo.* *Park. theat.* 558. 5.—*nemorum.* *Bauh. pin.* 252. *Mor. hist.* f. 5. t. 26. f. 5.—*Nummulariæ similis.* *Bauh. hist.* 3. 370.—*luteo flore.* *Clus. hist.* 2. 182. 2. *Lob. obs.* 248. 2. *Dalech.* 1237.
Leaves ovate acute, flowers solitary, stem procumbent.
11. *Lyfimachia Nummularia*. Creeping Loofe-strife, or Moneywort.
Lin. spec. 211. *syft.* 196. *Reich.* 1. 422. *vir. cliff.* 13. *hort. cliff.* 52. *fl. succ. n.* 177. *mat. med.* 58. *Huds. angl.* 87. *Wither. arr. ed.* 3. 238. *Curt. lond.* 3. 14. 149. *Lightf. scot.* 138. *Relb. cant.* n. 163. *Hall. herb. n.* 629. *Scop. carn. n.* 216. *Fl. dan. t.* 493. *Neck. gallob.* 109. *Pollich pal. n.* 202. *Allion. pedem. n.* 345. *Villars dauph.* 2. 464. *Krock. files. n.* 305. *Blackw. t.* 542. *Kniph. cent.* 8. n. 64. *Ludw. est. t.* 148. *Sabb. hort.* 2. t. 44. *Plenck, ic.* 84.
Nummularia. *Ger.* 505. f. 1. *emac.* 630. 1. *Trag.* 808. *Fuchs.* 401. *Matth.* 1013. *Dod. pempt.* 600. 2. *Lob. obs.* 251. 1. *Raii hist.* 1099. *syn.* 283.—*vulgaris.* *Park. theat.* 555. 1.—*f. Centimorbia.* *Bauh. hist.* 3. 371. 1.—*major lutea.* *Bauh. pin.* 309. *Mor. hist. f.* 5. t. 26. f. 1.
Hirundinaria f. Nummularia major & minor. *Tabern.* 874.
Anagallis mas. *Camer. epit.* 394.
Leaves subcordate, flowers solitary, stem creeping.
- [12. *Lyfimachia japonica*. Japan Loofe-strife.
Lin. syft. 196. *Thunb. jap.* 83.
Leaves subcordate, flowers axillary, peduncles shorter than the leaf.

DESCRIPTIONS, &c.

Root in most of the species perennial. Stem herbaceous. Leaves opposite. Flowers axillary or terminating, solitary, or else in spikes or corymbs^a.

1. Root perennial, creeping. Stem three feet or more in height, when the leaves grow in pairs obtusely four-cornered; when three together grooved or angular, angles obtuse; the upper part of the stalk slightly hairy, the lower smooth, branched, and a little thickened at the joints. Leaves in pairs, or three together, (sometimes four or five) sessile, ovate or lanceolate, pointed, entire but not perfectly even (rather waved) on the edges, veiny, smooth or sometimes woolly. Flowers in terminating axillary racemes, all together forming a panicle. Peduncles somewhat viscid, thickened at top. Divisions of the calyx striated and edged with red, the tips both before and after flowering twisted. Corolla yellow. Though the natural number of divisions in this and the calyx be five, yet sometimes they are six. Filaments unequal, shorter than the corolla, viscid, broad, united at the base into a cylinder inclosing the germ. Anthers incumbent, subfagittate. Style elongated as the flowers go off. Seeds numerous, very minute^b.

Scopoli remarks, that the corolla has glands on very short pedicels scattered over it: that the filaments are also glandular, except the tips: that one stamen is

^a Jussieu^b Curtis.

longer than the rest, and the contrary: that the anthers are blunt, and have a red septum: that the germ is glandular; the style thinner at the base; and the stigma not thicker than the style.

Native of most parts of Europe, on the banks of streams, and in marshy meadows; flowering from the end of June to September.

It has the English name *Loosestrife*, from the quality ascribed to it by the ancients of quieting oxen when put upon their yokes^c. So *Lyfimachia* or *Lyfimachus* is so called *απο του λυειν την μαχην*, from dissolving strife. It is also called *Willow-herb*, from the shape of the leaves. In German it is *Gelbe Weiderich*, *Gelbes Weidenkraut*, *Gemeine Lyfimachie*, *Esflwurzel*. In Dutch, *Gemeen Weiderick*, *Groote Gele Weiderick*. In Danish, *Fredlös*, *Bastart Dueurt*, *Guul Gaase-beel*, *Gunlarve*. In French, *Lisimaque vulgaire*, *Corneille*, *Chasse-bosse*, *Perce-bosse*. In Italian, &c. *Lisimachia*.]

2. Root perennial. Stems several upright, more than three feet high. Leaves narrow, smooth; and at the base of these come out short side branches, with smaller leaves of the same shape. The flowers are produced in a long close upright spike, at the top of the stalk. The corolla is white. Stamens longer than the corolla.

[D'Affo thus describes it. Plant three cubits high. Root dividing into several forks, fibrous, spreading horizontally. Stem round, fistulous, smooth. Leaves lanceolate, quite entire, glaucous. Common peduncles angular. Flowers white, each on its proper pedicel with a linear bracte under it, alternate except at the top, where they are usually opposite. Divisions of the calyx ovate, with membranaceous edges—of the corolla blunt. Anthers incumbent. Capsule five-valved, containing many angular seeds fixed to a dotted receptacle.

It is very distinct from the fourth sort by its size, five-valved capsules, white flowers, and leaves without dots. D'Affo, taking it to be different from *L. Ephemerum*, named it *L. Otani*, from Franc. Otano, who first detected it in Aragon. The leaves however of our plant are dotted.

Native of Spain. Cultivated in 1731, by Mr. Miller. It flowers from July to September.

3. Stem erect, four-cornered, smooth. Leaves quite entire, acute, smooth, dotted. Racemes simple. Pedicels in a sort of whorl, filiform, an inch long. Bractes lanceolate, very short. Divisions of the calyx lanceolate, smooth, dotted with red. Petals three times as long as the calyx, yellow with red stripes and dots, and two dark-red spots. Stamens shorter than the corolla.

Native of North America, in swampy ground. Introduced in 1781, by Mr. William Curtis, from Mr. Robert Squibb, then at New York. It flowers in July and August. After flowering, it throws out bulbs from the axils, which falling off in October, produce young plants the ensuing spring^d.]

4. This is an annual (biennial) plant, too tender for the open air of this country. [It agrees with the second in habit, structure and glaucous colour; but the leaves are not dotted, as in that. *L. Ephemerum* has the petals blunt and spreading; the stamens shorter than the corolla; the flowers on pedicels: whereas in this there are no dots under the leaves; the petals are acuminate, a little longer than the calyx, converging, and deep red; the stamens are longer than the corolla, with brown anthers; and the flowers are sessile in a spike: they are however very nearly allied^e.

Native of the Levant. Cultivated in 1759, by Mr. Miller. It flowers in July and August^f.

5. Root perennial, creeping and spreading in the mud, bearded with long fibres. Stems in tufts, porous, jointed, round, succulent, smooth, upright, hardly a foot high in general, but sometimes near a foot and half; not branched, except that the flowers come out on lateral thyrses from the axils, towards the top; which Linneus mentions as a singular circumstance in an upright plant. Leaves linear-lanceolate, marked

with many black dots, sessile or half embracing the stem, slightly pubescent beneath, acute, quite entire, about three inches long, and more than half an inch broad towards the base; many together at the top of the stem. Flowers in opposite axillary cylindrical thyrses or racemes, on peduncles an inch in length; each separated by a lanceolate bracte. Corolla small, yellow, divided almost to the base, with very short teeth between the divisions, which are marked, especially towards the tip, with tawny dots. Stamens much longer than the corolla. The number of these, and of segments both in the calyx and corolla, varies from five to eight^g.

Native of many parts of Europe, in bogs, marshes, ponds, ditches, and banks of rivers. In England not common. Near King's Langley in Hertfordshire. In Anglesea. In Ireland, along the banks of the river at Ballynahinch, above the bridge; found by Mr. John Templeton, of Orange Grove near Belfast. Mr. Dodsworth and others have found it in Yorkshire, but it seems to be lost there.

6. Leaves ovate, acute. Flowers yellow.—Native of Virginia^h.

7. Root perennial, transverse, somewhat creeping, bearded with pale fibres. Stems from a foot and half to three feet in height, angular, upright, the size of a quill, covered with a soft hoary down, leafy, seldom branched. Leaves ovate-lanceolate, entire, villose on both sides, soft, acuminate, frequently spotted with black on the lower side, in fours (but sometimes three or only two) at each joint, on short petioles, from two to three inches long. Peduncles one-flowered, short, villose, axillary, seven or eight to a whorl, except towards the top of the stem, where there are only two, and on the branches there is one only. Flowers small. Calyx pubescent. Corolla yellow; segments acuminate with tawny dots at the base. Filaments connate, awl-shaped at the base. Anthers acute, erect, ovate. Capsule globular, shiningⁱ.

Native of Holland, among reeds, Austria, Silesia, Piedmont, Siberia. — Cultivated in 1759, by Mr. Miller^k.]

8. Root perennial, creeping. Stalks many, erect, about two feet high. Leaves oblong, oblique, smooth, veined on their under side, and ending in acute points. Flowers axillary, each on a long, slender, naked peduncle; there are three or four of these arising from the short branches, which come out on each side the stalk, at all the upper joints. They are like those of the common sort, but smaller, and hang down.

It was first brought from Canada [and is also a native of Virginia. Mr. Miller cultivated it in 1759^l. In Syft. veget. it is set down as a variety of *L. quadrifolia*; and they are probably the same plant.

If this be *L. quadrifolia* of Gärtner, the capsule is spherical, with five lines meeting at the top, one-celled, five-valved. Receptacle globular, fungose, excavated, free. Seeds many, but only three or four ripening, roundish, very slightly convex on one side, angular on the other, dotted very closely with raised dots, ferruginous, navel neutral almost obsolete.

9. This is a little annual plant, about two inches, or seldom three inches high, from a slender, whitish, hair-like root. Stems one or two, very slender. Leaves short, ending in a very fine point. Flowers small, pale green or herbaceous, stellate^m. Corolla of *Centunculus*, five-cleft, hence Gerard places it in that genus. Bauhin and others took it for a *Linum*; but Ray, though he had not seen the plant, suspected it not to belong to that genus. Willich (obs. 91.) could not discern either petals or stamens. The capsule is small and spherical, one-celled, five-valvedⁿ, opening in five parts longitudinally, and not horizontally, as in *Centunculus*^o. Receptacle globular, flattened a little, fungose, white. Seeds two or three, seldom more, minute, ovate-globular, meniscoid; on one side convex and striated transversely; on the other hollowed out with a wide umbilical pit, and grooved radiately, of a smoky colour.

^c Pliny, l. 25. c. 7.

^e Linn.

^d Hort. kew. and Curt. magaz.

^f Hort. kew.

^g Krocker, Wither. Pollich, Linn. suec.

ⁱ Krocker.

^k Hort. kew.

^l Ibid.

^h Linn. spec.

^m Bauh. prodr.

ⁿ Gärtner.

^o Gerard.

Native of France and Italy ; flowering in the spring. Introduced here in 1776, by Monf. Thouin. It flowers in June ^p.

10. Root perennial, with whitish fibres. Stems several, roundish, grooved on each side alternately, smooth, red, rooting from the lower joints. Leaves glossy on each side, entire but somewhat waved, yellowish green, dotted with black underneath, the veins a little prominent; eight lines long, six or seven lines wide; petioles short, broadish, grooved above. Peduncles axillary, solitary or in pairs, round, one-flowered, slender, longer than the leaves. Divisions of the calyx awl-shaped, very slender. Corolla yellow, much smaller than the leaves (five lines in diameter); at bottom more intensely yellow and shining; in the mouth small yellow glands between the filaments, and little pedicelled glands on the edge of the corolla. Filaments smooth, upright, somewhat thicker in the middle. Anthers tawny, oblong, bent a little downwards. Germ smooth: style somewhat thicker at top. Seeds round and flat.

When the flowers are expanded, they somewhat resemble, in shape, those of *Anagallis arvensis* or common Pimpernel; hence the older botanists considered this as an *Anagallis*. It differs from the next species, to which it bears no small affinity in its general habit, in having the leaves more pointed, the flowers smaller, less bell-shaped, and on much longer peduncles, and the stalks generally redder ^q.

Native of many parts of Europe, in moist woods, flowering from May to July; or according to Mr. Curtis, from June to September. Charlton wood. Hanging wood near Woolwich. Shooter's-hill wood. Between Dartford-road and Leeson-heath. Between Muswell-hill and Highgate. Cane wood. Scarlet Spring near Harefield. Stow and Stokenchurch woods in Oxfordshire. Pynchley in Northamptonshire. Near Nottingham.

11. Root perennial, with simple fibres, striking downwards. Stems numerous, simple, trailing, putting out roots towards the top and sometimes a branch; a foot or more in length, smooth, jointed, compressed, with four membranaceous edges. Leaves ovate-orbicular, upright, smooth, somewhat veiny, a little waved, on short broad petioles which run down the stalk. Peduncles generally two together, opposite, upright, the length of the leaves, angular, gradually enlarged towards the end. Calycine leaflets or segments cordate-lanceolate, pointed, somewhat keeled, reflex at the base. Corolla yellow, about the same size with the leaves; the divisions ovate, pointed, twice the length of the calyx, slightly jagged, and appearing glandular on the edge when viewed with a microscope. Filaments upright, glandular, shorter than the corolla: anthers sagittate. Style a little longer than the filaments ^r.

The whole plant is smooth. The peduncles are not always equal to the leaves, but sometimes longer, sometimes shorter ^s. Haller remarks, that the calyx distinguishes this from all the other sorts; and that the filaments coalesce into a hairy circle. Scopoli says, the peduncles are five-angled; and that two of the filaments are longer, or one longer than the style. Pollich remarks, that the peduncles have four angles, and are shorter than the leaves, but often much longer; that the corolla is half an inch in diameter, and that it frequently has small tawny spots on it. Mr. Curtis observes, that this plant, like many others that increase much by the root or stem whilst they are in flower, seldom produces ripe seeds. Ray however describes the capsule to be round, very small, and filled with seeds so minute as to be scarcely visible.

Native of most parts of Europe, in moist meadows, on the sides of ditches, and under hedges in moist situations: flowering in June and July.

It is called *Nummularia*, says Gerarde, of the form of money, whereunto the leaves are like: in English *Moneywort*, *Herb Two-pence* and *Twopenny-Grass*. Other languages have borrowed the same circumstance. In German it is *Pfennigkraut*, *Wiesengeld*, *Gold-*

kraut, *Großes gelbes Munzkrout*, *Egelpfennig*, *Egelnkraut*, *Kleines Schlangenkraut*, *Kleines Natterkraut*, *Kleines Mondkraut*, *Wasserpoley*. In Dutch, *Penningkruid*. In Danish, *Pengekrud*, *Pengeblad*, *Krybende Pengeurt*. In Swedish, *Penningeört*. In French, *la Lisimaque monnoyere*, *la Nummulaire*, *l'herbe aux Ecus*, *l'herbe à cent maux*, *l'herbe à cent maladies*. These two last names are from *Centimorbia* or *Centummorbia* as it was called by some old writers, from its supposed efficacy in curing various diseases. It was also named *Serpentaria*, from a notion that Serpents, when wounded, apply to this herb for cure. In Italian, &c. *Nummularia*.

The leaves are subastringent and slightly acid; hence Boerhaave recommended them in the hot scurvy, and hæmorrhages: but modern practice takes no notice of them. According to Linneus, it is eaten by kine and sheep, not much relished by goats, and refused by horses. Scopoli recommends an infusion of the plant in oil for destroying Weevils.

12. Root annual, fibrous. Stem filiform, decumbent, from flexuose erect at top, villose, simple, a hand in length. Leaves roundish, blunt, entire, very finely villose, spreading, half an inch in diameter. Petioles double the length of the leaves. Flowers seldom solitary, generally two together. Peduncles one-flowered, when flowering upright, when fruiting reflex.

Native of Japan ^t.]

PROPAGATION AND CULTURE.

1. 5. 8. These are not often admitted into gardens, because the roots creep so much that they become troublesome; they deserve a place however for the beauty of their flowers in large gardens, especially in moist places, where better things will not thrive. If the roots be taken up in autumn from places where they grow naturally, and planted in a moist soil, they will thrive without farther care.

2. This is the finest species of this genus, and as the roots of it do not spread like those of the other, it deserves a place in the pleasure-garden, where it is a very ornamental plant for shady borders. It loves a moist soil and a shady situation, where it will continue long in beauty. It may be propagated by parting the roots in autumn, but by this method it increases slowly; so that the only way to have it in plenty, is by sowing the seeds: these should be sown upon an east-aspected border in autumn, soon after they are ripe, then the plants will come up the following spring; but those which are sown in the spring will not grow the same year. When the plants come up they should be kept clean from weeds, and if they are too close, some of them may be drawn out and transplanted on a shady border, which will give the remaining plants room to grow till autumn, when they may be transplanted into the borders of the flower-garden where they are designed to flower; after which they will require no other culture but to keep them clean from weeds, and dig the ground between them every spring.

[3. Increases by its bulbs, which it produces instead of seeds, and requires a very moist situation ^u.]

4. This is propagated by seeds, sown on a moderate hot-bed in the spring, often watering the ground to bring up the plants; and if the season should prove warm, the glasses of the hot-bed should be shaded in the heat of the day: when the plants are up, they should have a large share of fresh air admitted to them, to prevent their drawing up weak, and should be frequently refreshed with water. When they are fit to remove, plant each in a separate pot, plunging them into a moderate hot-bed to forward their taking new root; after which gradually inure them to bear the open air; into which remove them the beginning of June, and let them remain there till October; when they should be removed into a common frame, where they may be sheltered from frost in winter, but always enjoy the free air in mild weather. The spring following some of the plants may be shaken out of the pots, and planted in borders: but a few should be put into larger pots, where they may flower and seed.

[LYSIMACHIA. See *Anagallis*, *Chironia*, *Dracocephalum*,] *Epilobium*, [Jussieu, *Ludwigia*, *Lythrum*, *Mimulus*,] *Oenothera*, [Phlox, *Rhexia*,] *Scutellaria*, [Veronica.

LYSIMACHIAE AFFINIS. See *Capraria*, *Cressa*, *Oldenlandia*.]

LYTHRUM. (Λυθρον of Dioscorides. From λυθρον, cruor, gore: from the purple colour of the flower.)

Lin. gen. n. 604. Reich. n. 660. Schreb. n. 825. Gertn. t. 62. Juss. 332. Salicaria. Tournef. t. 129. Cuphea. Brown. 216. Gertn. t. 44. Juss. 332. Parsonia. Brown. t. 21. f. 2. Juss. 332.

Class. II. 1. Dodecandria Monogynia.

Nat. order of *Calycanthemae*. *Salicaria*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, cylindric, striated; with twelve teeth, alternately smaller.

COR. Petals six, oblong, bluntish, spreading, with the claws inserted into the teeth of the calyx.

STAM. Filaments twelve, filiform, the length of the calyx; the upper ones shorter than the lower. Anthers simple, rising.

PIST. Germ oblong. Style awl-shaped, the length of the stamens, declined. Stigma orbiculate, rising.

PER. Capsule oblong, acuminate, straight, two-celled or one-celled.

SEEDS numerous, small.

OBS. In some species one-sixth part of the number is taken from the flower; others have only six stamens.

ESSENTIAL CHARACTER.

Cal. twelve-toothed. Pet. six, inserted into the calyx. Caps. two-celled, many-seeded.

SPECIES.

1. *Lythrum Salicaria*. Common or Purple Willow-herb.

Lin. spec. 640. fyst. 446. Reich. 2. 426. hort. cliff. 178. fl. lapp. n. 197. fues. n. 422. Hudf. angl. 205. Wither. arr. ed. 3. 441. Curt. lond. 3. 28. 186. Lightf. scot. 247. Relb. cant. n. 345. Neck. gallob. 208. Scop. carn. n. 565. Pollich pal. n. 450. Fl. dan. t. 671. Allion. pedem. n. 1913. Villars dauph. 3. 818. Krock. filef. n. 714. Kniph. cent. 5. n. 55. Blackw. t. 520. Plenck, ic. 362. Zorn. ic. 113. Thunb. jap. 192.

Salicaria. Hall. helv. n. 854. —vulgaris purpurea. Tournef. inst. 253. Raii syn. 367. Pet. brit. t. 62. f. 6. Garid. 419.

ysimachia spicata purpurea. Baub. pin. 246. Ger. 386. 2. emac. 476. 5. Park. theat. 546. 1. Raii hist. 1036.

L. purp. communis major. Clus. hist. 2. 51. 1.

L. altera. Matth. 950. Camer. epit. 687.

L. purp. quibusdam spicata. Baub. hist. 2. 904.

Pseudolythrum purpureum alterum. Dod. pempt. 86. 1.

Blattaria rubra spicata major glabra, folio acuto. Mor. hist. f. 5. t. 10. f. 10.

β. purpurea spic. lanuginosa, f. fol. subrotundo incano. Mor. f. 11.

L. tomentosum. Mill. dict. n. 2.

γ. L. trifolia spic. purp. Bocc. mus. 167.

L. purp. trif. caule hexagono. Spigel. isag. Raii syn. 367. Hudf. angl. 206. 1. β.

δ. L. quadrifolia purp. mollioribus & longioribus foliis. Bocc. mus. 167.

ε. L. fol. alternis, floribus solitariis. Lin. lapp. 160. Leaves opposite cordate-lanceolate, flowers in spikes, twelve-stamened.

2. *Lythrum virgatum*. Fine-branched Willow-herb.

Lin. spec. 642. fyst. 446. Reich. 2. 427. Gmel. fib. 4. 175. Jacqu. austr. 1. 8. t. 7. Gertn. fruct. 1. 296.

L. austriacum. Jacqu. vind. 243. Krock. filef. n. 717.

Lysimachia rubra non filiquosa. Baub. pin. 246.

L. rubra 2. f. minor. Clus. hist. 2. 51. Raii hist. 1036.

L. purpurea minor. Ger. emac. 478. f. 13.

Leaves opposite lanceolate, panicle virgate, flowers twelve-stamened in threes.

3. *Lythrum fruticosum*. Shrubby Willow-herb.

Lin. spec. 641. fyst. 446. Reich. 2. 427.

Leaves opposite subtomentose underneath, flowers ten-stamened, corolla shorter than the calyx, calyx shorter than the genitals.]

4. *Lythrum verticillatum*. Whorled Willow-herb.

Lin. spec. 641. fyst. 446. Reich. 2. 427. Gron. virg. 52.

Leaves opposite tomentose underneath subpetioled, flowers in whorls lateral.

5. *Lythrum petiolatum*. Footstalk-leaved Willow-herb.

Lin. spec. 641. Reich. 2. 428. Gron. virg. 52.

Leaves opposite linear petioled, flowers twelve-stamened.

6. *Lythrum lineare*. Linear-leaved Willow-herb.

Lin. spec. 641. Reich. 2. 428. Gron. virg. 162.

Leaves opposite linear, flowers opposite six-stamened.

[7. *Lythrum Parsonia*.

Lin. spec. 641. fyst. 446. Reich. 2. 428. Swartz obs. 193.

Parsonia. Brown. jam. 199. t. 21. f. 2.

Leaves opposite oval, flowers alternate six-stamened sessile, stem diffused.

8. *Lythrum Melanium*.

Lin. spec. 641. Reich. 2. 428. Swartz obs. 193.

Melanium. Brown. jam. 215.

Leaves opposite ovate, flowers alternate mostly ten-stamened, stem prostrate.

9. *Lythrum cordifolium*. Heart-leaved Willow-herb.

Swartz prodr. 76.

Leaves opposite subsessile cordate acute rugged, racemes terminating and axillary, flowers ten-stamened.

10. *Lythrum ciliatum*. Ciliated Willow-herb.

Swartz prodr. 76.

Leaves opposite petioled ovate smooth ciliated, racemes terminating, flowers mostly pointing one way ten-stamened.

11. *Lythrum Cuphea*. Clammy Willow-herb.

Lin. fyst. 447. suppl. 249.

Cuphea. Brown. jam. 216.—viscosissima. Jacqu. hort. 2. 83. t. 177. Roth. beytr. 1. 124. Ait. hort. kew. 2. 129. Gertn. fruct. 1. 210.

Balsamona Pinto. Vandell. fasc. 1771. 15. t. 3.

Leaves opposite petioled ovate-oblong somewhat rugged, flowers twelve-stamened.

12. *Lythrum triflorum*. Three-flowered Willow-herb.

Lin. fyst. 447. suppl. 249.

Very smooth, leaves opposite subsessile lanceolate entire, peduncles axillary opposite, head three-flowered.

13. *Lythrum Pemphis*.

Lin. fyst. 447. suppl. 249. Forst. flor. austral. n. 205.

Pemphis acidula. Forst. gen. 68. t. 34.

Mangium porcellanicum. Rumph. amb. 3. 126. t. 84. Shrubby, hirsute, leaves opposite oblong entire, flowers axillary peduncled solitary, capsule cut round horizontally one-celled.

14. *Lythrum racemosum*.

Lin. fyst. 447. suppl. 250.

Diffused, leaves opposite petioled ovate, racemes terminating, flowers opposite.

15. *Lythrum dipetalum*.

Lin. fyst. 447. suppl. 250.

Hispid-viscid, leaves in threes or opposite sessile ovate, flowers axillary nodding two-petalled.]

16. *Lythrum Hyssopifolia*. Hyssop-leaved Willow-herb.

Lin. spec. 642. fyst. 447. Reich. 2. 428. mant. 392.

hort. upf. 118. cliff. 178. Hudf. angl. 208.

Wither. arr. ed. 3. 441. Engl. bot. 292. Relb.

cant. n. 346. Sibth. oxon. n. 434. Scop. carn.

n. 566. Jacqu. austr. 2. 20. t. 133. Pollich pal.

n. 451. Allion. pedem. n. 1914. Villars dauph.

3. 818. Krock. filef. n. 715.

Salicaria. Hall. helv. n. 855.—hyssopi folio latiore,

Rupp. jen. 147. t. 6. f. 3.—hyssopi folio latiore &

angustiore. Tournef. inst. 253. Raii syn. 367.

Hyssopifolia. Baub. pin. 218. prodr. 108.—aquatica.

Baub. hist. 3. 792. 3.

Gratiola angustifolia. Ger. emac. 581. 2. Raii hist.

1055.—f. minor. Park. theat. 220. 2.

Leaves alternate linear, flowers six-stamened.

[17. *Lythrum Thymifolia*. Thyme-leaved Willow-herb.

Lin. spec. 642. fyst. 447. Reich. 2. 429. Lerche

in. nov. act. nat. cur. 5. app. 186. Sauv. monsp.

49. Villars dauph. 3. 819. Allion. pedem. n. 1915.

Krock. filef. n. 716.

Petaglossum linifolium. *Forst. aegypt.* 11.
 Salicaria minima tenuifolia. *Tournef. inst.* 254.
 S. hyssopi folio angustiore. *Buxb. bal.* 290.
 Hyssopifolia minor f. potius thymifolia maritima. *Baub. hist.* 3. 792. *Raii hist.* 1055.
 Polygonum aquaticum minus. *Barr. ic.* 773. f. 2.
Leaves alternate linear, flowers four-stamened.]

18. Lythrum americanum. *South-American Willow-herb.*

Mill. dist. n. 9.

Salicaria americana, hyssopi folio latiore, floribus minimis. *Hoult. Mss.*

Leaves oblong-ovate, below opposite, above alternate, flowers six-stamened.

DESCRIPTIONS, &c.

[These are herbaceous, except N. 3, 10, 11. 13 to 15, which are shrubby; more are perennial than annual. Leaves sometimes alternate, but more frequently opposite, or in a sort of whorl. Flowers mostly in several whorls, all together forming a spike, sometimes axillary, subsolitary^a. The number of stamens differs in several species, and some of them (7, 8, 11, 12, 13.) are separated from Lythrum, and made distinct genera, by Brown, Jussieu, Gærtner, and others.

1. Root perennial thick branched somewhat woody widely extended. Stem from two or three to four or six feet high, upright, tinged with red, below smooth and four-cornered, above pubescent and five-cornered; corners sharp, membranaceous rugged. Upper branches scattered; lower opposite four-cornered rugged and slightly downy upright shortish numerous. Leaves sessile, embracing, about three inches long, smooth above, underneath slightly downy somewhat rugged veined spreading; all opposite, or all alternate, or the lower opposite and the upper alternate. Flowers in clusters, placed at a little distance from each other, in the axils of the leaves, each consisting of about eight flowers, (six to twelve) together forming a long leafy spike. Bracte of the clusters ovate with a long point, underneath villose, longer than the calyx, purplish. Bracte of each flower small, nearly linear, running out to a point. Calyx hairy, truncate, divided into twelve purplish segments, six awl-shaped upright, and six alternate with the others small ovate bending inwards concave and minutely bearded at top. Corolla red purple. Petals oblong wedge-shaped, upright, longer than the calyx, inserted into the edge of it between the longer segments. Filaments inserted into the inside of the calyx; the six longest somewhat longer than the tube of the calyx, the six shortest hid within the tube. Anthers ovate, incumbent; the lower yellow, the upper purple. Dr. Withering remarks, that sometimes a single anther grows to one of the petals; and in this case, besides the twelve perfect stamens, a single filament is found without an anther. Germ superior ovate pointed grooved on each side smooth greenish; style cylindrical scarcely longer than the corolla: stigma capitate. Capsule covered by the calyx, two-celled^b.

Scopoli remarks that there are eighteen flowers in a whorl, that the calyxes are sessile and ten-cornered, the capsule brown, separable from the calyx, and two-celled or three-celled, the seeds wedge-shaped and rufescent, and that the whole plant becomes red as it advances in age.

Pollich says there are twelve or more flowers in a whorl, but in some fewer, that the calyx is marked with twelve streaks.

Krocker observes, that the calyx is not green but white, with twelve red streaks, that the petals are waved, and that the stamens vary in number from six to twelve.

Native of most parts of Europe, in marshes, and on the banks of rivers, ponds and ditches, which it ornaments with its beautiful spikes of purple flowers. Thunberg also found it in Japan, and remarks that it is entirely smooth there. It flowers late in the summer, Linneus says with Hypericum perforatum or common St. John's wort. It is now in full flower on the 6th of september.

It is astringent, and is recommended by De Haen

^a Jussieu.

^b Curtis.

and several other foreign physicians in long protracted Diarrhoeas and Dysenteries. A decoction or the expressed juice is given from one to three ounces. When dried and powdered it imbibes a great quantity of water before it loses its glutinosity. It has been used with success in tanning leather. It seems generally to remain untouched by cattle; Schreber however affirms that they feed on it.

In English it is named Purple spiked Willow-herb or Loosestrife. In German, *Braune Weiderich*, *Rother Weiderich*, *Purpur Weiderich*, *Weidenkraut*, *Blutkraut*, *Blauer Fuchsschwanz*. In Dutch, *Partyke*. In French, *Salicaire*, *Lismaque rouge*. In Italian, &c. *Salicaria*. In Russian, *Plakun*.

There are several varieties of this handsome plant.

β. One of these is made a distinct species by Mr. Miller.] The stalks are upright and branching, three feet high. Leaves cordate-ovate, an inch long, and three quarters of an inch broad, downy, and placed by threes. Flowers in long spikes, disposed in thick whorls, with spaces between each; they are of a fine purple colour. It is *S. purpurea foliis subrotundis*, *Tourn. inst.* 253. [It is a smaller plant than the common, much more downy, and the leaves broader. We are not told of what country it is a native.

γ. The common sort often varies with three leaves to a joint; in which case the stem is six-cornered.

δ. It has sometimes even four leaves at a joint. Boccone says, the leaves are softer and longer.

ε. Linneus, in his *Flora lapponica*, mentions a singular variety, of which he found only a single plant there. The stem a foot high and simple. Leaves alternate, cordate-lanceolate, sessile. Flowers from each upper axil, solitary, sessile.

Mr. Miller has two other species, that seem to be only varieties of *L. Salicaria*.] 1. *Lythrum lusitanicum*, n. 4. *Salicaria lusitanica*, angustiore folio. *Tournef. inst.* 253. It grows naturally in Spain and Portugal, by the side of waters. It seldom grows more than a foot high. Leaves smooth, growing by threes, narrower and shorter than the common sort. Flowers in terminating spikes, of a light purple colour, appearing in july.—2. *L. hispanicum*, n. 5. *Salicaria hispanica hyssopifolia*, flor. oblongis saturate cæruleis. *Tournef. inst.* 253. This is also a native both of Spain and Portugal. The stalks are slender, not more than nine or ten inches long, spreading out on every side: the lower part has oblong-ovate leaves, placed opposite: on the upper part the leaves are narrower and alternate. The flowers come out singly from the side of the stalks at each joint; they are larger than those of the common sort, and of a deeper purple colour; they therefore make a fine appearance in july, when they are in beauty.

[2. Root perennial, thick. Stems upright, panicled, from a foot to two feet in length, at bottom hard and woody, round, pale brown mixed with green, commonly without leaves; towards the top green, four-cornered, leafy, with rod-like, axillary, upright, long, alternate branches. Leaves opposite, quite entire, acuminate, never cordate, fattish, an inch and half long, on very short petioles or sessile. Flowers in spikes, of the same colour and size as in the preceding, peduncled, in whorls, six in a whorl, the lower ones more remote, allaxillary^c. Linneus says, the flowers are two or three, pedicelled, from each alternate axil of the raceme: and that it varies, though seldom, with alternate leaves.

Capsule smooth, ovate-oblong or almost cylindric, obsoletely two-grooved, two-celled, two-valved; the valves when ripe often bifid: partition contrary to the valves. Receptacle linear-oblong, convex, fungose, closely fastened to the partition on each side. Seeds numerous, small, ovate, very much attenuated towards the navel, convex on one side, flat on the other, smooth, pale yellow^d.

Native of Austria, Silesia, Siberia.—Introduced in 1776, by Jos. Nic. de Jacquin, M.D. It flowers from june to september^e.

3. This is a shrub, with a lacerated bark. Leaves

^c Krocker.

^d Gærtner.

^e Hort. kew.

sessile, lanceolate, quite entire. Flowers solitary, peduncled, subterminating. Native of China^f.]

4. This rises with a stiff branching stalk a foot and half high. Leaves oblong. Flowers in whorls, pale purple, appearing in July. Capsules two-celled. [Peduncles many-flowered, very short. Native of Virginia^g.]

5. This rises with an upright woolly stalk near two feet high. Leaves on short petioles. Flowers axillary, solitary, small and pale purple, appearing in July. Native of Virginia.

[Mr. Miller cultivated both these before 1759.

6. Stem filiform erect angular, terminated by a larger spike, and two side ones, which are smaller, composed of opposite remote flowers, with a leaf under each. It has the appearance of *L. Hyssopifolia*^h.]

Stalks slender, about a foot high. Leaves entire. Flowers axillary, solitary, small, white. Calyx streaked, cut into six parts at top. It flowers in June, and is a native of Virginia. [This also was cultivated by Mr. Miller, before 1759.

7. Roots filiform. Stem prostrate or creeping, branched, round, slender, seldom exceeding ten or fourteen inches in length: branches only towards the top, simple, alternate, filiform, spreading, subflexuose, round, pubescent. Leaves small, oblong, acute, quite entire, smooth on both sides, nerved, on very short petioles. Stipules none. Flowers axillary, especially at the top of the stem, solitary, small, pale red. Calyx swelling a little at the base, oblique, smooth, the mouth having from six to ten teeth. Petals waved. Stigma slightly bifid, pubescent, white. Capsule two-celled, opening by the calyx being longitudinally cloven in front. Seeds from four to six, fastened by a pedicel to the middle of the receptacle, roundish, brown.

Native of Jamaica and Hispaniola; flowering the whole yearⁱ.

Dr. Browne, supposing it to be a new genus, named it *Parsonia*, after Dr. Parsons, who published a treatise on the seeds of vegetables, and many other curious remarks on different parts of natural history^k. Jussieu keeps it separate from *Lythrum*, under the name which Browne had given it: the calyx being ventricose and only six-toothed; stamens only six, short so as not to stand out of the corolla; capsule small, membranaceous, covered by the calyx, one-celled (two-celled), containing few seeds (two to six), fastened to a central receptacle. The flowers are axillary, alternate and solitary.

8. This is a weakly plant, with a slender stem well supplied with branches towards the top; and having a disagreeable sharp smell, approaching much to that of Guinea Henweed, but more subtle, and less perceptible when placed close to the nose. The leaves and flowers are much like those of the preceding, as well as the disposition and make of the capsule; but that plant does not branch so much, nor has it any thing of this smell^l.

Stem almost a foot high, subdivided, ascending, roundish, rugged. Leaves petioled, large, acute, quite entire, nerved, somewhat rugged. Flowers peduncled, solitary, axillary, larger than those of the preceding sort, purple. The calyx has from six to ten teeth. Petals ovate, deciduous. Filaments eight to ten, unequal, short, inserted below the middle of the tube: anthers cordate. Stigma acute. Seeds four to six, fastened to a pedicel, emitted by the bursting of the calyx, ovate, compressed. Distinguished by the alternate situation of the flowers^m. But is not that circumstance common to this and the preceding sort? Native of Jamaica, in the cane-pieces. I suppose Browne's name is given on account of its smell. If *Parsonia* should be separated from *Lythrum*, this will accompany it.

9. Native of Hispaniola.

10. Native of Jamaica. These are both shrubbyⁿ.

11. Root fibrous, annual. It has a delicate slender

stalk, round, upright, ten inches or a foot in height; pubescent, purple: branches few, alternate, simple. The whole plant is extremely viscid all over. Leaves quite entire. Flowers lateral, on very short peduncles, solitary, decumbent. Calyx twelve-streaked, six-toothed, the upper tooth wider. Petals unequal, the two upper ones larger. Nectary a reflex scale, within the prominent part of the calyx. Stamens twelve, unequal by insertion, eight coordinate and of the same shape, four smaller in two rows, the two upper ones villose: anthers roundish. Capsule oblong, one-celled, covered by the calyx, cloven along with it, and then boat-shaped; the receptacle with the unripe seeds coming forth and rising, in order to ripen the seeds in the open air, after the manner of *Phryma*^o. The seeds are few, from five to ten, ovate-rounded, lens-shaped, with a right line on one side ending in a very minute caruncle, of a testaceous brown colour^p. It differs from *Lythrum* in having a six-toothed unequal calyx; six (or five) unequal petals; and a one-celled capsule without valves, bursting by the enlargement of the receptacle: hence Jussieu, Gærtner and others, following Browne, have made it a distinct genus under the name of *Cuphea*, but Schreber not having taken it up, I have left it here.

Native of America, as Brasil and Jamaica; introduced in 1776, by Jos. Nich. de Jacquin, M.D. It flowers in July and August^q.

12. Root perennial. Easily distinguished from the rest by its filiform peduncles, terminated by two lanceolate channelled spreading bractes, longer than the flower, and between these three regular flowers, on short pedicels, blue and small^r.

Jussieu doubts whether this, which is the *Nesaea* of Commerson, really belongs to this genus. According to him the leaves are opposite, the peduncles opposite axillary three-flowered, the calyx ventricose with from eight to ten teeth, the corolla four or five-petalled, with from eight to ten stamens, and the fruit two-celled. Native of America.

13. This is a hoary shrub. Leaves approximating, at the tops of the branches. The calyx has twelve unequal toothlets. Petals white. Stamens twelve. Capsule turbinate.

It appears to be of a different genus on account of its one-celled circumscised fruit, but if one difference be deemed sufficient to constitute a separate genus, genera will be multiplied too much; and natural genera ought as much as possible to be kept entire^s.

Forster has given it under the name of *Pemphis*, from Περμψις, *bullia*, which the globular germ represents. According to him, the capsule is one-celled and six-valved, the seeds angular, compressed, fastened to a short three-toothed receptacle at the bottom of the capsule; in other respects the characters agree with those of *Lythrum*: and in his *Florula* he has given it under Linneus's name.

Found by Koenig on the coast of Ceylon, and by Forster in the island of Teautea in the South Sea.

14. This is a suffruticose plant. Leaves quite entire, veined. Racemes long, from the forks, or terminating. Flowers remote, in pairs, pedicelled, erect, with ovate bractes. The ends of the twigs, the calyxes and pedicels have clammy hairs.

15. This is a shrub with alternate branches. Leaves quite entire, very rugged with shagginess on both sides, shining on the upper; the lower in whorls, by fours or threes, on the branchlets opposite. Flowers pedicelled. Calyx linear, hispid, viscid. Petals large, inserted into the upper margin of the calyx, erect, obovate, violet or blue. This species is very distinct on account of its flowers, which are handsome. Both these were found in South America by Mutis^t.

16. Root annual. (Mr. Miller says perennial.) Stems prostrate, stiffish, simple or branched only near the root, rod-like. Leaves numerous, sessile, blunt, quite entire. Flowers axillary, solitary, subsessile, small, blue. (Linneus says purple, white at the base;

^f Linn.

^g Brown. jam.

^h Ibid.

ⁱ Browne.

^j Ibid.

^k Ibid.

^l Swartz.

^m Swartz.

^o Lin. suppl. & Browne.

^p Hort. kew.

^q Linn. suppl.

^r Ibid.

^s Gærtner.

^t Ibid.

Miller, light purple.) Calyx tubular, with five or six spreading teeth. Stamens shorter than the calyx^a.

Scopoli says, the stem is half a foot long; the branches angular; the calyx cylindric, streaked, smooth, twelve-toothed; the teeth alternately smaller and upright; the capsule four-celled, four-grooved, blunt, inclosed in the calyx, rufescent, cylindric; the seeds roundish, as many as fifty-six in one cell. The fruiting calyxes are pressed to the scape.

Pollich remarks, that though the flowers are solitary, yet that sometimes there are two together sitting close in the axil of a leaf; that the calyx is six-toothed, and that the teeth are short pointed spreading, and red at the tip.

Mr. Miller says that the stems are a foot, and Mons. Villars that they are two feet long. The latter remarks that the leaves are very bitter.

Krocker affirms, that the stems are suberect, not properly decumbent, and that they are a foot or more in length, quadrangular, with simple suberect brachiate branches from the base. Leaves glaucous-green, smooth, on very short petioles or sessile, an inch long and two lines wide. Flowers one, or two alternate. Calyx six or twelve-cleft; divisions triangular, six broader upright, six smaller reflex. Petals five or six, rose-coloured; ovate-lanceolate, inserted into the edge of the calyx between the segments, fugacious. Stamens six or eight. Capsule cylindric, contained within the calyx, two-celled.—Part of this description is from Haller.

Native of many parts of Europe, as Germany, Switzerland, Austria, France, Italy, England, in wet meadows, watery places, and especially where water stagnates in winter; but it does not seem to be very common any where. With us it is found on Hounslow heath. Between Staines and Laleham. On Histon, Hinton and Teversham moors, and at Oakington in Cambridgeshire. On the Banbury road from Oxford, near the first turnpike gate. Feversham in Kent, in the ditches near the Abbey pond. Near the Wheat-sheaf, five miles beyond Huntingdon on the north road. About Wilford in Northamptonshire: flowering in July and August. In English it is called *Grafs-Poly* or *small Hedge-Hyssop*.

17. Root annual. Very like the preceding, but only half or one third of the size. Stems, according to Villars, creeping, five or six inches long, with others smaller springing from their centre, which have several alternate branches. Krocker says the stem is upright, with sometimes a branch or two, but commonly simple. Leaves small, pointed, very dark green, the lower ones opposite, the rest alternate. Flowers solitary, axillary, sessile, very small. Calyx small, angular, commonly four-toothed, but sometimes though rarely five-toothed, supported by two lateral stipules. Petals commonly four, rose-coloured. Stamens commonly four, sometimes two or five. The number of these and of the petals corresponding with the divisions of the calyx. The flowers are much smaller than in the preceding sort^a.

Native of the South of France, Italy, Silesia, &c. in moist meadows and ditches; flowering in August. Krocker suspects that it may be a variety of the preceding.]

18. This has a woody root, from which arise two or three slender stalks upwards of two feet high. Leaves smooth. Flowers from the upper axils, solitary, small, white, six-petalled. They do not appear till the second year from seed. It was discovered by Dr. Houstoun at La Vera Cruz, in swamps: and was cultivated by Mr. Miller before 1733, but has been since lost.

PROPAGATION AND CULTURE.

1. The first, with its varieties, may easily be cultivated by parting the roots in autumn, but should be planted in a moist soil. It is a handsome plant, and deserving of a place in large gardens and plantations.

2. 4. 5. 6. The other hardy foreign sorts may be increased in the same manner. When raised from seed,

^a Linn. mant. & Woodw. Mss.

^x Linn. Villars, Krocker.

the seeds should be sown in autumn; otherwise they will remain a year in the ground.

3. 7. 8. 9. 10. 11. 12. 13. 14. 15. 18. These are too tender to live in the open air. Sow the seeds in pots, and plunge them into an old hot-bed. They will not rise unless they are sown in autumn. Shelter them through the winter, and in spring place them in a fresh hot-bed. Treat them as other tender plants from hot countries.

16. 17. Being annual, must be raised from seeds: but they are bog plants, and seldom cultivated in gardens.

M.

[MABA. (*The vernacular name of the islanders in the South Seas.*)

Lin. gen. Schreb. n. 1500. Suppl. 65. Forst. gen. t. 61. Juss. 418.

Class. 22. 3. Dioecia Triandria.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* semitrid: *divisions* acute, villose.

COR. one-petalled, tubular, villose on the outside. *Tube* cylindric, longer than the calyx. *Border* trid: *divisions* ovate, thickish, upright.

STAM. *Filaments* three, filiform, shorter than the calyx. *Anthers* erect, ovate.

PIST. *Rudiment* globular subsessile in the centre of the flower.

* Female.

CAL. *Perianth* inferior permanent—as in the Males.

COR.

PIST.

PER. *Drupe* superior, ovate-oblong, two-celled: *cells* two-seeded.

SEEDS. *Nuts* two oblong three-sided, somewhat convex at the back, with two plane sides.

ESSENTIAL CHARACTER.

Cal. trid. MALE. Cor. trid. FEM. *Drupe* superior, two-celled.

SPECIES.

1. *Maba elliptica*.

Forst. gen. 122. flor. austral. n. 366. Lin. syst. 881. suppl. 426.

DESCRIPTION, &c.

This is a very smooth tree, with the twigs and young leaves hairy. Leaves alternate, on very short petioles, elliptic, veined, very smooth. Peduncles axillary, short, often three-flowered. Flowers small, and singular in having the outside of the calyx and corolla more villose than any of the plant^a. Native of the Friendly islands.

There is another species or variety, which Forster calls *Maba major*, because the drupe or fruit is three times the size of the other, having three-sided kernels in the cells, which are tough and insipid; they are however eaten by the inhabitants, and were brought for sale to our people. In all the Friendly islands they plant the tree about their houses^b.

MABEA. (*The vernacular name amongst the Caribs is Piriri Mabé.*)

Lin. gen. Schreb. n. 1438. Aubl. t. 334. Juss. 388.

Class. 21. 7. Monoecia Polyandria.

Nat. order of *Tricoccæ*.—*Euphorbiæ*, Juss.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* one-leafed, five-toothed, acute.

COR. none.

STAM. *Filaments* nine to twelve, inserted into the bottom of the calyx. *Anthers* roundish.

^a Linn. suppl.

^b Forst. escul. 54.

* Female

M A C

* Female.

CAL. *Perianth* one-leaved, upright, five-toothed, acute.

COR. none.

PIST. *Germ* oblong, subtrigonal, longer than the calyx. *Style* long. (Are there not rather three styles glued together? *Juss.*) *Stigmas* three, filiform, revolute, or twisted spirally.

PER. *Capsule* covered with a thick bark, roundish, trilocular, three-celled; cells bivalve, bursting elastically.

SEEDS solitary, roundish.

ESSENTIAL CHARACTER.

Cal. one-leaved, five-toothed. *Cor.* none.

MALE. *Filam.* nine to twelve, inserted into the bottom of the calyx.

FEM. *Germ* and *Style* one. *Stigmas* three, revolute. *Capsule* covered with a thick bark, three-celled, three-seeded.

SPECIES.

1. *Mabea Piriri*. M. with ovate-oblong acuminate leaves. *Aubl. pl. Guian. p.* 867. *t.* 334.
2. *Mabea Taquari*. M. with ovate obtuse leaves marked with red veins beneath.

DESCRIPTIONS.

1. This is a shrub, of which the trunk is six feet high; and about six inches in diameter. From the trunk rise several twiggy branches to a great height, which spread and catch upon the neighbouring trees. The leaves are alternate, smooth, green above, white below: the foot-stalk short, and furnished with two long and straight stipules, which are deciduous. The flowers are borne in great numbers on the tops of the branches, ranged in a long panicle: the males are on the upper part of the panicle, the females on the lower, and are about eight or six in number. All the parts of this shrub yield a milky juice. The Creoles and Negroes use the smaller branches for pipes; for which reason the tree is called Pipe wood (*Bois a Calumet.*)

2. This differs from the preceding in having a reddish bark; and the leaves larger, green above, and veined with red beneath: the largest are three inches and a quarter long, and an inch and quarter wide. The fruit is much larger than the former. In other respects it is like the former, and the branches are put to the same use.

MACAW-TREE. See *Cocos*.

MACEDONIAN PARSLEY. See *Bubon*.

MACPALXCCHI. See *Helicteres*.

MACROCARPON. See *Artocarpus*.

MACROCNUM. (*Μακρονύμνος, longas tibias habens.*)

Lin. gen. Reich. n. 241. *Schreb. n.* 297. *Browne* 165. *Juss.* 200.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Contortæ.—Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, superior, turbinate, five-toothed, permanent.

COR. one-petalled, somewhat bell-shaped, five-cleft: *divisions* ovate, upright.

STAM. *Filaments* five, awl-shaped, villose, shorter than the corolla. *Anthers* ovate, compressed, in the jaws of the flower.

PIST. *Germ* inferior, conical. *Style* simple, the length of the stamens. *Stigma* thickish, two-lobed.

PER. *Capsule* oblong, turbinate, two-celled, two-valved.

SEEDS very many, imbricate.

ESSENTIAL CHARACTER.

Cor. bell-shaped. *Caps.* two-celled: two-valved, with the valves gaping outwardly at the sides. *Seeds* imbricate.

SPECIES.

1. *Macrocnemum jamaicense*.

Lin. spec. 244. *syn.* 212. *Reich. l.* 474. *amoen.* 5. 413. *Swartz. obs.* 68. *t.* 3. *f.* 1. *Brown. jam.* 165.

2. *Macrocnemum coccineum*.

Vahl. symb. 2. 38. *t.* 29.

Racemes with elliptic coloured leaves, leaves lanceolate-elliptic.

M A C

3. *Macrocnemum candidissimum*.

Vahl. symb. 2. 38. *t.* 30.

Corymbs trichotomous with roundish leaves, leaves ovate.

DESCRIPTION, &c.

1. This is a small tree, with a branching smooth trunk. Branches long, loose, round, warted. Leaves approximating, towards the upper part of the branchlets petioled, opposite, large, oblong, with a short point, entire, nerved, smooth on both sides. Petioles short thickish round smooth. Flowers in a sort of panicle. Peduncles axillary opposite longer than the leaves round compressed smooth, three-parted above, with trichotomous branchlets, the last one-flowered. Corollas rather large, of a yellowish green: tube half an inch long, regular, narrower at the throat, before opening five-cornered, then cylindric: divisions of the border acute, almost upright. Filaments the length of the tube, from the base above the middle very hairy, a little inclined. Anthers vertical oblong tawny. Germ obconical smooth.

Browne observes, that this tree rises generally to the height of twelve or fourteen feet. It is a native of the southern part of the island of Jamaica, on the banks of rivulets.

2. This is a tree with hairy branches. Leaves petioled, a foot long and a hand wide, narrowed at the base, broader outwards, membranaceous, quite entire, smooth above, the midrib hairy underneath. Raceme terminating, a foot long, peduncled, composed of small opposite peduncled corymbs: partial peduncle hirsute trifid: lateral pedicels five-flowered; middle one trifid. Bracte at the base of the partial peduncles ovate, acuminate, concave, ciliated: bracte of the pedicels lanceolate, rough-haired. The five clefts of the calyx are rounded. There is a petioled leaflet, an inch and half long, elliptic purple, netted veined, smooth, to each corymb, as in *Mussaenda frondosa*. Corolla funnel-form: divisions lanceolate, blunt, smooth: tube twice as long as the calyx. Filaments in the jaws of the tube, the length of the corolla, hairy within: anthers linear, reaching beyond the corolla. Germ turbinate, angular, hirsute: style thickened, the length of the corolla: stigmas two, blunt, reflex. Seeds membranaceous, awl-shaped, fastened to a linear receptacle. Can this be a *Macrocnemum*, with the corolla not bell-shaped? It certainly agrees with that genus in most circumstances. It differs from *Mussaenda* in the fruit. Found in the island of Trinidad by von Rohr.

3. This is a tree with round smooth opposite branches, jointed at top, compressed, dilated under the leaves. Leaves petioled, two inches long and more, opposite, acuminate, blunt, veined, quite entire, smooth above, paler underneath, villose along the veins. Peduncles from the tops of the branches in threes, ancipital, dilated at top, twice trifid. Leaflets two, small, under the first division of the peduncles. Partial peduncles of the same structure with the common peduncle. Pedicels three-flowered: the lateral flowers subpedicelled, the middle flower sessile. There is a petioled leaf, obovate or roundish, an inch long, membranaceous, netted-veined, very white, from the margin of the lateral calyxes of the corymb, two in each corymb. Capsule oblong, somewhat flattened, two-grooved, each valve having a raised line along it. Found by von Rohr in the neighbourhood of St. Martha.

MACROLOBIUM. (So named probably from having one of the petals very long in proportion to the others.)

Lin. gen. Schreb. n. 62. *Outea. Aubl. guian.* *t.* 9. *Juss.* 347. *Vouapa. Aubl. t.* 7. *Juss.* 350.

Class. 3. 1. Triandria Monogynia.

Nat. order of Lomentaceæ.—Leguminosæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* double. Outer two-leaved: leaflets opposite, ovate-oblong, fastened to the base of the inner. Inner one-leaved, turbinate, short: mouth oblique, five-toothed.

^a Swartz.

^b Vahl.

COR.

COR. five-petalled, unequal. *Upper petal* very large, upright, clawed, oblong, blunt, concave, waved, inserted into the inner perianth. *Lower petals* four, small, ovate, spreading, fastened to the inner perianth above.

STAM. *Filaments* four, inserted into the inner perianth, one short barren, under the great petal: three very long, filiform, anther-bearing, fastened below the smaller petals. *Anthers* four-cornered.

PIST. *Germ*, pedicelled, ovate. *Style* filiform. *Stigma* blunt.

PER. *Legume* ovate, compressed, coriaceous, one-celled.

SEED single, roundish, compressed.

OBS. *Outea* and *Vouapa* of *Aublet*, seem to be of the same genus, since in both, the corolla, fertile stamens and pistil, agree in number figure and situation of parts; though in the former *Aublet* did not find the ripe fruit, and in the latter has not distinguished the smaller petals from the calyx. *Jussieu* however has kept them separate.

ESSENTIAL CHARACTER.

Cal. double: outer two-leaved: inner one-leaved. Pet. five: upper very large, the four others very small, equal. *Germ* pedicelled. *Legume*.

SPECIES.

1. *M. Vouapa*. With binate leaves; the legume sharp on one side, and two-winged.
2. *M. Simira*. With binate leaves; the legume rounded on all sides.
3. *M. Outea*. With two-paired leaves (foliis bijugis.)

DESCRIPTIONS, &c.

1. This is a tree sixty feet high, very much branching at the top, with scattered branches and branchlets: the leaves are alternate, green, strong, and thick; oval, and terminated by a long point: the largest are about five inches long, and two broad. The flowers grow on a little sprig from the bosoms of the leaves at the ends of the branches: they are large, and of a pale violet-colour. It grows in the large forests of Guiana.

2. This is a tree of eighty feet high, with a very thick trunk, much branched at the top: the bark is reddish, thick, and wrinkled. Leaves smooth, entire, green, the flowers were not observed by *Aublet*.

3. A tall tree, rising to fifty feet, with a smooth, gray bark: very branchy at top: branches some rising, others hanging; leaves alternate: their wings smooth, strong, green, oval, and obtuse: from the bosoms of the leaves spring the spikes of flowers about three inches long; these flowers are alternate, solitary, and borne each on a peduncle of different length in different flowers, and furnished at the base with a small scale. Grows in forests in Guiana.

MACUNA. See *Dolichos*.

MADABLOTA. See *Gærtnera*.

MAD APPLE. See *Solanum*.]

MADDER. See *Rubia*.

[MÆSA. See *Bæobotrys*. *Mæsa* of *Forstkahl* is *B. lanceolata* of *Vahl*, *ymb.* 1. 19. t. 6.

[MADWORT. See *Alyssum* & *Asperugo*.

MAGISTRANTIA. See *Imperatoria*.]

MAGNOLIA. (So named by *Plumier*, in honour of *Pierre Magnol*, Professor of Medicine, and Prefect of the botanic garden at *Montpelier*. He published *Botanicum Montpelienfe*, 1676. *Prodromus Hist. Plant.* 1689. *Hort. Monspel.* 1697. *Character Plantarum.* 1720.)

Lin. gen. n. 690. *Reich. n.* 748. *Schreb. n.* 942. *Plum. 7.* *Juss.* 281. *Dill. elth.* 168. *Gærtn. t.* 70.

Class. 13. 7. Polyandria Polygynia.

Nat. order of *Coadunatae*.—*Magnoliæ*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* three-leaved: leaflets ovate, concave, petal-shaped, deciduous.

COR. *Petals* nine, oblong, concave, blunt, narrower at the base.

STAM. *Filaments* numerous, short, acuminate, compressed, inserted into the common receptacle of the pistils below the germs. *Anthers* linear, fastened on each side to the margin of the filaments.

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PIST. *Germ*s numerous, ovate-oblong, two-celled, covering a club-shaped receptacle. *Styles* recurved, contorted, very short. *Stigmas* longitudinal of the style, villose.

PER. *Strobile* ovate, covered with *Capsules*, which are compressed, roundish, scarcely imbricate, clustered, acute, one-celled, two-valved, sessile, opening outwards, permanent.

SEEDS two or one, roundish, berried, hanging by a thread from the sinus of each scale of the strobile.

OBS. The *Germ*s are two-celled and two-seeded: the ripe capsules one-celled, two-valved. *Gærtn.*

ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. nine. Caps. one-celled, two-valved. Seeds berried, pendulous.

SPECIES.

1. *Magnolia grandiflora*. Laurel-leaved *Magnolia*.

Lin. spec. 755. *yst.* 508. *Reich.* 2. 625. *Gærtn. fruct.* 1. 343. *Marsh. arbust.* 84. *Mill. fig. t.* 172. *Catesb. car. t.* 61. *Trew Ebret. t.* 33. *Hort. angl. t.* 14.

α. Common Laurel-leaved *Magnolia*.

Leaves oblong-elliptic coriaceous, flowers somewhat contracted.

β. Broad Laurel-leaved *Magnolia*.

Leaves obovate-oblong, flowers expanded.

γ. Long Laurel-leaved *Magnolia*.

Leaves oblong-lanceolate bent at the tip, flowers somewhat contracted. *Ait. hort. kew.* 2. 251.

Leaves perennial oblong, tomentose underneath, petals obovate.

- [2. *Magnolia Plumieri*. Plumier's *Magnolia*.

Swartz. prodr. 87.

M. Plum. gen. 38. 7. *ic. not.* *Burm.* 161.

Leaves perennial ovate-roundish smooth on both sides.]

3. *Magnolia glauca*. Swamp *Magnolia*.

Lin. spec. 755. *yst.* 508. *Reich.* 2. 626. *hort. cliff.* 222. *Marsh. arbust.* 83. *Du Roi barbk.* 1. 399. *Gron. virg.* 61. *Kalm. itin.* 2. 324. *engl. ed.* 1. 204. *Dill. elth.* 207. t. 168. f. 205. *Catesb. car.* 1. t. 39. *Trew Ebret. t.* 9. *Pluk. phyt.* t. 68. f. 4.

Laurus Tulipifera baccis calyculatis. *Banisteri. Raii hist.* 1690. item 1798. n. 4.

α. *M. glauca latifolia*. Deciduous Swamp *Magnolia*.

β. *M. glauca longifolia*. Evergreen Swamp *Magnolia*. *Ait. hort. kew.* 2. 251.

Leaves ovate-oblong glaucous underneath.

- [4. *Magnolia obovata*.

Thunb. in Linn. transf. 2. 336.

M. glauca β. *Thunb. jap.* 236.

Mokkwuren. Kämpf. aman. 5. 845. *ic. select.* t. 43, 44.

Leaves obovate, parallel-nerved and netted underneath.

5. *Magnolia tomentosa*.

Thunb. in Linn. transf. 2. 336.

M. glauca α. *Thunb. jap.* 236.

Mitsmata, item Kobus. Kämpf. aman. 5. 845. *ic. select.* t. 42.

Leaves elliptic tomentose underneath.]

6. *Magnolia acuminata*. Blue *Magnolia*.

Lin. spec. 756. *yst.* 508. *Reich.* 2. 626. *Catesb. car.* 3. t. 15. *Gron. virg.* 61. *Kalm. itin.* 2. 324. *Marsh. arbust.* 83.

Leaves ovate-oblong acuminate.

7. *Magnolia tripetala*. Umbrella *Magnolia* or Umbrella Tree.

Lin. spec. 756. *yst.* 508. *Reich.* 2. 626. *Catesb. car.* 2. t. 80. *Trew Ebret. t.* 32. *Marsh. arbust.* 84.

Leaves lanceolate, outer petals hanging down.

DESCRIPTIONS, &c.

[These are trees, chiefly natives of North America, none of Europe. The leaves are large, and the flowers are axillary, very large, and odorous.]

1. The Great laurel-leaved *Magnolia* or Tulip-tree, in the Southern Provinces of North America, rises with a straight trunk of two feet or more in diameter to the height of seventy or eighty feet, or more, dividing into many spreading branches, that form a large regular head. The leaves are nine or ten inches long, and three inches broad in the middle, of a thick

consistence, resembling those of the common Laurel, but much larger, entire but a little waved on their edges, of a lucid green on the upper surface, and sometimes russet-coloured underneath; they are sessile, placed without order on every side the branches, and continue green throughout the year, falling off only as the branches extend, and new leaves are produced. The flowers are produced at the ends of the branches: they are very large, and composed of eight or ten petals, narrow at their base, but broad rounded and a little waved at their extremities; they spread open very wide, are of a pure white colour, and have an agreeable scent.

[The fruit is composed of many capsules disposed in form of a strobile; they are triangular, compressed wedge-shaped, coriaceous, one-celled, the outer side thickened, corky, pubescent; they gape open, and each cell is lined with its own papery membrane, and is accompanied at its lower and anterior margin with the style converted into a woody bristle. Common receptacle long, roundish, covered all over with the capsules placed vertically. Proper receptacle a filiform umbilical chord, becoming finally very long, springing from the inner angle of the capsule. Seeds regularly two to each capsule, but sometimes only one, parabolical, plano-convex or obsoletely angular, berried, scarlet^a.]

The summers in England are not warm enough to bring the fruit to perfection, though some old plants often form strobiles. This tree in its native country begins to produce flowers in may, and continues a long time in flower, so that the woods are perfumed with their odour the greatest part of the summer: but in England it seldom begins to flower till the middle or end of june, and does not continue long in beauty.

This fine tree is a native of Florida and Carolina, and in common with many of the trees and plants of that country, is impatient of cold here, and difficult to keep in perfection, either abroad or housed. If it can be so far naturalized as to endure the cold of our severe winters in the open air, it will be one of the greatest ornaments to our plantations. The time when it suffers most is by the early frosts in autumn, the extremities of the shoots being then tender.

[In the Kew catalogue, it is said, from Catesby, that the Laurel-leaved Magnolia was cultivated before 1737, by Sir John Colliton.] Mr. Miller relates that there were a great many young plants in England before the year 1739; that a great part of these were destroyed by that severe winter; and that since, few good seeds have been sent to England, so that for many years after few of the plants were to be sold in the nurseries. He had however a pretty large plant, which having been apparently killed by the severe winter of 1739-40, he cut down to the ground after midsummer, and the root shot up again the year after. He says that the largest tree of this sort which he had met with in England was in the garden of Sir John Colliton of Exmouth in Devonshire; he also mentions a very handsome plant in Mr. Christopher Gray's nursery near Fulham; and many large thriving trees at Goodwood in Sussex, the seat of his Grace the Duke of Richmond.

[2. Native of the islands of St. Lucia, Martinico, and Guadaloupe, in the West Indies^b.] Mr. Miller remarks, that if Father Plumier's figure of the section of his fruit be exact, his must be a different genus from this; the seeds being represented within the fruit, lying round a column.

3. Swamp Magnolia usually grows about fifteen or sixteen feet high, with a slender stem, covered with a smooth whitish bark. The wood is white and spongy. Leaves thick and smooth, resembling those of the Bay, [entire, dark green on their upper surface, but whitish or glaucous, and a little hairy underneath.] The flowers are produced in may and june at the extremity of the branches; they are white, and have an agreeable sweet scent; and have only six concave petals. After these are past the fruit increases to the size of a Walnut with its cover [an inch or more in length, and three fourths

^a Gartner.

^b Swartz.

of an inch in diameter] of a conical shape: the seed is about the size of a kidney-bean. This fruit is at first green, afterwards red, and when ripe, of a brown colour. In North America, where it grows naturally in low moist or swampy ground, there is a succession of flowers on the trees for two months or more: but in England there are seldom more than twelve or fourteen flowers on a tree, and these of short duration.

The young plants frequently retain their leaves through the greatest part of winter, and often do not fall, till the young shoots thrust them off; but when they are three or four years old, they constantly cast their leaves by the beginning of november.

[In the Kew catalogue however the *deciduous* is distinguished from the *evergreen* Swamp Magnolia.]

The greatest number of these trees, which are now growing in England, are at his Grace the Duke of Norfolk's, at Workshop Manor, in Nottinghamshire.

[It was cultivated in 1688, being inserted by Ray in his catalogue of rare exotic trees and shrubs, cultivated in the episcopal garden at Fulham, by Bishop Compton, to whom it was sent by Banister^c.

In America this tree is known by the names of *White Laurel*, *Swamp Sassafras*, and *Beaver Tree*. It has the last name, because the root is eaten as a great dainty by Beavers; and this animal is caught by means of it. Kalm says that this tree drops its leaves early in autumn, though some of the young trees keep them all the winter. This corresponds with what Mr. Miller affirms, as stated above. Kalm also reports, that he has seldom found the Beaver tree to the north of Pennsylvania, where it begins to flower at the end of may. These trees may then be discovered by the scent of the blossoms at the distance of three quarters of a mile, if the wind be favourable. It is beyond description pleasant to travel in the woods at that season, especially in the evening. They retain their flowers for three weeks, and even longer. The berries also look very handsome, when they are ripe, being of a rich red colour, and hanging in bunches on slender threads. They cure coughs and other pectoral diseases by putting these berries into brandy, and giving a draught of the liquor every morning; it is even said to have salutary effects in consumptions. A decoction of the bark also, or an infusion of it in brandy, is said not only to ease pectoral diseases, but to be of service against internal pains and heat, and it is thought that it will stop a dysentery. For a cold they commonly boil the branches in water.—The wood is made use of for joiner's planes^d.—Dillenius usually observed eight petals in the corolla; and remarks that the flowers never open in a morning, that the calyx falls off at the second opening of the flower; but that the petals dry on, and that the scent resembles that of Lily of the Valley, with a mixture of aromatic.

4. The leaves of this are obovate-oblong, entire, smooth, from a hand to a foot in length, with the nerves underneath villose.

5. The leaves are elliptic-lanceolate, acute, petioled, entire, smooth above, silky tomentose underneath, a hand in length. Peduncles short, reflex, grooved, thick, tomentose. Both are natives of Japan, and were originally supposed by Thunberg to be the same with *M. glauca* of America. They are cultivated by the Japonese for the elegance of the flowers^e.

6. This tree grows sometimes to the height of thirty or forty feet, and the trunk is eighteen inches or more in diameter.] Leaves near eight inches long, and five broad. The flowers come out early in the spring, are composed of twelve [large bluish-coloured petals. The fruit is about three inches long, somewhat resembling a small Cucumber, whence the inhabitants of North America call it Cucumber Tree^f.] The wood is of a fine grain, and an orange colour. It is not very common in any of the inhabited parts of America. Some of the trees were discovered by Mr. John Bartram, growing on the north branch of Susquehannah river. [It was introduced in 1736, by Mr. Peter Collinson^g.]

^c Hist. p. 1798.

^e Thunb. in Linn. trans. & jap.

^g Hort. kew.

^d Kalm.

^f Marshall.

7. The Umbrella tree usually grows from sixteen to twenty feet high, with a slender trunk, [covered with a smooth bark, and dividing into several branches.] The leaves are remarkably large, [often from twelve to fifteen inches or more in length, and five or six in width, narrowing to a point at each extremity, placed at the ends of the branches in a circular manner, somewhat like an Umbrella, whence its name. The flowers are composed of ten, eleven or twelve large, oblong, white petals; the outer ones hanging down. Seed-vessels oblong, conical, between three and four inches in length, and about an inch and half in diameter^b.]

The wood is soft and spongy; and the leaves drop off at the beginning of winter.

This is pretty frequent in Carolina. It is also found in Virginia, [and some parts of Pennsylvania. It was cultivated here in 1752, according to Miller¹.]

PROPAGATION AND CULTURE.

The Magnolias are propagated by seeds, procured from the places of their natural growth: these should be put up in sand, and sent over as soon as possible; for if they are kept long out of the ground, they rarely grow, and therefore should be sown soon after they arrive. It is a good way to sow them in pots, and plunge them into an old hot-bed of tanner's bark.

They may also be raised from layers and cuttings; but these do not thrive so well as those which come from seeds, nor will they grow to near their size.

1. The first sort is not so difficult to train up as the third, but in order to get the plants forward, it will be proper when they are removed out of the seed-pots, to plant them each into a separate small pot, filled with soft loamy earth, and plunge them into a gentle hot-bed of tanner's bark, observing to shade them from the sun, and admit proper air to them; but at midsummer, if they are well rooted, inure them to the open air gradually, and place them in a sheltered situation, where they may remain till autumn; but on the first approach of frost remove them under shelter. When the plants have got strength, some of them may be turned out of the pots, and planted in the full ground in a warm sheltered situation; but part should be kept in pots, and sheltered in the winter, lest those in the open air should be killed.

If the plants make good progress, they will be strong enough to plant in the full ground in about six or seven years from seeds. Remove or shift them in march, before they begin to shoot; which may sometimes happen to be too soon to turn them out of the pots into the full ground; but as there will be no danger in removing them out of the pots, the ball of earth being preserved to their roots, it is best to defer this till the month of april: but it will be necessary to harden those plants which are intended to be planted out, by exposing them to the air as much as possible before, which will keep the plants back, and prevent their shooting: for if they make shoots in the greenhouse, they will be too tender to bear the sun, until they are by degrees hardened to it, and the frosts which frequently happen very late in the spring will greatly pinch them.

Two or three winters after they are planted out, it will be necessary to lay some mulch on the surface of the ground about their roots, as also to throw some mats over their heads, especially at the beginning of the morning frosts in autumn: but in doing this, the heads of the plant should never be too closely covered up, lest the shoots should grow mouldy, which will be as injurious to them as the frost. As the plants get strength, they will be better able to endure the cold of our climate; though it will be proper to lay some mulch about their roots every winter, and in very severe frost to cover their heads and stems. [This is best done by erecting an occasional frame of poles, whereon the mats may be thrown, which by being at a distance from the plant, will not confine it, or bruise the tender shoots; and they may be put aside in the day time towards the sun, or from the wind.]

3. When the Swamp Magnolias are transplanted from the place of growth into dry ground, they make

handsomer trees, and produce a greater number of flowers: this however is to be understood of America, for in Europe they do not thrive so well in a dry soil as in a moist loam.

This and the other deciduous sorts are not so tender as the first, but will endure the cold very well, after they have once acquired strength: for as they lose their leaves in the winter, the frost has not so much power over them as over the first, whose leaves are frequently tender towards the ends of the shoots; especially when it grows freely, or shoots late in the autumn.

[In increasing these trees by Layers, choose the young pliable shoots, giving them a gentle twist or a slit. It may be done either in spring or autumn. Some may root in one year, but more probably not till the second. Take them off in march, plant them in pots, and plunge them in a moderate hot-bed for a month or two, and thus they will make good plants by autumn. Shelter them during winter for a year or two, and then plant them in the full ground.

For Cuttings, take short young shoots of the preceding year; in march or april plant them in pots; plunge the pots up to the brims in a hot-bed; water and shade them occasionally; and when they are rooted inure them by degrees to the open air.

MAHAGONI. See *Swietenia*.

MAHALEB. See *Prunus*.

MAHERNIA.

Lin. gen. Reich. n. 424. Schreb. n. 534. Juss. 290. Cavan. diff.

Class. 5. 5. Pentandria Pentagynia.

Nat. order of *Columniferae. Tiliaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-cleft, bell-shaped; with awl-shaped longer teeth: permanent.

COR. *Petals* five, heart-shaped, oblong, spreading, twice as long as the calyx.

Nectaries five, obcordate, pedicelled, surrounding the germ, shorter than the calyx.

STAM. *Filaments* five, capillary, placed on the nectary, united at the base, shorter than the calyx. *Anthers* oblong, acuminate, erect.

PIST. *Germ* subpedicelled, obovate, five-angled. *Styles* five, bristle-shaped, erect, the length of the petals. *Stigmas* simple.

PER. *Capsule* ovate, five-celled, five-valved.

SEEDS few, kidney-form.

OBS. It has a very great affinity to *Hermannia*, but their *nectaries* cannot be combined in the same character.

ESSENTIAL CHARACTER.

Cal. five-toothed. Pet. five. Nect. five, obcordate, placed under the filaments. Caps. five-celled.

SPECIES.

1. *Mahernia verticillata*. Whorl-leaved *Mahernia*.

Lin. syst. 308. Reich. 1. 776. mant. 59.

Leaves in whorls linear.

2. *Mahernia pinnata*. Wing-leaved *Mahernia*.

Lin. syst. 308. Reich. 1. 776. Curt. magaz. 277.

Comm. rar. t. 7. (Ketmia) Pluk. mant. t. 244.

f. 3. (Cistoides)]

Hermannia pinnata. Lin. spec. 943. hort. cliff. 342.

Mill. dict. n. 6.

[*H. verticillata. Berg. cap. 169.*

Leaves three-parted pinnatifid.

3. *Mahernia incisa*. Cut-leaved *Mahernia*.

Curt. magaz. 353.

Leaves lanceolate gashed.

DESCRIPTIONS, &c.

1. Stem shrubby, diffused; with filiform branches. Leaves frequently from eight to ten in a whorl, scarcely divided or pinnatifid. Manner of fructification the same as in *Hermannia*, terminating, with the peduncles commonly two-flowered. Corolla yellow. Take away the nectaries from the petals, and add them to the stamens, and you will have a *Hermannia*, though a strange one, with the leaves in whorls^a.

Jussieu remarks, that the claws of the petals are not

^b Marshall.

¹ Hort. kew.

^a Linn. mant.

convoluted; the filaments flat and narrow below, dilated and obcordate above, with the tip contracted; one style and stigma, or perhaps rather five very closely cohering. The rest as in *Hermannia*.

Native of the Cape of Good Hope.]

2. This rises with a shrubby stem near three feet high, sending out many slender delicate branches, covered with a reddish bark. The flowers come out from the side of the branches in small clusters, [they are of a lively red, when they first open, and hang down like little bells, commonly two together; appearing from June to August and September.—Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. ^b Linneus regarded it at first as a species of *Hermannia*, to which genus it is very nearly allied.

3. In point of size and mode of growth this beautiful species comes near to the preceding, but differs essentially in the singular hispidity of its stalks, the form of its leaves, and the colour of its flowers.

The stalks to the naked eye discover a manifest roughness; with a magnifying glass it appears that they are beset on every side with little protuberances, whence issue tufts of pellucid hairs, and here and there a single hair is discoverable with a small red viscid globule at its extremity: a portion of the stalk, when highly magnified, somewhat resembles that of the creeping *Cereus*. The leaves, which are not so manifestly hairy as the stalk and calyxes, are deeply jagged on the edges, and somewhat resemble those of *Pelargonium tricolor*. The flowers when in bud are of the richest crimson: as they open they incline to a deep orange, and finally become yellowish.

Native of the Cape of Good Hope. It flowered in Mr. Colvill's nursery in 1796^c.

The name *Mahernia*, by which this genus is distinguished, is said to be an anagrammatic inversion of *Hermannia*; the two genera being very nearly allied, or rather in reality scarce to be separated.

PROPAGATION AND CULTURE.

They may be increased by cuttings.

MAHOE. See *Hibiscus*.

MAHOGANY TREE. See *Swietenia*.

MAHURIA. See *Bonnetia*.

MAIANTHEMUM. See *Convallaria*.

MAIDENHAIR. See *Adiantum*, *Asplenium*.

MAIDENHAIR TREE. See *Ginkgo* and *Salisburia*.

MAIDEN PLUM. See *Comocladia*.

MAIL-ANSCHI. See *Lawsonia*.]

MAJORANA. See [*Mentha*, *Ocimum*,] *Origanum*.

[MAITHES. See *Anthemis*.

—— Red. See *Adonis*.

MALA. See *Pyrus*.

—— Armeniaca. See *Prunus*.

—— Goensia. See *Averrhoa Carambola*.

—— infana. See *Solanum*.

MALABAR NIGHTSHADE. See *Basella*.

—— Nut. See *Justicia*.

MALACCA-PELA. See *Psidium*.

MALACCA-SCHAMBU. See *Eugenia*.

MALACHODENDRUM. (From *μαλαχον* a Mallow; which is from *μαλακος* soft; and that from *μαλασσω* or *μαλασσω*, to soften: and *δενδρον*, a tree.)

Lin. gen. Schreb. n. 1143. Mitch. 16. ap. Catesb.

3. 13. Cavan. diff. 5. 302.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*. *Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, deeply five-cleft: divisions lanceolate, acute, permanent.

COR. Petals five, roundish, erose, spreading, equal, large.

STAM. Filaments numerous, capillary, uniting at bottom into a short cylinder, shorter than the corolla. Anthers kidney-form.

PIST. Germ pear-shaped, pentagonal, villose. Styles five, erect, the length of the stamens. Stigmas globular.

PER. Capsules five, ovate-acuminate, coadunate, two-valved.

SEEDS solitary, ovate-three-sided.

^b Hort. kew.

^c Curtis.

ESSENTIAL CHARACTER.

Cal. simple. Germ pear-shaped, pentagonal. Styles five. Caps. five, one-seeded.

SPECIES.

1. *Malachodendrum ovatum*.

Cavanill. diff. p. 302. n. 437. t. 158. f. 2.

Leaves ovate smooth.

2. *Malachodendrum corchoroides*.

Stewartia corchoroides. Forsk. flor. ag. arab. p. 126. n. 98.

Sida spinosa. Vahl. symb. 2. p. 78.

Leaves villose.

DESCRIPTIONS, &c.

1. Stem arborescent, branchy, a fathom or more in height. Leaves alternate, ovate-acuminate, with distant serratures, and a single branching nerve: they are pubescent while young, and afterwards smooth: the foot-stalks are scarce an inch long, and are cylindrical beneath, and afterwards channelled with small membranes, and somewhat villose: there are no stipules: the flowers are large, axillary, and subsessile: the calyx villose externally, and smooth internally: the corolla is two inches long, yellow or whitish, villose externally: the claws of the petals somewhat leathery.

2. The stem is shrubby, and a foot and half in height: the leaves ovate, serrate, and villose underneath: the flowers small and yellow: the capsules five, separate, and two-horned.

MALACOIDES. See *Malope*.

MALACHRA. (From *μαλακος*, soft.)

Lin. gen. Reich. n. 903. Schreb. 1131. Cavan. diff. 2. 97. Juss. 272.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*.—*Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. Perianth common mostly five-flowered, three or five-leaved, large: leaflets cordate, acute, permanent. Chaffs brittle-shaped, set round the proper perianths.

Perianth proper one-leaved, bell-shaped, small, five-cleft, permanent.

COR. proper. Petals five, obovate, entire, fastened at bottom to the tube of stamens.

STAM. Filaments many, conjoined below into a tube, above loose gaping along the whole surface of the cylinder. Anthers kidney-form.

PIST. Germ orbicular. Style cylindric, ten-cleft. Stigmas globular.

PER. Capsule roundish, divisible into five cells, compressed on one side, gibbous on the other.

SEEDS solitary, roundish, angular.

OBS. The divisions of the style and the stigmas are twice as many as the capsules. Cavan.

ESSENTIAL CHARACTER.

Cal. common three-leaved, many-flowered, larger. Anils five, one-seeded.

SPECIES.

1. *Malachra capitata*. Heart-leaved *Malachra*.

Lin. syst. 624. Reich. 3. 340.]

Sida capitata. Lin. spec. 965. Aët. upf. 1743. 137.

t. 2. Mill. dict. n. 10. Brown. jam. 281.

Malva frutescens hirsuta, flor. luteis in capitulum congestis. Plum. spec. 2. ic. 169. f. 1.

M. aspera major aquatica. Sloan. jam. 1. 217. t. 137. f. 1. Raii suppl. 320.

Heads peduncled three-leaved seven-flowered.

[2. *Malachra radiata*.

Lin. syst. 624. Reich. 3. 340.

Sida radiata. Lin. spec. 965.

Alcea hirsutissima frutescens. Plum. spec. 2. t. 19.

Heads peduncled five-leaved many-flowered, leaves palmate.

3. *Malachra bracteata*.

Cavanill. diff. p. 98. n. 168.

Leaves palmate, heads many-flowered, flowers very small and bracteated.

4. *Malachra fasciata*.

Jacqu. ic. rar. 548.

With serrate three-lobed leaves, the lowest five-lobed, the common involucre three-leaved and about five-flowered.

5. *Malachra*

5. *Malachra alcaifolia*.*Jacqu. ic. rar.* 549.*With five-lobed leaves cordate at the base; the common involucre five-leaved, and about ten-flowered.*

DESCRIPTIONS, &c.

1. Stem thick, erect, two feet high; rough, as is the whole plant; leaves foot-stalked, heart-shaped; stipules four or six, subulate. Flowers aggregate, peduncled; peduncles common, two, axillary, placed here and there; each flower sessile. Calyx common, of three subtriangular-auriculated leaflets, which are stiff and sharp. Calyx proper single, one-leafed, half-five-cleft, with the divisions lanced, bristly at tip, with white bristles. Corolla yellow, spreading, petals roundish.

Native of marshy places in the Caribbee islands.

2. Stem tender, round, whitish-green, coated with rufous pungent hairs; as is likewise the whole plant, which is branchy and taller than a man. Leaves commonly divided into five lobes, which are crenated, hirsute, and bright green. Calyx triple: the common one of five or six unequal, oblong, acuminate leaflets, which are toothed, and enlarged below, and very shortly foot-stalked: the partial exterior one of eight linear leaflets: the interior one-leafed, half-five-cleft. Corolla purplish; scarce an inch in diameter: tube scarlet. Native of marshy places in Domingo.

3. Stem as well as the whole plant very hairy, the hairs pungent and numerous. Leaves with long foot-stalks, hearted, roundish-palmated, crenated, with seven deep acuminate lobes. Stipules capillary, villose. Flowers about fourteen on the tip of the peduncle, which is solitary and axillary. Each flower is shortly pedicelled, and almost always ornamented with a leafy bracte, which is roundish, but acuminate. Calyx triple. Corolla scarce larger than the calyx, whitish, marked in the bottom with red streaks.

Native of America. Cavanilles saw only one specimen in the collection of Jussieu.

4. This has a single upright stem of six feet in height, and twice the thickness of the thumb: it emits branches from the bosoms of almost all the leaves, and is thickly beset with pungent villi. From the right side of the bosom of all the branches which proceed from the stem a green smooth upright fascia ascends towards the next branch, and is commonly about two lines broad. The leaves are on long foot-stalks, and are serrated and veiny, roughish at the edges; the lower ones roundish, and five-lobed at the margin: the upper ones three-lobed, and longer and sharper. The heads of flowers are axillary: the flowers small, rose-coloured outward, within whitish, with purple streaks. Native of America.

5. Stem single, six feet high, upright, an inch thick, green, branching from the axils of the leaves, and covered with glittering pungent hairs: leaves alternate, cordated at the base, roundish, veiny, very spreading, obtusely ferrate-crenated. Flowers headed, two or three together, axillary, rather small in proportion to the plant, and of a deep yellow: the flower is seated, as in *Turnera ulmifolia*, at the base of each leaflet of the common calyx. Native of Martinico.

MALAMIRIS. See *Piper*.MALANEA. See *Cunninghamia*.MALAN-KUA. See *Kämpferia*.MALAXIS. (From *μαλασσω* or *μαλαττω*, to soften.)Soland. *Swartz. prodr.* 119. *Schreb. gen. n.* 1370.

Class. 20. 1. Gynandria Diandria.

Nat. order of *Orchideæ*.

GENERIC CHARACTER.

CAL. *Spathes* none. *Perianth* none.COR. *Petals* five: three outer, of which two upper, one lower, lanceolate, blunt, spreading: two inner linear, acute, reflex about the germ.

Nectary in the middle of the corolla, less than the petals, concave, with convex margins, cordate, acuminate behind, bifid in front.

STAM. *Antbers* two ovate, scarcely pedicelled, inserted into the pitcher of the pistil at the edge, sitting on two little excavations at the bottom.PIST. *Germ* pedicelled, somewhat cylindric, inferior. *Style*, a pitcher in the middle of the nectary, halved, VOL. II.very short, spreading, bearing the stamens on its hinder margin. *Stigma* before the little excavations, near the anthers.PER. *Capsule* pedicelled, oblong, three-keeled, one-celled, opening under the keels; cohering at top and bottom:

SEEDS extremely minute:

ESSENTIAL CHARACTER.

Nectary one-leafed, concave, cordate, acuminate backwards; bifid in front; cherishing the genitals in the middle:

SPECIES.

1. *Malaxis spicata*:*Swartz. prodr.* 119.*Scape* quadrangular, flowers in spikes.2. *Malaxis umbelliflora*.*Swartz. prodr.* 119.*Scape* quinquangular, flowers umbelled.Both these are natives of Jamaica: Several species of *Ophrys*, in Linneus's second division, with round bulbs, belong properly to this genus.MALE BALSAM APPLE. See *Momordica*.MALETTA-MALA-MARAVARA. See *Acrostichum*.MALI FOLIO. See *Croton* and *Mammea*.MALLA HOLLA. See *Ola*.MALLAM TODDALI. See *Celtis* and *Muntingia*.MALLOCOCCA. See *Grewia*.]MALLOW. See *Malva*.[——— Jews. See *Corchorus*.——— Marsh. See *Althæa*.——— Indian. See *Sida*.——— Tree. See *Lavatera*.——— Venice. See *Hibiscus*.MALO AFFINIS. See *Psidium*.MALOCCOCCA. See *Grewia*.]MALÖPE. (Seems to be a corruption of *Μαλαχνη*.)*Lin. gen. n.* 843. *Reich. n.* 908. *Schreb. n.* 1136.*Cavan. diff.* 2. 84. *Juss.* 272. *Malacoides*.*Tournef. t.* 25.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*. *Malvaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* double. Outer three-leaved, broader: leaflets cordate, acute, permanent. Inner one-leafed, half-five-cleft, more erect, permanent.COR. *Petals* five, obcordate, præmorse, spreading, fastened to the tube of the stamens at the base.STAM. *Filaments* numerous, at bottom united into a tube, above at and below the apex of the tube separate and loose. *Antbers* almost kidney-form.PIST. *Germ*s roundish. *Style* simple, the length of the stamens. *Stigmas* many, simple, bristle-shaped.PER. *Capsule* roundish, many-celled: cells as many as there are stigmas, conglomerated into a head.

SEEDS solitary, kidney-form.

ESSENTIAL CHARACTER.

Cal. double; outer three-leaved. *Arils* glomerate one-seeded.

SPECIES.

1. *Malope Malacoides*.*Lin. spec.* 974. *fyst.* 627. *Reich.* 3. 353. *hort. cliff.*347. *ups.* 206. *Sabb. hort.* 1. t. 50.*Malva betonica* folio. *Mor. hist.* 2. 522. f. 5. t. 17.f. 11. *Bocc. sic.* 15. t. 8. f. 2.*Alcea beton.* folio, flore purpureo violaceo. *Barr. ic.*

1189.

Leaves ovate crenate smooth above.[2. *Malope parviflora*.*L'Herit. stirp. nov.* 5. 105. t. 50.*Calyxes* simple, leaves subcordate even, peduncles scarcely longer than the petiole.]

DESCRIPTIONS, &c.

1. The whole plant has greatly the appearance of Mallow, but differs from it in having the cells collected into a button, somewhat like a Blackberry. The branches spread, and lie almost flat upon the ground, extending a foot or more each way. The flowers are produced singly upon long axillary peduncles; they are in shape and colour like those of Mallow.

[Native of the meadows of Tuscany and of Barbary. Cultivated by Mr. Miller in 1759.

S f

2. Plant

2. Plant a span high. Root annual. Stem very much branched, spreading, red, subvillose, a foot high. Branchlets alternate, round, green, subflexuose. Leaves alternate, petioled, subcordate or ovate, the lower ones subtrilobate, toothed, bluntish, mostly five-nerved; nerves prominent underneath, scored above, almost naked, bright green, scarcely paler underneath, spreading, one inch long, ten lines wide. Petioles round, subvillose, a little shorter than the leaves. Stipules awl-shaped, erect, minute. Flowers axillary, peduncled, solitary, seldom two together, a few terminating, purple, three lines wide. Peduncles upright, round, jointed at top, subvillose. Calyx one-leafed, bell-shaped, cloven beyond the middle, subvillose; divisions lanceolate, acute. Corolla hemispherical: petals cuneate-roundish, clawed, oblique at the tip, emarginate, concave, contorted, imbricate on one side, the length of the calyx. Filaments capillary, reflex, scarcely shorter than the corolla. Anthers one-celled, peltate, red. Germ superior, orbicular, depressed, pentagonal, covered with the sheath of the stamens. Styles ten to twelve, filiform, reflex, united at the base, red, scarcely longer than the stamens. Stigmas headed-truncate, small, red. Arils several, kidney-form, collected into a hemispherical head, without order, about a receptacle terminated by a filiform axis, covered by the converging calyx, valveless, brown. One seed to each aril, kidney-form, brown, small.

Native of Peru, where it was found by Jos. Dombey.

There are other Peruvian species with simple calyxes, which might therefore constitute a distinct genus.]

PROPAGATION AND CULTURE.

1. This is propagated by seeds, sown in the place where they are designed to remain, for it does not bear transplanting well. If these seeds be sown upon a warm border in august, the plants will frequently stand through the winter, and flower early the following season, so that good seeds may be obtained; but those which are sown in the spring rarely ripen the same year in England: and these plants being large, are often destroyed in winter, unless they are sheltered under a frame. It seldom continues longer than two or three years.

[2. Ripens its seed if sown in the same manner, in favourable seasons.]

MALPIGHIA. (So named by Plumier in honour of Marcello Malpighi, Professor of Medicine at Bologna, the famous author of *Anatome Plantarum*, 1675 and 1679.)

Lin. gen. n. 572. Reich. n. 621. Schreb. n. 779.

Plum. 36. Juss. 253.

Class. 10. 3. Decandria Trigynia.

Nat. order of *Tribilatae*.—*Malpighiæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, erect, very small, permanent, converging. There are two melliferous glands, oval and gibbous fastened to the calycine leaflets on the outside and at bottom.

COR. *Petals* five, kidney-form, large, plaited, ciliate, spreading, concave; with long linear claws.

STAM. *Filaments* ten broadish, awl-shaped, erect, placed in a cylinder, united below, small. *Anthers* cordate.

PIST. *Germ* roundish, very small. *Styles* three, filiform. *Stigmas* blunt.

PER. *Berry* globular, torulose, large, one-celled.

SEEDS three, bony, oblong, blunt, angular; with an oblong blunt kernel.

OBS. *M. nitida* has only a single style.

ESSENTIAL CHARACTER.

Cal. five-leaved, with melliferous pores on the outside at the base. *Pet.* five roundish, with claws. *Berry* one-celled, three-seeded.

SPECIES.

1. *Malpighia glabra.* Smooth-leaved Barbadoes Cherry.
Lin. spec. 609. syst. 426. Reich. 2. 368. mant. 387. hort. cliff. 169. upf. 108. Mill. fig. t. 181. f. 2. Brown. jam. 230. 2. Comm. hort. 1. 145. t. 75. (Cerasus) Sloan. jam. 2. 106. t. 207. f. 2. Raii dendr. 74. (Arbor baccifera, &c.)
Leaves ovate quite entire smooth, peduncles umbelled.

2. *Malpighia puniceifolia.* Pomegranate-leaved Barbadoes Cherry.

Lin. spec. 609. syst. 426. Reich. 2. 369. hort. upf. 108. Brown. jam. 230. 3. Plum. gen. 46. t. 166. f. 2. Pluk. phyt. t. 57. f. 7.

Leaves ovate quite entire smooth, peduncles one-flowered.

3. *Malpighia nitida.* Shining-leaved Barbadoes Cherry.

Lin. spec. 609. syst. 426. Reich. 2. 369. Swartz obs. 180. Jacq. amer. 136. pict. 68. Brown. jam. 230. 4.

Leaves lanceolate quite entire smooth, spikes lateral.

- [4. *Malpighia faginea.*

Swartz prodr. 74.

Leaves oblong-ovate entire silky-shining underneath, peduncles three-parted-umbelled.

5. *Malpighia lucida.*

Swartz prodr. 74.

Leaves obovate wedge-form quite entire nerveless shining, peduncles terminating many-flowered.]

6. *Malpighia urens.* Stinging Barbadoes Cherry.

Lin. spec. 609. syst. 426. Reich. 2. 369. Brown. jam. 229. 1. Mill. fig. t. 181. f. 1. Plum. gen. 46. t. 167. f. 1.

Mespilus americana, folio lato subtus spinoso, fructu rubro. Tournef. inst. 642.

Arbor baccifera, &c. Sloan. jam. 2. 106. t. 207. f. 3. Raii dendr. 74.

Leaves oblong-ovate, with rigid decumbent bristles underneath, peduncles one-flowered aggregate.

7. *Malpighia angustifolia.* Narrow-leaved Barbadoes Cherry.

Lin. spec. 610. syst. 426. Reich. 2. 370. Jacq. amer. pict. 67. Plum. gen. 46.

M. linearis. Jacq. amer. 135.

Leaves linear-lanceolate with rigid decumbent bristles on both sides, peduncles umbelled.

- [8. *Malpighia crassifolia.* Thick-leaved Barbadoes Cherry.

Lin. spec. 610. syst. 426. Reich. 2. 370. Brown. jam. 231. 7. Aubl. guian. 457. t. 182.

Leaves ovate quite entire tomentose underneath, racemes terminating.

9. *Malpighia coriacea.*

Swartz. prodr. 74. Brown. jam. 230. 6.

Tilia affinis laurifolia, &c. Sloan. jam. 2. 20. t. 163. f. 1.

Leaves ovate acute entire smooth on both sides, racemes terminating spiked.

10. *Malpighia canescens.* Downy-leaved Barbadoes Cherry.

Ait. hort. kew. 2. 105.

Leaves oblong blunt pubescent, racemes axillary compound.

11. *Malpighia verbascifolia.* Mullein-leaved Barbadoes Cherry.

Lin. spec. 610. syst. 426. Reich. 2. 371. Aubl. guian. 460. t. 184.

Leaves lanceolate-ovate tomentose quite entire, racemes terminating.]

12. *Malpighia aquifolia.* Holly-leaved Barbadoes Cherry.

Lin. spec. 611. syst. 426. Reich. 2. 371. Plum. gen. 46. ic. 168. f. 1.

M. ilicifolia. Mill. dict. n. 8. descr. lucidæ. n. 9. R.

Leaves lanceolate tooth-spiny hispid underneath.

13. *Malpighia coccigera.*

Lin. spec. 611. syst. 426. Reich. 2. 371. Plum. gen. 46. ic. 168. f. 2.

Leaves subovate tooth-spiny.

- [14. *Malpighia martinicensis.*

Jacq. amer. pict. n. 2.

Leaves ovate with decumbent rigid bristles underneath.

15. *Malpighia diphylla.*

Jacq. amer. pict. n. 4.

Leaves oval smooth, racemes terminating.

16. *Malpighia odorata.*

Jacq. amer. pict. n. 5. t. 260. f. 36.

Leaves ovate emarginate tomentose on both sides, racemes axillary.

17. *Malpighia grandifolia.*

Jacq. amer. pict. n. 6.

Leaves lanceolate-oblong racemes corymbed axillary.

18. *Malpighia altissima*.

Jacqu. amer. pict. n. 7. obs. 1. 40. Aubl. guian. 455. t. 181?

Leaves lanceolate ferruginous underneath smooth above quite entire, racemes terminating upright.

DESCRIPTIONS, &c.

This genus consists of trees and shrubs; some of them climbing, natives of the West Indies. Leaves simple, opposite (except in n. 8.) some bristly, the bristles stinging and free at both ends; the petiole in many appendicled or dilated within at the base. Peduncles axillary or terminating, one or many-flowered. Does *Caucanthus* of Forskahl belong to this genus? It is a shrub with opposite leaves, resembling these plants in the structure and disposition of the flowers, with an unknown fruit? In *M. glabra*, two divisions of the calyx are biglandular, two uniglandular, and one naked. *M. nitida* has only one style: and it may be doubted whether it is properly placed here^a.]

1. This tree usually grows to the height of sixteen or eighteen feet, and we have several trees in England upwards of ten feet high. [Browne says, it is a small shrub, which seldom rises above six or seven feet in height, that it is erect in its growth, and divided into very delicate slender branches. According to Sloane however it rises to about fifteen feet, with several trunks, covered with a clay-coloured smooth bark, and dividing into many spreading branches, making a pleasant round head.] Leaves opposite, subsessile, acute, continuing all the year. Flowers in axillary and terminating bunches [or umbels, on peduncles half an inch long, and about four flowers on each. The pedicels have a single joint. Calyx incurved, with glands as described above. Petals subcordate. Stigmas simple, with a little drop^b. Petals rose-colour or bright purple. Fruit red, round, the size of a Cherry, smooth-skinned, having one or more furrows on the outside, and containing within a reddish, sweetish, not unpleasant, copious, juicy pulp; and several triangular sulcated stones, so fitted together as to seem one round one, with several furrows on the outside.

This tree is planted in most gardens in the West-Indies, where in a little time after rain they seldom miss having ripe fruit, which is esteemed pleasant there.^c]

It grows plentifully in most of the islands in the West-Indies, but whether it be natural there, or introduced only, is not easy to determine; for birds, being fond of the fruit, disperse the trees every where in great abundance. It usually flowers here in march and april, but these flowers are seldom succeeded by fruit: it flowers again in july, and when the season is warm, fruit is often produced from these flowers; the plants being then removed into the open air. [In the Kew catalogue it is said to flower from december to march; and to have been cultivated by Mr. Miller in 1757^d.]

2. This rises with a shrubby stalk ten or twelve feet high, dividing into several slender spreading branches, covered with a light brown bark. The flowers are produced in small umbels at the end of the branches, upon short peduncles. Corolla pale rose-colour. Berry roundish, pulpy, with several furrows, red when ripe, inclosing three or four hard angular seeds. [It is of the same size and make with our common English Cherries, very succulent, and of a pleasant subacid taste. This shrub has much the appearance of the Pomegranate, is full of slender flexile branches, and seldom rises above seven or eight feet^e.

Native of the West Indies. Browne says it had been but lately introduced into Jamaica.—It was introduced here in 1690, by Mr. Bentinck^f.

3. This is a shrub, a fathom in height. Stem upright round even; branches decussated upright round, covered with a shining bark. Leaves decussated-opposite, oblong, blunt, with a convex margin, nerved, veined, firm, pale green, shining; on short petioles. Racemes axillary, shorter than the leaves, many-flowered; flowers peduncled, the same size as in *M.*

glabra, yellow. Berry three-lobed, three-seeded, blood-red^g.

Browne says, it seldom rises above three feet in height, but throws out many slender upright branches; and bears large hard berries, which are much eaten by turkeys and other large fowls.

According to Jacquin, the leaves are four inches long, ending in a blunt point; there is only a single style, (perhaps the three were glued together so as to appear one) and the seeds are smooth; commonly two in a berry.]

Mr. Miller says, his *nitida* is ten feet high, the stem covered with a light brown spotted bark; the flowers come out from the side of the stalks in small umbels; standing erect; on peduncles scarcely an inch long; the corolla is of a pale blush colour; the berries are roundish and furrowed, covered with a red skin, and contain three hard angular seeds.

[Native of the West-Indies. Common in Jamaica; about Carthagena in New Spain, where it was found by Houftoun, and sent to Miller; who therefore cultivated it before 1733^h.

4. 5. Natives of the West-Indiesⁱ.

6. This shrub rises with a strong upright stem about three feet high, covered with a brown bark, sending out several side branches which grow erect. Leaves ending in acute points, sessile, covered with fine bristles, which do not appear unless closely viewed^k: these bristles are double pointed, and sustained by pedicels of the same fragile transparent substance with themselves, descending from the middle of them; these are easily broken, but the bristles enter pretty deep in, and stick close to whatever has forced them off^l. The flowers come out upon long slender peduncles from the axils at each joint, four, five or six together, in a sort of whorl. The three styles stand apart. It flowers in july and august (to october), but has not perfected seeds in England.

It is very different from Plumier's *M. latifolia*, folio subtus spinoso (which Linneus gives as a synonym of his *urens*); the leaves of this being more than twice as big, and armed on both sides with stinging bristles; whereas that has them only on the under side. Plumier's plant also rises with a much taller stem, and seldom flowers here.

The seeds of this plant were sent to Mr. Miller (about 1753) by Mons. Richard, gardener to the King of France at Trianon, by the name of *Bois de Capitain*^m. It is called in the English West-India islands *Cowhage Cherry*.

Linneus describes the *urens* thus in his *Species Plantarum*. Leaves ovate-oblong, quite entire, subpetioled; the surface, especially underneath, having stiff stinging double bristles scattered over it. Stipules on each side two. Flowers axillary, on each side four, on one-flowered peduncles, which have a joint.]

Mr. Miller describes his *urens* as having a stem from fifteen to eighteen feet high, dividing into many pretty strong branches, which are furrowed, and covered with a brown bark: the leaves are from three to four inches long, and one inch broad at the base; where they are rounded in form of a heart, lessening gradually to a point; covered on the under side with stinging bristles, which when fastened into the flesh are difficult to get out again. The flowers are produced in umbels from the side of the branches; they are of a light purple colour. He had the seeds from Jamaica, by Houftoun, [and therefore must have cultivated it before 1733.]

7. This rises with a shrubby stalk seven or eight feet high, covered with a bright purplish bark which is spotted and furrowed, dividing towards the top into several smaller branches. Leaves numerous, about two inches long, and a quarter of an inch broad, acuminate, of a lucid green on their upper side, but of a russet brown on their under, where they are closely armed with stinging bristles. Flowers from the side and at the end of the branches in small umbels, small,

^a Jussieu.
^d Mill. fig.

^b Linn. mant.
^e Browne.

^c Sloane.
^f Hort. kew.

^g Swartz.
^k Mill. fig.

^h Hort. kew.
ⁱ Browne.

^l Swartz.
^m Mill. fig.

and of a pale purple colour. Fruit small, oval, furrowed, dark purple when ripe.

[Native of the West Indies; Jacquin saw it flowering in June in the island of St. Martin.] Mr. Miller had it from the island of Barbuda. [He cultivated it in 1752¹.

8. This is a tree, with the leaves a hand in length, thick, subpetioled, quite entire, pubescent above, tomentose underneath, commonly alternate. Racemes long, tomentose².

Browne calls it the larger Locus-berry tree, and says that the upper branches terminate in loose bunches of flowers, each of the divisions being simple, as well as the top of the main supporter, which terminates also in a single spike. The glands of the calyx are remarkably distinct in this species, which seems to have all the habit and appearance of *Cominia*.

Native of the West India islands and Guiana.

9. This tree rises frequently to the height of thirty or forty feet or more. The leaves while young, are covered on both sides with down, but this falls off gradually, and they appear pretty smooth and shining after a short time. There is a remarkable stipula at the axil of every leaf, which, with its opposite, seems to embrace the stalk. Two of the seeds are generally abortive in the berry.

Native of Jamaica, where it is common in the lower hills of Liguanea³. Browne calls it the Locus-berry Tree.

10. Native of the West Indies. Cultivated before 1742, by Robert James Lord Petre⁴.

Is this the *incana* of Miller, n. 3? He describes it as arising with a strong woody stalk eighteen or twenty feet high, dividing into many branches, covered with a brown spotted bark. Leaves lanceolate, hoary on their under side. Flowers in axillary umbels, of a rose-colour. Fruit oval, channelled. He had it from Mr. Robert Millar, who found it at Campeachy.

[11. Leaves ending in the petioles, a foot long, villose, clothed underneath with a very close nap. Racemes long, villose.—Native of South America⁵.

Sloane's figure, referred to here by Linneus, is *Clethra tinifolia* of Swartz; the description perhaps may belong to *Malpighia crassifolia*⁶.]

12. This rises with a shrubby stalk to the height of seven or eight feet, sending out branches the whole length, which are covered with a gray bark. Leaves narrow, prickly like those of Holly, and having many stinging bristles on their under side. The flowers are produced in small clusters from the side of the branches, small and of a pale blush-colour. The fruit is more pointed than the common sort, and turns to a dark purple colour when ripe.—Dr. Houstoun found it in plenty in the island of Cuba.

[The above is what Miller names *M. lucida*, the description of which, according to Reichard, belongs to Linneus's *M. aquifolia*.]

Miller describes *M. ilicifolia* as having a strong woody stem from fifteen to twenty feet high, dividing into many spreading branches, covered with a gray bark. Leaves oblong-ovate, of a firm consistence, about an inch long, and half an inch broad, rounded at their ends, of a lucid green. The flowers come out from the side, and also at the end of the branches, upon pretty long peduncles, which branch in form of a raceme or long bunch. They vary in colour, some being of a bright red, others orange in the same bunch. Berries small, oval, less furrowed, when ripe dark purple. Sent from the island of Barbuda.

13. This is a very low shrub, seldom rising more than two or three feet high. Stalk thick and woody, as are also the branches, which come out on every side from the root upwards, and are covered with a rough gray bark. Leaves lucid, half an inch long, and almost as much broad, appearing as if cut at their ends, where they are hollowed in, and the two corners rise like horns, ending in a sharp thorn, as do also the indentures on the sides. The flowers come out from the side of the branches, upon peduncles an inch long,

each sustaining one small pale blush flower. Fruit small, conical, furrowed, changing to a purple red colour when ripe.

The fruit of several of the sorts are gathered promiscuously and eaten in the West Indies; but the first sort is cultivated for the fruit, which is but indifferent, and much inferior to our European Cherries; having however a pleasant flavour, it is agreeable to the inhabitants of hot climates.

There are many other species, not yet sufficiently ascertained. [I have added five from Jacquin.

14. This small tree agrees so perfectly in habit with *M. glabra*, that it is distinguished from it only by the bristles on the leaves, and the less pleasant flavour of the fruit; and therefore is distinct from *M. urens*, in the leaves only. This however is by much the most prurient of all the prurient species. All the sorts of *Malpighia* have eatable fruits, but *glabra* and *urens* only are in common use. The latter is insipid, and eaten only raw by children and savages: the former is much eaten boiled with sugar, but is generally neglected raw. Jacquin however, and two companions, being very thirsty with travelling in the heat in Martinico, took a large quantity of these berries without suffering from them in any degree.

15. This is an upright shrub, eight feet high. Leaves quite entire. Racemes simple, two inches long, on two-leaved branchlets. Flowers yellow. Berries red.—Near Carthage⁷.

16. This also is an upright shrub, eight feet high. Leaves blunt, quite entire, three inches long. Racemes opposite. Flowers sweet, smelling like those of yellow Lupine: petals yellow. Stigma sometimes trifid, with a three-grooved fruit, containing three seeds, convex on one side and angular on the other. Berries orange coloured.

Jacquin having examined all the Linnean species, except *crassifolia*, remarks, that the calycine glands are either all free, or some coalescent in different numbers; that some have only one, others three styles, in the latter the stigmas being always simple, in the former bifid or trifid, with the same number of seeds, that the berry in a few is subtrilobate, but in most grooved, containing seeds that are either wrinkled or smooth.—This sort grows near Carthage.

17. This is a small tree, ten feet high, upright and having a handsome head. Leaves quite entire, a foot long. Petals yellow.—Native of Martinico.

18. This is a tree of thirty feet in height and more, with an upright trunk, and a pyramidal elegant head. Leaves broad-lanceolate, three or four inches long, sharp, petioled. Flowers yellow, sweet, in long racemes, not unlike those of the Horse Chestnut. Berries yellow, soft, flattened on both sides, smaller than a Cherry, acid but not pleasant, and therefore left chiefly to birds. The wood is white. By the natives called *Bois tan*; the bark being fit for tanning leather.—Common in Martinico⁸.]

PROPAGATION AND CULTURE.

These plants are preserved in the gardens of those persons who are so curious in botanical studies, as to erect hot-houses for maintaining foreign plants: and where there are such conveniences, these plants deserve a place; because they retain their leaves all the year, and commonly continue flowering from December to the end of March, when they make a fine appearance at a season, when there is a scarcity of other flowers, and many times they produce ripe fruit here. Those sorts whose leaves are armed with stinging bristles, like the Cowitch, are the least worthy of a place in stoves, because they are so troublesome to handle, nor do their flowers make so good an appearance as many of the other sorts. The thirteenth sort is the most valuable for its flowers, which are produced in larger bunches than those of any of the other, and there being flowers of different colours in the same bunches, they make a fine variety; and this sort grows more like a tree than the others, the leaves are also of a stronger consistence and of a lucid green.

¹ Hort. kew. ² Linn. spec. ³ Browne. ⁴ Hort. kew.
⁵ Linn. spec. ⁶ Swartz obs. 182.

⁷ Jacquin, amer. pict.

As these plants are natives of the warmest parts of America, they will not live through the winter in England, unless they are preserved in a warm stove; but when the plants have obtained strength, they may be exposed in the open air in a warm situation, from the middle or latter end of June, till the beginning of October, provided the weather continues so long mild; and the plants so treated, will flower much better than those which are constantly kept in a stove.

They are all propagated by seeds, which must be sown upon a good hot-bed in the spring; and when the plants are fit to transplant, they must be each put into a separate small pot filled with rich earth, and plunged into a hot-bed of tanners bark, and must be treated in the same manner as has been directed for other tender plants of the same country; and for the two first winters, it will be proper to keep them in the bark-bed in the stove; but afterwards they may be placed upon stands in the dry stove in winter, where they may be kept in a temperate warmth, in which they will thrive much better than in a greater heat; these must be watered two or three times a week, when they are placed in the dry stove, but it must not be given to them in large quantities.

MALVA. (*q. Malva, quod album molliat. In Greek Μαλαχην, for the same reason.*)

Lin. gen. n. 841. Reich. n. 906. Schreb. n. 1134. Gært. t. 136. Cavan. diff. 2. 58. Tournef. t. 24. Juss. 272.

Alcea. Tournef. t. 24. Abutilon. Dill. elth. 1. 4.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of Columniferae. Malvaceae, Juss.

GENERIC CHARACTER.

CAL. Perianth double. Outer three-leaved, narrower: leaflets cordate, acute, permanent. Inner one-leaved, half-five-cleft, larger, broader, permanent.

COR. Petals five, obcordate, præmorse, flat, fixed to the tube of the stamens at the base.

STAM. Filaments numerous, united below into a tube, seceding and loose at the top and surface of it. Anthers kidney-form.

PIST. Germ orbicular. Style cylindric, short. Stigmas very many, bristly, the length of the style.

PER. Capsule roundish, composed of very many cells, (as many as there are stigmas,) two-valved, placed in a whorl about a columnar receptacle, finally falling.

SEEDS solitary, very seldom two or three, kidney-form.

OBS. Malva of Tourn. has leaves almost entire, not villose.

Alcea of Tourn. has many-cleft leaves, not villose.

Some species have the outer calyx two-leaved. S.

M. caroliniana has the cells divided into two chambers by a transverse diaphragm. S.

ESSENTIAL CHARACTER.

Cal. double: outer three-leaved. Caps. many, united in a depressed whorl, one-celled, one-seeded.

SPECIES.

* With undivided leaves.

[1. Malva spicata. Spiked Mallow.

Lin. spec. 967. Reich. 3. 343. amoen. 5. 401. Brown. jam. 282. 5.

Althæa spicata. Sloan. cat. jam. 97. hist. 1. 219.

Leaves cordate crenate tomentose, spikes oblong rough-haired.

2. Malva tomentosa. Downy-leaved Mallow.

Lin. spec. 967. Reich. 3. 343. fl. zeyl. n. 255. hort. cliff. 347. Lour. cochinch. 422. Pluk. amalth. t. 356. f. 1. (Althæa).

Leaves cordate crenate tomentose, flowers lateral heaped, stem shrubby.

3. Malva gangetica.

Lin. spec. 967. Reich. 3. 343. Pluk. phyt. t. 74. f. 6.

Leaves cordate obtuse rugged, flowers sessile glomerate, arils ten awnless crenulate.

4. Malva coromandeliana.

Lin. spec. 967. Reich. 3. 344. hort. cliff. 346. upf. 201. Swartz obs. 262. Pluk. mant. 10. (Althæa).

Leaves oblong or cordate serrate, peduncles axillary, flowers glomerate, arils three-cusped.

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5. Malva scoparia. Small yellow-flowered upright Mallow. L'Herit. stirp. nov. 53. t. 27. Cavan. diff. 2. 65. t. 21. f. 4. Ait. hort. kew. 2. 447.

Leaves ovate crenate-serrate, flowers axillary clustered, stems shrubby, branches rod-like.

6. Malva angustifolia. Narrow-leaved Mallow.

Cavan. diff. 2. 64. t. 20. f. 3. hisp. 48. n. 74. t. 68. Ait. hort. kew. 2. 447.

Leaves lanceolate, flowers axillary in pairs, peduncles shorter than the petiole, outer calyx bristle-shaped deciduous.]

7. Malva americana. American Mallow.

Lin. spec. 968. syst. 624. Reich. 3. 344. Willich obs. 53.

Leaves cordate crenate, lateral flowers solitary, terminating flowers in spikes.

** With angular leaves.

8. Malva peruviana. Peruvian Mallow.

Lin. spec. 968. syst. 625. Reich. 3. 344. Jacqu. hort. 2. 73. t. 156. Willich illustr. n. 24. Kniph. cent. 7. n. 52.

Stem upright herbaceous, leaves palmate, spikes directed one way axillary, seeds toothletted.

[9. Malva limensis. Blue-flowered Mallow.

Lin. spec. 968. syst. 625. Reich. 3. 345. amoen. 4. 325. Jacqu. hort. 2. 66. t. 141.

Stem upright herbaceous, leaves lobed, spikes in Ee way axillary, seeds even.]

10. Malva bryonifolia. Bryony-leaved Mallow.

Lin. spec. 968. syst. 625. Reich. 3. 345. Hall. emend. 15.

Althæa frutescens, bryoniæ folio. Baub. pin. 316. prodr. 138.

A. profunde serrato f. dentato folio. Baub. hist. 2. 955.

Stem shrubby tomentose, leaves pinnate rugged, peduncles many-flowered.

[11. Malva lactea. Panicked Mallow.

Ait. hort. kew. 2. 448.

Stem shrubby, leaves acute cordate villose, petals obcordate shorter than the calyx, peduncles panicked.

12. Malva vitifolia. Vine-leaved Mallow.

Cavan. hisp. 13. n. 18. t. 20.

Stem upright branched, leaves five-lobed crenate villose, axils many-flowered.

13. Malva umbellata. Umbelled Mallow.

Cavan. hisp. 64. n. 104. t. 95.

Stem shrubby, leaves cordate five-lobed, flowers umbelled.]

14. Malva capensis. Gooseberry-leaved or Cape Mallow.

Lin. spec. 968. syst. 625. Reich. 3. 345. hort. cliff. 347. upf. 201. Gært. fruct. 2. 255. Kniph. cent. 6. n. 59.

α. M. cap. frutescens, grossulariæ folio minori glabro. Dill. elth. 208. t. 169. f. 206.

β. M. cap. frut. gross. fol. majore hirfuto. Dill. elth. 209. t. 169. f. 207. Gært. 256. β.

γ. M. scabrosa. Lin. amoen. 4. 325. Gært. fruct. 2. 256. Kniph. cent. 6. n. 58.

M. africana frutescens flore rubro. Comm. hort. 2. 171. t. 86. Pluk. amalth. t. 431. f. 5.

Leaves cordate five-lobed, stem arborescent.

[15. Malva virgata.

Lin. syst. 625. Murr. in comm. gott. 1779. p. 20. t. 6.

Leaves narrowed at the base multiform parted, divisions gasb-crenate, peduncles one-flowered, stem frutescent.

16. Malva balsamica.

Lin. syst. 625. Jacqu. misc. 2. 321. icon. rar. t. 10.

Leaves subcordate sublobate unequally serrate glutinous, stem shrubby.

17. Malva Abutiloides.

Lin. syst. 625. suppl. 307. v. Retz. obs. 4. 21. & 5. 5.

Leaves deeply lobed and sinuated, stem shrubby hoary.]

18. Malva caroliniana. Creeping Mallow.

Lin. spec. 969. syst. 625. Reich. 3. 346. hort. cliff. 347. upf. 201. Willich obs. n. 55.

Abutilon repens, Alceæ foliis, flore helvulo. Dill. elth. 5. t. 4. f. 4.

T t

A. caro-

- A. carolinianum repens, Alceæ fol., gilvo flore. *Mart. cent. t. 34.*
 A. car. reptans, Alceæ fol. gilvo flore. *Philos. trans. Mill. dict. n. 3.*
Stem creeping, leaves multifid.
 [19. Malva parviflora.
Lin. spec. 969. syst. 625. Reich. 3. 346. amoen. 3. 416. Jacqu. hort. t. 39.
 M. annua rotundifolia, flor. omnium minimis albis pentapetalis verticillatim genicula ambientibus. *Mor. hist. 2. 521. Raii hist. 598.*
 M. tingitana, flore cæruleo, parva. *Pluk. phyt. t. 44. f. 2.*
Stem spreading, flowers axillary sessile glomerate, calyxes smooth spreading.
 20. Malva nicæensis.
Allion. pedem. n. 1416. Vahl symb. 1. 50.
 M. montana. *Forsk. descr. 124.*
Stem decumbent, calyxes glomerate, both hairy, leaves five-lobed.
 21. Malva pusilla.
Engl. bot. 241. Wither. arr. ed. 3. 612.
 M. parviflora. *Huds. angl. 307.*
 M. minor flore parvo cæruleo. *Raii syn. 251.*
Stem declining, leaves roundish-heart-shaped slightly five-lobed, flowers peduncled, generally in pairs, petals the length of the calyx.]
 22. Malva rotundifolia. Round-leaved or dwarf Mallow.
Lin. spec. 969. syst. 625. Reich. 3. 346. hort. cliff. 347. fl. succ. n. 626. mat. med. 166. Huds. angl. 307. Wither. arr. ed. 3. 612. Curt. lond. 3. 43. 157. Lightf. scot. 374. Relb. cant. n. 508. Gron. virg. 79. Hall. belv. n. 1070. Crantz. austr. 143. Scop. carn. n. 858. Neck. gallob. 294. Pollich pal. n. 658. Fl. dan. t. 721. Allion. pedem. n. 1414. Villars dauph. 3. 382. Krock. filef. n. 1128.
 M. sylvestris, fol. subrotundo. *Bauh. pin. 314. Mor. hist. f. 5. t. 17. f. 7.*
 M. sylv. minor. *Park. theat. 299. f. 1. Raii hist. 599. syn. 250.*
 M. sylv. pumila. *Fuchs. hist. 508. Ger. 785. 2. emac. 930. 2.*
 M. vulgaris flore minore, fol. rotundo. *Bauh. hist. 2. 549. 2.*
Stem prostrate, leaves cordate-orbiculate obsoletely five-lobed, fruiting peduncles declining.
 [23. Malva fherardiana.
Lin. spec. 1674. syst. 625. Jacqu. hort. 2. t. 142.
 M. cretica minor hirsuta. *Buxb. cent. app. 46. f. 32.*
Stems prostrate, leaves orbicular plaited tomentose crenate, peduncles solitary one-flowered bowed.]
 24. Malva sylvestris. Common Mallow.
Lin. spec. 969. Reich. 3. 347. hort. cliff. 347. fl. succ. n. 627. Gært. fruct. 2. 255. Woodv. med. bot. 148. t. 54. Huds. angl. 307. Wither. arr. ed. 3. 613. Curt. lond. 2. 51. Lightf. scot. 375. Relb. cant. n. 507. Hall. belv. n. 1069. Scop. carn. n. 859. Pollich pal. n. 659. Crantz. austr. 143. Neck. gallob. 294. Allion. pedem. n. 1417. Villars dauph. 3. 382. Krock. filef. n. 1129. Blackw. t. 22.
 M. sylvestris. *Ger. 785. 1. emac. 930. 1.—fol. sinuato. Bauh. pin. 314. Mor. hist. f. 5. t. 17. f. 8.—recta. Cord. hist. 114.—minor. Park. theat. 299. Raii hist. 599. syn. 307.*
 M. vulgaris flore minore, fol. rotundo. *Bauh. hist. 949. 1.*
Stem upright herbaceous, leaves five-lobed acute, peduncles and petioles hairy.
 25. Malva orientalis, Oriental Mallow.
Mill. dict. n. 3.
 M. orient. erectior, flore magno suave rubente. *Tournef. cor. 3.*
Stem upright herbaceous, leaves lobed blunt crenate.
 [26. Malva mauritiana. Ivy-leaved Mallow.
Lin. spec. 970. Reich. 3. 347. hort. upf. 200. Krock. filef. n. 1131. Thunb. jap. 271.
 M. hederaceo folio. *Bauh. pin. 315.*
 M. major tertia. *Dalech. hist. 586. Kniph. cent. 7. n. 51.*
 β. M. folio ficus altera. *Bauh. pin. 315. prodr. 137.*

- Stem upright herbaceous, leaves five-lobed blunt, peduncles and petioles smoothish.*
 27. Malva fragrans.
Lin. syst. 626. Jacqu. hort. 3. t. 33.
Stem upright frutescent, leaves roundish-cordate, half-five-lobed.
 28. Malva hispanica.
Lin. spec. 970. Reich. 3. 348. Loebl. it. 157. Pluk. phyt. t. 44. f. 3.
Stem upright, leaves semiorbiculate crenate, outer calyx two-leaved.]
 29. Malva verticillata. Whorl-flowered Mallow.
Lin. spec. 970. syst. 626. Reich. 3. 348. vir. cliff. 356. hort. cliff. 502. upf. 200. Gært. fruct. 2. 255. Jacqu. hort. t. 40. Lour. cochinch. 422. Burm. ind. 149. Wither. arr. ed. 2. 739.
 M. sinensis erecta, flosculis albis minimis. *Boerb. lugdb. 268.*
 M. annua rotundifolia, &c. *Mor. hist. 2. 521. Raii hist. 598.*
Stem upright, leaves angular, flowers axillary glomerate sessile, calyxes rugged.
 30. Malva crispa. Curled Mallow.
Lin. spec. 970. Reich. 3. 348. hort. cliff. 347. upf. 200. Leers herb. n. 545. Krock. filef. n. 1133.
 M. foliis crispis. *Bauh. pin. 315.*
 M. crispa. *Dod. pempt. 653. Bauh. hist. 2. 952. Ger. 785. 3. emac. 931. 3. Park. parad. 495. Raii hist. 597.*
Stem upright, leaves angular curled, flowers axillary glomerate.
 31. Malva Alcea. Vervain Mallow.
Lin. spec. 971. syst. 626. Reich. 3. 348. hort. cliff. 347. fl. succ. n. 628. Gært. fruct. 2. 254. Hall. belv. n. 1071. Scop. carn. n. 860. Pollich pal. n. 660. Neck. gallob. 293. Allion. pedem. n. 1418. Krock. filef. n. 1130. Villars dauph. 3. 383. Kniph. cent. 7. n. 50. Sabb. hort. 1. t. 48.
 Alcea. *Camer. epit. 669. Blackw. t. 309.—vulgaris. Bauh. hist. 2. 953. Clus. hist. 2. 25. Raii hist. 604. syn. 252.—major. Bauh. pin. 316.*
Stem upright, leaves many-parted somewhat rugged.
 32. Malva moschata. Musk Mallow.
Lin. spec. 971. syst. 626. Reich. 3. 349. hort. upf. 202. fl. succ. n. 629. Gært. fruct. 2. 256. Huds. angl. 308. Wither. arr. ed. 3. 613. Curt. lond. 4. 50. 228. Lightf. scot. 376. Relb. cant. n. 509. Hall. belv. n. 1072. Scop. carn. n. 861. Pollich pal. n. 661. Leers herb. n. 547. Allion. pedem. n. 1419. Villars dauph. 3. 383. Krock. filef. n. 1132. Mill. fig. t. 17. Fl. dan. t. 905.
 M. montana f. Alcea rotundifolia laciniata. *Col. ecphr. 1. 148. t. 147.*
 M. verbenaca. *Ger. 785. 4. emac. 931. 4.*
 Alcea folio rotundo laciniato. *Bauh. pin. 316. Raii hist. 605. Mor. hist. f. 5. t. 18. f. 4.—vulg. f. M. verbenacea. Park. theat. 301.*
 β. A. vulgaris minor. *Bauh. pin. 316.*
 A. tenuifolia crispa. *Bauh. hist. 2. app. 1067. 1. Raii syn. 253.*
Stem upright, root-leaves kidney-form gashed, stem-leaves five-parted pinnate-multifid.
 33. Malva tournefortiana.
Lin. spec. 971. syst. 626. Reich. 3. 349. amoen. 4. 283. Ger. prov. 477.
 M. maritima galloprovincialis, geranii folio. *Tournef. inst. 98.*
 Alcea minor maritima tenuifolia procumbens. *Herm. par. t. 9. Pluk. phyt. t. 44. f. 4.*
Stem decumbent, root-leaves five-parted three-lobed linear, peduncles longer than the stem-leaf.
 34. Malva ægyptia. Palmated Mallow.
Lin. spec. 971. syst. 626. Reich. 3. 350. Jacqu. hort. 1. 27. t. 65.
 Alcea ægyptia, geranii folio. *Lipp. ægypt. mss.*
Stem upright, leaves palmate toothed, corollas smaller than the calyx.

DESCRIPTIONS, &c.

1. Stem pale green, two or three feet high, branched. Leaves almost round, an inch and quarter long, and three quarters of an inch broad at the base, pale green, smooth, on petioles three quarters of an inch

in length. The tops of the twigs and branches, for the length of an inch, are thick set in a spike with orange-coloured flowers, in very hirsute calyxes.

Native of Jamaica, in cleared, barren, rocky lands^a. Cultivated by Mr. Miller in 1726. It flowers in september and october^b.

2. Stem shrubby, tomentose, or hispid, two feet high, upright, round, little branched. Leaves ovate, subacute, subcordate, curled. Outer calyx three-leaved, inner five-toothed. Petals short. Stamens five. Styles many. Beaks of the seeds, when the flower is fallen, very short, forming the angles of a retuse fruit^c.

Native of the East Indies and Cochinchina.

3. This is sister plant to *M. coromandeliana*, but stiffer. Leaves ferrate, strigose. Stipules linear. Flowers at the tops of the branches, yellow. Seeds in a retuse disk, without awns, the upper margin crenulated with minute tubercles.

Native of India^d.

4. Stem a foot high, round, hispid. Branches leafy, round, hispid. Leaves alternate, oblong sometimes cordate at the base, obtuse, hispid. Petioles round, longer, hispid. Peduncles solitary, upright, shorter than the petiole; flowers terminating, in a sort of spike, sessile, yellow. Leaflets of the outer calyx linear. Styles ten to sixteen. Fruit hirsute: with two cusps of the arils in a pair, the third superior.

Common in Jamaica, among grass^e. These are both annual plants.

5. This is a shrub, a fathom in height. Stem upright, round, smoothish, very much branched. Branches alternate, almost upright, root-like, somewhat rugged, tomentose, twigs hoary. Leaves alternate, spreading or hanging down a little, subcordate, acute, entire at the base, loosely nerved with the nerves prominent underneath, subtomentose, somewhat rugged, pale green, two inches and a half or three inches in length, from an inch and half to two inches and a half in breadth. Petioles shorter by half than the leaf, spreading very much, round, tomentose. Stipules awl-shaped, caducous. Flowers aggregate or solitary, the upper ones in a sort of spike, on short peduncles, yellow marked with red spots on both sides, half an inch over. Peduncles tomentose, whitish. Calyx subtomentose: leaflets of the outer awl-shaped, pressed close: inner bell-shaped, longer; segments lanceolate, acute, spreading. Germ pubescent. Arils or capsules from ten to twelve, obsoletely kidney-form, acuminate, two-horned, scarcely opening inwards, pubescent, ash-coloured. Seeds brown.

Native of Peru, about Lima; where it was found by Dombey, and sent to the Paris garden. It flowers in its native soil in july and august. Though shrubby, it seldom comes to a second year; but perfects seeds here, and readily grows from them. The Spaniards in America call it *Escoba cimarrona*, or wild Broom; the inhabitants making common brooms of the branches^f.

Introduced in 1782, by Monf. Thouin. It flowers in august and september^g.

6. Stem suffrutescent, round, branched, three feet high, covered with numerous stellate hairs, so small and close that this and the whole plant appear mealy. Leaves alternate, several times longer than the petioles, crenate; the lower ones often four inches long, and an inch wide; the upper ones shorter and narrower. Stipules bristle-shaped. Flowers numerous and as it were glomerate, with several short, one or two-flowered peduncles; on the top of the stem and branchlets not so numerous, but at length in pairs and then solitary. The outer calyx consists of three very small bristles: the inner is half-five-cleft. Corolla pale violet; petals spreading, emarginate. Tube of the filaments short, hairy at the base, surrounding the germ, resembling the tube of *Sida*. Anthers violet. Fruit spherical, umbilicate, tomentose. Capsules awnless, three-seeded. Seeds black, smooth.

Native of Mexico^h. Introduced in 1780, by Benjamin Bewick, Esq. It flowers in augustⁱ.

7. Root annual. Stem a foot high, stiff, round, somewhat hairy: branches few, short, upright, from the lower axils. Leaves scarcely tomentose. Peduncles axillary, upright, solitary, one-flowered. Spike terminating, with many sessile flowers, expanding after noon. Corolla yellow. Outer calyx linear, spreading, the length of the inner; which is urceolate at the base. Styles ten, longer than the stamens^k.

Native of North America. Cultivated in 1759, by Mr. Miller: It flowers in june and july^l.

8. This also is an annual plant. Stem from two to three feet high, with hairs thinly scattered over it, usually in pairs. Leaves seven-lobed, plaited, smooth; veined, sharply ferrate; on petioles the length of the leaf. Stipules ovate-lanceolate. Peduncles long; naked. Spike directed to one side, turned upwards, recurved before the flowers open. Corollas small, purple. Seeds ten; roughened above with many alternate teeth^m.

According to Jacquin, the leaves are five or three-lobed; and the flowers red.] Miller says, that the leaves are broad, hairy and three-lobed; the flowers small, pale blue, and set very closely on the spikes, appearing in june. It grows naturally in Peru, whence the seeds were sent to the Royal garden at Paris by Monf. Joseph de Jussieu. [It was cultivated by Mr. Miller in 1759ⁿ.

9. This is sister to *M. peruviana*, but the flowers are blue, not purple^o. According to Jacquin, the leaves are seven-lobed.

Native of Peru, about Lima. It is an annual plant, and flowers in july. Introduced in 1768, by Monf. Richard^p.

10. This plant is handsomely echinated on the disk of the leaf, and is a native of Spain^q.] Mr. Miller describes it as having a shrubby woolly stalk, four or five feet high, sending out branches on every side, with woolly, rough leaves. Peduncles axillary, supporting four or five flowers, bright purple, shaped like those of the common Mallow: they appear in july, and the seeds ripen in autumn. It seldom continues more than two or three years.

[In the Kew catalogue it is said to be a native of the Cape of Good Hope, and to have been introduced by Masson in 1774.

11. This was introduced in 1780, by Benjamin Bewick, Esq. is shrubby, and flowers in january and february. Its native place is unknown^r.

12. Stem a fathom in height, round; the tender branches tomentose, but becoming smooth by age. Leaves alternate, longer than the tomentose petioles, the lower lobes shorter, the middle longer. Stipules lanceolate, reflex. Flowers axillary, somewhat branched; branchlets short. Outer calyx of three, sometimes two bristles, one of which is inferior: inner calyx five-cornered, with prominent angles, half-five-parted; divisions ovate-acute. Corolla white, a little larger than the calyx; petals orbiculate, with very narrow claws. Tube of the stamens very short: anthers whitish. Style divided into twelve or fourteen whitish segments.

Found near Mexico. It flowers in the Royal garden at Madrid in december.

13. Stem shrubby, round, two feet high, tomentose especially when tender. Leaves alternate, nearly equal to the petioles, the breadth almost equal to the length, the middle lobe more produced, crenate, subtomentose underneath, the nerves and petiole very tomentose. Stipules lanceolate, shrivelling. Umbels five-flowered or thereabouts: common peduncle axillary, solitary, erect, elongated, having a few ovate shrivelling scales on it: rays about an inch long, thick. Outer calyx of three, sometimes four orbicular concave leaflets, dark purple, falling off before the corolla: inner globular at the base, five-cornered above, half-five-cleft; divisions acute, tomentose. Corolla bell-shaped, twice as large as the calyx, very deeply divided into five rounded striated segments of a fiery-violet colour,

^k Linn. syst.

^l Hort. kew.

^m Linn. spec.

ⁿ Hort. kew.

^o Linn. spec.

^p Hort. kew.

^q Linn. spec.

^r Hort. kew.

^a Sloane. ^b Hort. kew. ^c Linn. spec. and Loureiro.

^d Linn. spec. ^e Swartz. ^f L'Heritier. ^g Hort. kew.

^h Cavanilles. ⁱ Hort. kew.

with the base by which they are united white. Tube of the stamens whitish, a little shorter than the corolla, thick, upright. Germ superior, tomentose, of an oblate-spheroidal form, with as many grooves as there are stigmas. Style purple-rose coloured, hollow, entire at the base, dividing into from fifty to sixty threads. Fruit globular, umbilicated. Seeds three in a capsule. It differs from its congeners in the outer calyx being deciduous. In the manner of flowering it approaches to *Dombeya*; in fruit to *Sida*. It is therefore between *Malva* and *Sida*.

Native of Mexico: flowering from January to March at Madrid¹.]

14. This rises with a woody stalk ten or twelve feet high, sending out branches from the side the whole length: the stalks and branches are closely covered with hairs. Leaves hairy, indented on their sides, so as to have the appearance of a trilobate leaf: these on the young plants are three inches long and two broad at their base; but as the plants grow older, they are scarcely half that size. The flowers come out from the side of the branches, upon peduncles an inch long; they are of a deep red colour, shaped like those of the common Mallow, but smaller. It flowers great part of the year.

[Dillenius, who distinguishes the three varieties here given, as species, describes the first, as having the stem from eighteen inches to three feet in height, and higher, when more advanced, not much branched: the stems round and woody, not very thick, scarcely so large as the little finger; the bark ash-coloured below, bay at top; the ends of the twigs green. Leaves not unlike those of the Gooseberry, with several smaller ones from the same point, smooth, paler underneath. Peduncles axillary, solitary, slender, perpendicular to the stem. Calyx smooth; outer usually three-leaved; inner divided almost to the base into five broadish segments. Capsules hirsute: twelve in a whorl, muricate with four tubercles arched upwards and spreading on each side at the back, of a brown bay colour, they are broader than they are high, compressed and coriaceous. Seed rounded-beaked, lens-shaped, smooth, bay-coloured².

Native of the Cape of Good Hope. The first mention of this shrub is by Peines in hort. bos. 1705 and 1713. In 1713 it was cultivated in the botanic garden at Chelsea³. Dillenius was the first who described and figured it⁴.

β. This has thicker, higher stems, of a brownish red colour. Leaves hirsute, broader, with wider segments less deeply cut, but with the toothlets sharper and serrate. The outer calyx has somewhat larger segments; the inner is subhirsute. Peduncles jointed, and bent a little downwards; whereas in the preceding they are short and not jointed⁵.

The whorls of fruit are a little larger than in the preceding, and not muricated. Capsules compressed, horizontally oblong, with waved wrinkles running from the centre towards the circumference, of a dirty black colour⁶.

γ. The rugged Cape Mallow differs from the others in having the hairs of the leaves and stem simple not compound; the flowers almost upright not drooping⁷.

It is a loftier and stouter plant, with larger flowers, having deeper and darker spots on the petals, the calyxes more hirsute, with the outer leaflets larger, and the peduncles shorter, without any joint; the leaves also are thicker, more wrinkled, softer, broader, less gashed, not so like those of the Gooseberry, with the toothlets less sharp⁸.

The fruit has twelve capsules in a whorl, rounded-kidney-form, somewhat compressed, brittle, black: back rounded, rugged, but neither tubercled nor muricate: sides flat, obsoletely striated. Seed kidney-form, with a depressed streak on the back, bay-coloured. The embryo in this is white; in the two others green⁹.

Gärtner can scarce think this a variety of *M. capensis*. On the contrary Miller, who is very apt to

advance varieties into species, says that] the leaves of this appear very different from either of the other, being deeply divided into three lobes, which are also deeply indented, so that any person would suppose it to be a different species; but that he has frequently raised them all, with other intermediate varieties, from the seeds of one plant.

[15. Trunk very small, branching almost immediately from the root: branches six feet and a half long; about the thickness of a wheat straw at the base, rough with fasciculated hairs, dividing into smaller branches. Leaves narrow at the base, entire, oblong, cuneiform, an inch or more in length, most of them divided into three deep incisures; divisions sharply crenated, rugose and plaited, smooth above, rough below: stipules two, semilunar, spreading. Flowers axillary, in the lower branches solitary, in the upper ones binate, peduncled, bending. Corolla purple, streaked, with deep-purple or red spots at the base.

16. This is a shrub about four feet high, upright, but so weak, that unless it is supported, half the trunk and the branches hang downwards. Trunk thicker than a quill, round, with a brown bark, rugged with scars from the fallen leaves and stipules. Younger branches villose and glutinous. Leaves acute, alternate, petioled, somewhat rugged, villose, dark green on the upper surface. Stipule on each side the petiole, ovate, acute, entire, somewhat convex. Peduncles axillary, solitary, one-flowered, villose. The three leaflets of the outer calyx are ovate, acuminate, somewhat villose: inner half-five-cleft, with divisions similar to the leaflets of the other. Petals pale rose colour, spreading very much, twice as long as the calyx, streaked with red at bottom. Column of filaments white and hirsute. Anthers and stigmas purple. Arils about twelve, black, somewhat wrinkled and rugged. Seeds smooth, brownish. Named from the highly balsamic smell of the plant. Jacquin had the seeds from Holland about the year 1777. The native country is unknown¹⁰. Probably from the Cape of Good Hope.

17. This is a shrub very much resembling *M. capensis*, but the whole of it, except the upper surface of the leaves is hoary or subtomentose. Leaves small, cordate, three or five-lobed; lobes gashed, the middle one more lengthened out. Flowers large, in terminating racemes. Outer calyx lanceolate. Corolla white. Fruit globular, retuse; with from fifteen to twenty cells, closely connected, as in the *Abutilon* of old authors.

Native of the Cape of Good Hope¹¹.

Linneus, in his *Species Plantarum*, p. 971. has a species under the name of *M. abutiloides*, totally different from this, which was omitted in the thirteenth edition of *Systema vegetabilium*, and ought to be restored¹². It is an American plant, native of Providence in the Bahama islands; and figured by Dillenius under the name of *Abutilon althæoides*, flore carneo, fructu globoso, t. 1. f. 1. It has the appearance of an *Althæa*, is tall, and is distinguished from the other Mallows by its subglobular, striated pericarps, with many-seeded cells, not at all distinct on the outside. The stem is upright; the leaves are lobed and villose; the calyxes very short¹³. Catesby brought over the seeds, and it was cultivated in the Eltham garden in 1725, but did not flower there till July 1728¹⁴.

18. Root annual. Stems creeping, eighteen inches and longer, round, putting out roots at the lower joints, hairy. Leaves villose, soft, those next the root larger, roundish, gash-ferrate, smaller and more deeply divided as they ascend, five-lobed and seven-lobed, all on long hairy petioles, gashed and ferrate on the edge. Flowers axillary and terminating, on almost upright peduncles from an inch to an inch and half in length, small, the colour of Burgundy wine, the claws of a darker red. Seeds in each capsule commonly two, small, smooth, one of them commonly abortive. Capsules small, a little hairy at top, with two short horns on the outer margin; they are bifid and open from the

¹ Cavanilles.

² Ibid.

³ Gärtner.

⁴ Gärtner.

⁵ Hort. kew.

⁶ Linn.

⁷ Hort. Elth.

⁸ Dillenius.

⁹ Gärtner.

¹⁰ Jacquin.

¹¹ Linn. suppl.

¹² Retzius.

¹³ Linn. spec.

¹⁴ Dill. elth.

top to the middle, but at the lower and inner part they remain entire^k.]

Native of Carolina, whence the seeds were brought by Catesby. [It was cultivated in the botanic garden at Chelsea in 1723^l.

19. This is an annual plant, differing from *M. rotundifolia* in having the stem almost upright, and three times as large; the leaves more acute, with the tip of the petiole ascending; the calyxes smooth, the outer linear not lanceolate; the flowers sessile; the calyxes, when the fruit is ripe, purple; the arils wrinkled above and toothed on the sides.

Native of Barbary^m.

20. Root annual. Stems decumbent, scarcely branched, green, somewhat striated. Leaves on long petioles, five-lobed; lobes rounded on the lower leaves, in the rest lanceolate, crenate, with a lanceolate stipule at the base of the petioles. Flowers axillary, commonly four, on erect naked almost equal peduncles, half an inch long. Calyx converging. Corolla pale red, a little larger than the calyx; petals emarginate. Stems, petioles, peduncles and calyx bearded with longish hairs. Leaves very finely and evenly hirsute. It differs from *rotundifolia* in having the leaves acutely lobed not cordate, in the colour and size of the flower, and in the peduncles, which in *rotundifolia* are unequal, and sometimes leafy. In *parviflora*, besides the same difference of the leaves, the calyx is spreading and smooth, the flowers conglomerate in the axils not scatteredⁿ. Vahl doubts whether it be really different from *M. parviflora*, to which it is certainly very nearly allied.

Found by Bellardi in the county of Nice.

21. Root annual, or perhaps biennial. Chiefly distinguishable from *M. rotundifolia* to which it is very nearly allied, in the petals scarcely exceeding the calyx, and the flowers being never more than two in each axil. After all it is doubtful whether it be permanently distinct from the next species^o; and indeed this with the two preceding ones require farther examination, before it be finally determined whether they are species or only varieties. Hudson took it for the *parviflora* of Linneus; but being different from that, which has the leaves very angular and sharply serrated, the flowers sessile or nearly so, three or four together in axillary clusters, it was necessary to give it another name.

It was first found by Mr. James Sherard in company with Mr. Rand, at Hithe in Kent. Mr. Hudson remarked it in the same place. Dr. Withering says, that his specimens were gathered in Pembrokeshire. In Ray's synopsis it is observed, that it differs from the other Mallows in having the seeds wrinkled.

22. Root annual, whitish, striking deep. Stems several, branched, lying close to the ground, except the flowering branches, which ascend a little, not creeping or putting out roots from the joints, from nine to twelve inches in length or more. (I have specimens before me, on Sept. 16th, 1797, four feet long,) round, pubescent, frequently tinged with purple on one side. Leaves covered on both sides with a fine down, somewhat rugged, roundish kidney-form or almost orbicular, cordate or hollowed at the base, the surface waved or raised a little at the angles between the lobes, and when the leaves, especially the larger, are laid flat, so as to press out these wavings, hardly any interval remains between the two edges at the base, so that they then are almost round, allowance being made for the lobes, which are very shallow, five or seven in number, rounded, serrate or rather crenate on the edge, having five or seven ribs on the under side, not flat but concave upwards, or what Linneus calls cucullate, especially the younger ones; the largest two inches and a half or three quarters across, and an inch and a half from the petiole to the apex. There is a dark purple spot at the corner of the base or top of the petiole; which is also tinged with purple, roundish but with a slight channel along the upper side, hairy and slightly rugged, four or five inches in length. Sti-

pules in pairs, lanceolate, fringed with hairs. Peduncles axillary, shorter than the petioles, frequently two together, but often more of different lengths, sometimes one only, the other seeming to have proved abortive; they are round, pubescent and one-flowered. Leaves of the outer calyx linear, bluntish, nearly as long as the inner; which is bell-shaped, pubescent with a slight ruggedness, of a paler yellow; segments ovate, acute, keeled, toothletted and slightly waved. Corolla white with purple veins, and purple towards the top, (at least it is so in my specimens). Lightfoot says, white streaked with red veins. Curtis, white, striped with reddish veins. Withering, purplish rose red, sometimes paler. The veins are darker, and more inclined to red than the purple at the end, which in my specimens cannot be called red, but beautiful pale lilac purple. Linneus says, that about Upsala it is entirely white. The corolla is full twice as long as the calyx: petals narrow-wedge-shaped, very blunt and deeply emarginate at top, nearly upright and subsessile. Filaments and anthers white. Styles twelve to fourteen, purple, hairy on one side. Fruit three-eighths of an inch in diameter, made up of as many capsules as there are stigmas^p.

Native of most parts of Europe, on dry banks, by way sides, under walls and other fences; flowering from June to September.

23. Peduncles in flowering time bowing, shorter than the leaves. Petals red, rounded with a point. Capsules more than five, in a ring, or scattered.

Native of Bithynia. Arduini. It is perennial^q. I observe that the fruiting peduncles are frequently arched upwards in *M. rotundifolia*.

24. Root perennial, (or biennial, according to some; annual according to others,) whitish, the thickness of a finger, striking deep, thinly furnished with large fibres, not creeping, sweetish and viscid. Stem more or less upright, according to circumstances; in hedges drawing up to the height of several feet, but by foot-paths and among rubbish in a manner prostrate, from one to three feet in length or more, round, inclined to be woody, hairy, branched. Leaves five-lobed, (rarely six or seven,) unequally crenate, hairy on both sides, or only underneath, the surface waved and concave upwards, especially the younger ones, having a dark purple stain at the insertion of the petiole: root-leaves five or six inches in diameter, on petioles eighteen inches long; stem-leaves three or four inches in diameter, darker green and more deeply lobed than in *M. rotundifolia*. Petioles three-cornered, hairy. Stipules two at the base of each petiole, ovate, acuminate, ciliate. Peduncles axillary, nearly cylindrical, several together, forming a sort of umbel, one-flowered, hairy, an inch long. Leaflets of the outer calyx lanceolate; segments of the inner broader; both hairy without, smooth within, toothed at the edges, and the teeth terminating in long hairs. Petals deeply emarginate, purple with three or four darker or red streaks, varying sometimes to white, or with more or less of a blueish cast. Filaments and styles purple or red^r. Capsules about ten, or from ten to fifteen, rounded-kidney-form, three-sided, somewhat crustaceous, brittle, close all round, dark straw-colour, excavated wrinkled on the back, streaked in curves on the sides. Seeds kidney-form, three-sided, dotted, whitish, ash-coloured^s.

Common in most parts of Europe, by hedges, roads, and in waste places, flowering from June to September. In the north of England it is called *Mauls*. In French, *Mauve*, *la grande Mauve*. In German, *die wilde Malve*. In Dutch, *Wilde Maluwe*. In Danish, *Den store katost*. In Swedish, *Kattost*. In Italian, *Malvone*. In Spanish and Portuguese, *Malva sylvestre*. In Russian, *Proskurat*.

Cattle do not appear to be fond of it. Every part of the plant, particularly the root, abounds with a mild mucilage. The root boiled is much used as an emollient cataplasm; and an infusion of it is generally prescribed in all cases wherein mild mucilaginous sub-

^k Dill. elth.

^l Hort. kew.

^m Linn. spec.

ⁿ Allion.

^o Engl. bot.

^p Curtis, Woodw. Mss. Wither. Lightf.

^q Linn. syst.

^r Curtis, Withering.

^s Gartner.

stances are useful; as in disorders of the urinary passages, and in coughs, hoarsenesses, &c. The use of it however has been much superseded by Marshmallow, which possesses its valuable qualities in a superior degree. The leaves also are not unfrequently used in fomentations and clysters¹. Woodville says, the roots of *Malva* are useless, whilst those of *Althæa* are of more efficacy than any other part of the plant.

It is well known that *Malva* was an esculent vegetable among the Romans. Haller however says it was not this, but one allied to it, named *M. rotundifolia italica*, flore amplo, by Tournefort. Prosper Alpinus informs us, that a tree of the Mallow kind is eaten by the Egyptians: and the Chinese use some sort of Mallow in their food.]

25. This is an annual plant, with an upright stalk. The flowers are larger than those of the common sort, and are of a soft red colour.

[I have a stalk now before me above six feet in height. The petioles of the leaves are not so long, nor so hairy as in the common Mallow. The leaves and the whole plant are smoother. The flowers are not purple, but dark red with the veins so dark as to be almost black. The inner calyx is not so deeply divided, and does not fold over the fruit, which consists of fewer capsules. The uprightness of the plant, with the colour of the flowers, immediately distinguish this from the common Mallow, which in many respects it much resembles.] It was discovered by Tournefort in the Levant, [and cultivated by Miller, in 1759.

26. This also resembles the common Mallow: but this has five ribs to the leaf, that has seven; this has the outer calyx lanceolate, that ovate; this has the corolla more blood-red, in that it is blueish purple.

It is annual, and native of the South of Europe^a. Introduced in 1768, by John Earl of Bute. It flowers in June and July^x.

27. Stem straight, six feet high; branches axillary: leaves cordate at the base, about five-lobed, the middle one sometimes longer than the rest: they are obtuse, footstalked, crenulated, subviscid, soft, and alternate. Stipules lanceolate and entire. Flowers single, axillary, with long peduncles; corolla an inch in diameter, bright purple; sometimes more obscure: the column of the stamens is marked at its base betwixt each of the petals with a blood-red speck. The whole plant breathes a strong aromatic smell.

Native place uncertain^y.

28. Root annual. Stems diffused, ascending, rough-haired. Leaves cordate-roundish, scarcely lobed, crenate. Stipules lanceolate. Peduncles solitary, one-flowered, longer than the leaf. Outer calyx two-leaved, the third inner leaflet being wanting: inner calyx five-cleft, with the lobes cordate or the sinuses prominent. Corolla flesh-coloured.

Native of Spain^z.

29. Root annual, three feet high. Leaves cordate, five or seven-angled, subcrenate, smooth, on long, alternate petioles. Flowers whitish red, small, on one-flowered peduncles.

Native of China and CochinChina^a. Cultivated in 1683, by Mr. James Sutherland. It flowers in June and July^b.]

30. This also is annual. Stem upright four or five feet high. Leaves curled on their edges. [Stem thick, round, green, hirsute below, branched, from three to four feet high. Lower leaves a hand wide, on long petioles: the upper ones smaller, on shorter petioles; the uppermost very small, almost sessile; all obscurely angular, sinuate, bright green, pubescent. Flowers sessile in the axils over the whole stem and branches, small in proportion to so large a plant, like those of *M. rotundifolia* in size and colour^c.

Native of Syria, and now become a denizen of Germany and Silesia. Cultivated in 1596, by Gerarde. It flowers from June to August^d.

31. Root long, branched, perennial. Stem from

two to three feet high, round, rugged, hairy; hairs in bundles, spreading; branches alternate. Leaves alternate, semiorbicular, five-parted to the base, with the lobes oblong, three or five-parted, bright green, whitish underneath, pubescent, somewhat rugged. Petioles round, with very small awl-shaped stipules at the base. Flowers terminating, in panicles or bundles. Calyx small in proportion to the size of the corolla, pubescent; outer small, inner much larger. Corolla an inch and half or two inches long, five-parted to the base, bright purple; with blunt two-lobed segments. Capsules very smooth, first green then black^e, about twenty-four in number, rounded-kidney-form, papery, marked with a raised line along the back, one-celled, valveless, opening only by the dorsal shield separating from the sides. The receptacle or central column is cogged or many-winged from the lateral permanent laminae of the capsules. Seeds solitary, kidney-form, compressed a little, smooth, ash-coloured^f.

Native of many parts of Europe, but not of Britain, as has been generally supposed. No other than *M. moschata* being found in the counties of Warwick, Leicester, and Nottingham, as appears from the repeated observations of botanists, who have carefully searched for it in those counties. This differs so entirely from *M. moschata*, that it could not well have been mistaken or overlooked. Ray mentions but one in his own edition of the *Synopsis*; and what Dillenius adds in the third edition, is not from his own observation^g.

32. Root-leaves roundish, kidney-shaped, entire, except being crenate on the margin. First stem-leaves three-lobed, divided half way down; side-lobes divided again into two or three, but not so deeply: above these they are three-lobed to the foot-stalk: lobes again deeply divided; divisions deeply jagged: higher ones five-lobed, lobes pinnatifid, segments of the upper ones more and more divided, and narrower; uppermost linear. Stem round, much branched, slightly hairy: at the origin of each branch two lanceolate hairy stipules. Flowers crowded on the top of the stem and branches on short peduncles, and single ones from the axils of the upper leaves. Petals heart-shaped, divided nearly to the base, pale red or flesh-coloured with deeper veins^h. Styles fourteen to eighteenⁱ. Capsules about fifteen, kidney-form, compressed, papery, black, thickly set with pale villose hairs, especially on the back. Seeds smooth, pale-ash-coloured.

This differs from the preceding, with which our English botanists have confounded it, in having the stem not so tall, with solitary upright hairs rising from a prominent little point. Arils rough with hairs. Flowers of an ambrosial or musky scent^k. The musky smell however is not always to be perceived, and the circumscription of the upper leaves being sometimes lengthened out into a triangular form, these two circumstances have probably caused it to be mistaken for *M. Alcea*^l.

Mr. Curtis having cultivated both species together, found *M. Alcea* grow nearly to twice the height of this; to be in every respect a stronger plant, and harsher to the touch; the leaves of the stalk much less jagged; the corollas similar, but the calyxes remarkably different, the outer leaflets in *moschata* being lanceolate or sometimes almost linear; in the *Alcea* ovate, with a large protuberant ring near the base.

Native of many parts of Europe. By no means uncommon in many parts of Great Britain, particularly the midland counties, in Hertfordshire, Huntingdonshire, Derbyshire, and the North frequent. In Norfolk, Suffolk and Cambridgeshire sparingly. Cullumheath, South Leigh, and between Witney and Burford, Oxfordshire. Mr. Curtis mentions its growing plentifully near Coomb-wood. I have found it near Ballam in Surry, by the five mile stone on the Epsom road. Gerarde says, it groweth by the ditch sides on the left hand of the place of execution by London, called Tyborne; near Bushey, on the backside of a gentleman's

¹ Curtis, Withering.

^a Linn. spec.

^x Hort. kew.

^y Jacquin.

^z Linn. spec.

² Loureiro.

^b Hort. kew.

^c Krockner.

⁴ Hort. kew.

^e Pollich and Krockner.

^f Gartner.

^g Woodw. Mfs.

^h Ibid.

ⁱ Withering.

^k Linn.

^l Woodw. Mfs.

M A L

house named master Robert Wylbraham; among the bushes and hedges as you go from London to a bathing place called the old Foorde; in the bushes as you go to Hackney, a village by London, and divers other places, as at Bassingburne in Hartfordshire, three miles from Roiston. Mr. Goodyer found it with white flowers in a close near Maple-Durham in Hampshire, called Aldercrofts^m. About Duplin, near Perth, &c. in Scotlandⁿ.]

33. This is an annual plant. Leaves cut into five obtuse lobes almost to the bottom, and these deeply cut on their side. The flowers stand upon very long peduncles: the calyx is large, prickly and acute-pointed: the corolla is blue.

[Leaves blunter, ciliate, having bristles scattered over the upper surface at the ends. Stems much branched at the base, prostrate, rising. Corolla four times as large as the calyx.

Native of Provence and Spain, on the coast^o.

Gerard doubts whether this be different from *M. moschata*.]

34. This also is an annual plant, with stalks about a foot long, smooth and declining. Leaves on pretty long footstalks. Flowers single from the axils, and at the top in clusters. Calyxes large, acute. Corollas small, pale blue.

[Leaves sharper, ciliate, entirely smooth above. Stem upright, with alternate branches at the upper part of the stem, and none towards the root. Corollas not longer than the calyx. It is allied to the preceding^p.

Native of Egypt. Cultivated in 1739, by Mr. Miller. It flowers in June and July^q.

The following observations may assist in distinguishing the species. The leaves in all are alternate; undivided from one to seven, the rest angular. Stem herbaceous annual in 3, 4, 7, 8, 9, 18 to 22, 25, 26, 28, 29, 30, 33. Perennial in 23, 24, 31, 32. Shrubby in 1, 2, 5, 6, 10 to 17, 27.

The outer calyx is in general three-leaved, but sometimes in n. 12, and always in n. 28 it is two-leaved. In 13 it is sometimes four-leaved. In general it is permanent, but in 6 and 13 it is deciduous. Commonly there is a single seed only in each capsule or aril, but they are two-seeded in 18; three-seeded in 6 and 13; the capsules being divided into cells. The corolla is

Orange in 1.

Yellow, 4, 5, 7.

Pale Violet, 6.

Fiery Violet, 13.

Purple, 8, 10, 24.

Blue, 9, 19, 21, 33, 34.

Red, 14, 18, 20, 23, 25, 26, 28, 29.

Pale Rose, 16.

Flesh-coloured, 31, 32.

White, 12.

White with purple veins, 22, 30.

Gærtner remarks, that the common receptacle in all those whose fruit he has described is not clogged (mollendinaceum), nor the back of the capsule soluble, as in *M. Alcea*; whence Medicus has separated this species from the rest under the name of *Bismalva*.]

PROPAGATION AND CULTURE.

Sow the seeds of the hardy sorts at the end of March, upon a bed of fresh light earth, and when the plants are three or four inches high, transplant them where they are to continue, allowing them sufficient space. They appear best when intermixed with other flowers of the same growth.

The seeds may also be sown in August, for most of them will endure the greatest cold of our climate, on a dry soil, and these plants will grow larger and flower sooner than those which are sown in the spring: or if the seeds be permitted to scatter, they will come up and thrive equally with those which are sown.

The seeds of those sorts which come from hot countries must be sown upon a hot-bed in the spring.

M A M

When the plants are fit to remove, plant each in a small pot filled with light fresh earth, and plunge them into a new hot-bed, shading them until they have taken fresh root: admit free air to them in proportion to the warmth of the season, and at the end of June they may be placed in the open air in a sheltered situation, where they will flower and produce ripe seeds. [Some of the species require the protection of the bark-stove.

MALVA. See *Hibiscus*, *Lavatera*, *Malachra*, *Malope*, *Napaea*, *Sida*, *Urena*.]

Malva arborea. See *Hibiscus*, *Lavatera*.

Malva rosea. See *Alcea*, [*Dillenia*, *Hibiscus*.]

MALVAISCUS. See *Hibiscus*.

MALVINDA. See *Sida*, *Urena*, *Waltheria*.

MALUS. See *Pyrus*.

— *americana*. See *Cañus*, *Crataeva*, *Hippomane*.]

— *armeniaca*. See *Prunus*.

— *aurantia*. See *Citrus*.

[— *coronaria*. See *Pyrus coronaria*.

— *cotonea*. See *Pyrus Cydonia*.

— *indica*. See *Rhamnus Fijuba*.]

— *Limonia*. See *Citrus*.

— *Medica*. See *Citrus*.

— *Perfica*. See *Achras*, *Amygdalus*, *Mammea*.

— *Punica*. See *Punica Granatum*.

[*MAMAY* }
and } See *Mammea*.]

MAMEI.

MAMMEA. (So called by Plumier, from the vernacular name of the West Indies.)

Lin. gen. n. 656. *Reich. n.* 713. *Schreb. n.* 1586.

Jacqu. amer. 268. *Juss.* 257. *Mamei. Plum.*

t. 4.

Class. 23. 1. Polygamia Monoecia (or Dioecia.)

Nat. order of *Guttiferæ*, *Juss.*

GENERIC CHARACTER.

* *Hermaphrodite*.

CAL. Perianth one-leaved, two-parted: *divisions* roundish, concave, coriaceous, coloured, spreading very much, deciduous.

COR. Petals four, roundish, concave, spreading very much, subcoriaceous, longer than the calyx.

STAM. Filaments numerous, bristle-shaped, erect, very short, inserted into the receptacle, ending in oblong, blunt, erect *Anthers*.

PIST. Germ roundish, depressed. *Style* cylindric, erect, longer than the stamens, permanent. *Stigma* capitate, convex.

PER. Berry roundish, fleshy, very large, acuminate with part of the style, with a coriaceous rind, one-celled.

SEEDS four, subovate, rugged, distinct from the flesh.

* *Male* on the same or a different tree.

CAL. COR. and STAM. as in the Hermaphrodite.

ESSENTIAL CHARACTER.

Cal. one-leaved, two-parted. *Cor.* four-petalled. *Berry* very large, four-seeded.

SPECIES.

1. *Mammea americana*. *American Mammea*.

Lin. spec. 731. *Juss.* 492. *Reich.* 2. 581. *Jacqu.*

amer. 268. *t.* 181. *f.* 82 *piet.* 130. *t.* 248. *Brown.*

jam. 249.

Mamei magno fructu, perficæ sapore. Plum. gen. 44. *ic.* 170.

Mamay. Baub. hist. 1. 172. *Dalech. hist.* 1836.

Laet. amer. 356. *Park. theat.* 1633. 1688.

Malus perfica maxima, fol. rotundis splendentibus glabris, fructu maximo scabro rugoso. Sloan. jam. 2.

123. t. 217. *f.* 3.

Arbor indica Mamei dicta. Baub. pin. 417. *Raii hist.* 1665.

DESCRIPTION, &c.

[This is a tall upright handsome tree, with a thick spreading elegant head. It has a long downright tap root, which renders it very difficult to transplant. Younger branchlets quadrangular. Leaves oval or obovate, quite entire, blunt, extremely shining, leathery, firm, with parallel transverse streaks, on short petioles, opposite, from five to eight inches in length. Peduncles one-flowered, short, scattered over the stouter branches. Flowers sweet, white, an inch and half in diameter. The calyx is often trifid with a five-petalled

^m Ger. emac 931.

ⁿ Lightf.

^o Linn. syst.

^p Ibid.

^q Hort. kew.

talled or six-petalled corolla; but this arises from one of the segments or petals being cut. Fruit roundish, or obsoletely three-cornered or four-cornered according to the number of seeds, one or two of which are frequently abortive, varying in size from three to seven inches in diameter: it is covered with a double rind; the outer leathery, a line in thickness, tough, brownish yellow, divided by incisures longitudinally decussated; the inner thin, yellow, adhering strongly to the flesh; which is firm, bright yellow, has a pleasant singular taste, and a sweet aromatic smell; but the skin and seeds are very bitter and resinous. It is eaten raw alone, or cut in slices with wine and sugar, or preserved in sugar. In Martinico they distil the flowers with spirit, and make a liquor which they call *Eau Creole*. The English and Spaniards call the fruit *Mamei* or *Mammee*; and the French *Abricot-sauvage*, from the yellowness of the pulp, like that of the *Abricot*.*

Swartz remarks that the tree which bears hermaphrodite flowers is very lofty, but that the male trees are smaller.

Native of the Caribbee islands and the neighbouring continent. Cultivated in 1739, by Mr. Miller†.

Browne gives the hermaphrodite and male trees as different species. He informs us, that they are among the largest trees in the island of Jamaica, abound with a strong resinous gum, and are esteemed among the best timber trees; that the leaves and young branches are full of a yellow milky juice; that the fruit is large and agreeable, but too strong and gross for a weakly stomach, leaving a bitterness behind it, that continues for a considerable time upon the palate; when in a perfect state containing four rugged oblong angular nuts, having as many kernels of the same shape.]

Mr. Miller says that this tree grows to the height of sixty or seventy feet in the West Indies; that the leaves are large and stiff, and continue green all the year; that the fruit is as large as a man's fist, when ripe of a yellowish green colour, and very grateful to the taste; that it is generally sold in the markets in the Spanish West Indies, and is esteemed one of the best fruits in that country; that it has been transplanted into most of the Caribbee islands, where it thrives exceeding well.

PROPAGATION AND CULTURE.

Set the stones or seeds, as fresh as possible from the West Indies in pots filled with fresh light earth; and plunge them into a hot-bed of tanners-bark, observing to water the earth whenever it appears dry. In about a month or six weeks the plants will appear above ground, after which they must be frequently refreshed with water, and in hot weather the glasses of the hot-bed should be raised to let in fresh air. In two months the roots of the plants will have filled the pots, when you should provide some pots of a little larger size, into which you should transplant the plants, being careful to preserve as much earth to their roots as possible; then you should fill up the pots with fresh light earth, and plunge them into the bark-bed again, observing to water and shade them until they have taken root, after which they should be constantly refreshed with water as you find they want it, and must have air in hot weather. In this bed they may remain till Michaelmas, when they must be removed into the bark-stove, where they must be constantly kept, observing to refresh them with water, but sparingly at this season, as also to clean their leaves from the filth they are apt to contract in the stove; the spring following they should be shifted into fresh earth, and if they require it, into larger pots, but by no means overpot them, for they do not produce many roots, therefore if the pots are too large the plants will not thrive; they must be constantly kept in the bark-stove, and may be treated after the manner directed for the Coffee-tree.

If, when the stones of the fruit are brought over, they are put into the tan-bed, under the bottom of any of the pots, they will sprout sooner than those which are planted in the earth.

* Jacquin.

† Hort. kew.

[MAMMEA ASIATICA. See *Barringtonia*.

SAPOTA. See *Acbras*.

MAMMEE TREE. See *Mammea*.

MANABEA. See *Aegiphila*.]

MANCANILLA, [MANCINELLA and MANCHINEEL.] See *Hippomane*.

[MANDARU. See *Baubinia*.

MANDRAGORA and MANDRAKE. See *Atropa*.

MANDUBI. See *Glycine*.

MANETTIA. (Named from Xavier Manetti, Prefect of the botanic garden at Florence, and Secretary of the botanic society there. Author of *Viridarium Florentinum*, 1751: and *Regnum Vegetabile*, 1756.)

Lin. gen. Reich. n. 171. Schreb. n. 181. Nacibea.

Aubl. t. 37. Juss. 199.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Contortæ. Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth eight-leaved: leaflets linear, concave, hirsute, permanent.

COR. one-petalled, falver-shaped. Tube cylindric, longer than the calyx, scored on the inside with four lines. Border four-parted: divisions shorter than the tube, ovate, obtuse, bearded within.

Nectary a rim surrounding the receptacle, quite entire, concave.

STAM. Filaments four, filiform, very small, inserted into the throat. Anthers linear, incumbent, two-celled.

PIST. Germ inferior, turbinate, compressed. Style filiform, declined, the length of the tube. Stigma bifid, thickish, blunt.

PER. Capsule turbinate, compressed, grooved on both sides, one-celled, two-valved, or separable as it were into two capsules.

SEEDS few, flat, winged, orbiculate with a central seedlet, imbricate at a pulpy oblong pillar.

ESSENTIAL CHARACTER.

Cal. eight-leaved. Cor. four-cleft. Caps. inferior, two-valved, one-celled. Seeds imbricate, orbicular, with a central seedlet.

SPECIES.

1. *Manettia reclinata*.

Lin. syst. 164. Reich. 1. 345. mant. 558. Swartz prodr. 37.

Leaves ovate acute pubescent, stem reclining herbaceous.

2. *Manettia Lygistum*.

Swartz. prodr. 37.

Petelia Lygistum. Lin. syst. 153. Reich. 1. 313.

Swartz obs. 47.

Lygistum. Brown. jam. 142. t. 3. f. 2.

Leaves ovate acute veined, stem twining suffrutescent.

3. *Manettia lanceolata*.

Vahl symb. 1. 12.

Leaves lanceolate, flowers five-stamened.

DESCRIPTIONS, &c.

1. Root annual. Stem weak, branched. Leaves opposite, approximating, subciliate, an inch and half long. Petioles very short, hirsute. Stipules opposite, fastened to the petioles, pressed close, semicircular, very short. Peduncles axillary, solitary, shorter than the leaves, many-flowered: pedicels opposite, round, hirsute. A bracte to each pedicel, minute, acute. Flowers white.

Native of Mexico^a.

2. This weakly shrub rises by a very branched flexuose stem to the height of about seven feet, and is every where adorned with moderately large ovate leaves disposed in an opposite order. The twigs or boughs begin to shoot almost immediately above the root; and they, as well as the succeeding branches, rise generally to the height of the main stem, and are furnished with moderate bunches of flowers towards the top, which generally rise by long branched peduncles from the axils^b. The calyx is eight-leaved, and the seeds imbricate, as in the preceding^c.

Native of Jamaica.

3. Stem shrubby. Peduncles terminating, often in threes, the side ones three times as long as that in the middle, bifid at top. There is a lanceolate leaflet at the division of the peduncles. Flowers at first heaped,

^a Linn. mant.

^b Browne.

^c Swartz obs.

then in racemes, directed one way; with brittle-shaped leaflets at the base of the calyx. Capsules crowned with the calyx. It agrees with *Manettia* in the corolla, nectary, stigma and pericarp; differing only in the number of stamens and segments of the calyx.— Allied to *Cinchona*^d.

MANGA. See *Mangifera*.

MANGHAS. See *Cerbera*.

MANGHOS. See *Mangifera*.]

MANGIFERA. (From *Manga* or *Manghos*, the vernacular name of the fruit; and *fero*, to bear.)

Lin. gen. n. 278. Reich. n. 289. Schreb. n. 387.

Gartn. t. 100. Juss. 369.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Terebintaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: divisions lanceolate.

COR. Petals five, lanceolate, longer than the calyx.

STAM. Filaments five, awl-shaped, spreading, the length of the corolla. Anthers subcordate.

PIST. Germ roundish. Style filiform, the length of the calyx. Stigma simple.

PER. Drupe kidney-form, oblong, gibbous, compressed.

SEED. Kernel oblong, compressed, lanuginose.

ESSENTIAL CHARACTER.

Cor. five-petalled. Drupe kidney-form.

SPECIES.

1. *Mangifera indica*. *Mango-Tree*.

Lin. spec. 290. Juss. 242. ed. 13. 201. Reich. 1.

563. suppl. 157. flor. zeyl. n. 471. Bont. jav. 95.

Lour. cochinch. 159.

M. domestica. Gartn. fruct. 2. 95.

Manga domestica. Rumph. amb. 1. 93. t. 25.

M. indica fructu magno reniformi. Raii hist. 1550.

Mangas. Park. theat. 1631.

Mao f. *Mau* f. *Manghos*. Rheed. mal. 4. 1. t. 1, 2.

Perficæ similis putamine villosa. Baub. pin. 440.

Amygdalum referens fructus hirsutus. Baub. hist. 1. 183.

Amba f. *Mangas*. Baub. hist. 1. 173.

β. *Manga compressa*. Gartn. fruct. 2. 96.

γ. *Manga dodoel*. Gartn. fruct. 2. 96.

δ. *Manga Kayjer*. Gartn. fruct. 2. 96.

ε. *Manga teloor*. Gartn. fruct. 2. 96.

ζ. *Manga Bierie-gandaria*. Gartn. fruct. 2. 96.

Leaves simple, flowers five-stamened.

[2. *Mangifera pinnata*. *Wing-leaved Mango Tree*.

Lin. Juss. 242. suppl. 156. Retz. obs. 5. 4. n. 66.

Leaves pinnate, flowers ten-stamened.

3. *Mangifera foetida*. *Stinking Mango Tree*.

Lour. cochinch. 160.

Manga foetida. Rumph. amb. 1. t. 28. Bont. jav. 25.

Racemes elongated, petals entire and reflex, drupe cordate pubescent.]

DESCRIPTIONS, &c.

1. This is a large spreading tree. The wood is brittle, brown and used only for indifferent works. The bark becomes rugged by age. The leaves are seven or eight inches long, and two or more broad, [lanceolate, quite entire, smooth, of a fine shining green and a sweet resinous smell^e] terminating in points, and having several transverse parallel opposite ribs; [they are on short petioles^f, and grow in bunches at the extremity of the branches^g.] The flowers are produced in loose bunches at the end of the branches. [The calyx consists of five, acute, spreading leaflets: the corolla, which is inferior, of five oblong flat petals, reflex at the tip, white with yellow streaks at the base, longer than the calyx: nectary spheroidal, large, fleshy, five-lobed, compressing the germ. Stamens shorter than the corolla, with five ovate nodding anthers. Style short. Drupe large, covered with a smooth, softish, resinous, pale green, yellow, or half red skin, and containing an ovate woody fibrous compressed nut or stone, within which is an ovate fleshy kernel^h.—Gärtner thus describes it more particularly. It is a berried drupe, flattened like a lens, kidney-shaped; the flesh soft and pulpy, like a damascene Plum; the shell

ovate-oblong, almost kidney-shaped, of a leathery crustaceous substance, hard, one-celled, valveless, on the outside grooved and wrinkled, covered all over with capillary woody fibres, smooth within and lined with a whitish papery membrane, very tough and smooth, separating from the shell or stone when ripe. Umbilical chord very short, arising from the bottom of the shell, and inserted into the margin of the seed at the lower part. Skin single, papery, thin. Albumen none. Embryo upright, white: cotyledons fleshy, plano-convex: radicle short, curved in upwards, inferior.

This fruit, when fully ripe, is yellow and reddish, replete with a fine agreeable juice; some are full of fibres, and the juice runs out of these on cutting, or with a little handling; but those which have few or no fibres are much the finest; they cut like an apple, but are more juicy, and some are as big as a large man's fist. It is esteemed a very wholesome fruit, and except very fine Pine-apples is preferable to any fruit in India; gentlemen there eat little other fruit in the hot months; but if no wine be drank with it, the Mango is apt to throw out troublesome boils, at least with new comers, which are however conducive to healthⁱ.] In Europe we have only the unripe fruit brought over in pickle.

It grows naturally in most parts of India, also in the Brazils, and some other parts of the world; [as Cochinchina, Pegu, &c.

It was cultivated in 1690, in the Royal garden at Hampton Court^k.]

Mr. Miller, in his last folio edition of the Dictionary (1768) says, that a Mango plant was brought over by Captain Quick, and was then in good health in the Chelsea garden; the plants that were in England before having been destroyed by too much heat.

[Linneus, not having an opportunity of examining the fructification with accuracy, could not determine this genus with certainty; he had several in his herbarium, but he regarded them as varieties only of the cultivated Mango. Loureiro remarks, that there are many varieties, differing chiefly in the figure, size, colour, and taste of the fruit, as Apples and Pears do in Europe. Retzius on the contrary affirms, that there are certainly several distinct species; the number of stamens in some being double; the racemes in others compound; the fruit kidney-shaped, globular, fleshy, almost juiceless, &c. Gärtner has distinguished some of the most remarkable varieties by the fruit.

β. Shell large, about a span in length, in a manner leafy at top, but having a small lenticular cell below; grooved and crinite in the other parts like the cultivated sort.

γ. Shell very turgid, in other respects very like the preceding, except in being a third part shorter.

δ. Shell extremely like that of γ, but scarcely grooved, being only striated here and there.

ε. Shell less by half than the preceding varieties, but a little turgid and deeply grooved.

ζ. Shell the size and shape of that of an Almond, leathery, thin, brittle, white, neither grooved nor striated, but rough with very gross fibres.

He adds, that in all these varieties the embryo is regularly divided into two cotyledons; whereas in the cultivated sort the lobes are most usually united and split into various irregular partial lobules.

Doubtless many more varieties might be added by people of the countries where this tree grows naturally.

M. Amba of Forskahl, which Gmelin has given as a distinct species, is probably not different from *M. indica*, in which Jacquin (ic. vol. 2. and collect. 4. 97.) has found the stamens such as Forskahl describes them in *Amba*^l.

Rottboel in nov. act. dan. 2. 534. t. 4. has a species which he names *Mangifera glauca*, and which Gmelin has also adopted under the same name. It is *Celastrus glaucus* of Vahl, 2. 42. *Schrebera* of Retzius, 6. 25. And properly a species of *Elæodendrum*.

Linneus doubts whether all the flowers in *M. indica*

^d Vahl.

^e Loureiro.

^f Ibid.

^g Jves.

^h Loureiro.

ⁱ Jves, voy. 184.

^k Hort. kew.

^l Linn. trans. 2. 226. see Linn. zeyl. n. 472.

be hermaphrodite. Loureiro affirms that he has always found them so.

2. Leaves a foot long, unequally pinnate; the leaflets oblong and quite entire. The flowers in a large paniced raceme. Linneus refers it to this genus on the authority of Koenig, who had examined the living plant, and had seen the fruit^m. It appears however to be of a different genus; the flowers having ten (feldom eight) stamens and five styles; the nut being five-celled and five-seeded, with a cover like that of the Nutmeg, but callopsⁿ.

Native of the East Indies.

3. This is a large tree, with the bark somewhat rugged, and ascending branches. Leaves lanceolate, quite entire, but three times the size of those of the common Mango, dark green, scattered, on long petioles. Flowers red, terminating, in oblong racemes. Corollas reflex from the base, acute, five-petalled. Drupe fleshy hirsute, roundish, cordate, strong smelling, of an acid flavour and unwholesome. Nut roundish, fibrous.

The wood, though not very good, is used for floors, and lasts very well, if it be soaked a considerable time in muddy water^o.

Native of the East Indies and Cochinchina.]

PROPAGATION AND CULTURE.

The vegetative quality of the nuts not seeming to be long preserved, the readiest method to obtain plants of Mango in Europe, is to set a quantity of the nuts in a tub of earth in the country where they grow naturally, and when the plants are grown a foot high, to ship them, placing a covering over them to defend them from the water and spray of the sea, being very careful not to water them too much in the passage: when the ship arrives in a cold climate, screen them from cold. This tree will not thrive in the tan-pit. Set the plants therefore in pots filled with light kitchen-garden earth, and place them in a dry stove, where in warm weather they should have fresh air daily, and in winter the air should be kept up to temperate, as marked on the thermometer.

[The nuts should be sent over in wax to preserve their vegetative quality. The Mango may be increased here from cuttings, in the same manner as Gardenia.

MANGIUM. See *Rhizophora*.

MANGLE. See *Avicennia*, *Bucida*, *Conocarpus*, *Rhizophora*.

MANGOSTANA, MANGOSTAN or MANGOSTEEN. See *Garcinia*.

MANGO TREE. See *Mangifera*.

MANGROVE GRAPE TREE. See *Coccoloba*.

MANIA-KUA. See *Curcuma*.

MANIA-KURINI. See *Jussiaea*.

MANIA-PUMERAN. See *Nyctanthus*.

MANIELLA-KUA. See *Curcuma*.]

MANIHOT. See *Hibiscus*, *Jatropha*, [*Tragia*.

MANIOC. See *Jatropha*.

MANISURIS. (From *man* and *sur*, a thin or loose tail, which this grass resembles.)

Lin. gen. Reich. n. 1257. Schreb. n. 1570. fl. nov.

gen. gram. 21. f. 1—7. Gært. t. 175. Juss. 34.

Class. 23. 1. Polygamia Monoecia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

* Hermaphrodite flowers, in the adverse side of the flexuose jointed spike, imbricate, alternate, each immersed in each joint, which is excavated on one side.

CAL. Glume one-flowered, two-valved: outer valve larger, coriaceous, roundish, rugged in the middle, emarginate or entire at the top and sides; inner smaller, broad-lanceolate, membranaceous, pressed close to the outer.

COR. Glume two-valved, membranaceous, thin, diaphanous, smaller than the calyx, included: the outer with its margins embracing the inner, which is smaller.

Neetary.

STAM. Filaments three, filiform, standing out. Anthers oblong, incumbent.

^m Suppl.

ⁿ Retzius.

^o Loureiro.

PIST. Germ ovate. Styles two, short, filiform. Stigmas oblong, bearded, spreading, standing out on both sides.

PER. none. Calyx cherishing the seed.

SEED single, ovate.

* Male flowers marginal, alternate, in the back of the spike on each side.

CAL. Glume one-flowered, roundish, two-valved: valves parallel, ovate-lanceolate, blunt, striated, leathery, augmented by a membrane, almost equal.

COR. Glume two-valved, membranaceous, thin, almost the size of the calyx: outer valve ovate, blunt, convolute; inner lanceolate, plaited, scarcely longer.

Neetary.

STAM. Filaments three very short or none. Anthers as in the hermaphrodites.

OBS. The inner calycine glume of the hermaphrodite flowers, in *M. myurus* at least, is certainly not glued to the rachis, as it is described and figured by the younger Linneus. S.

ESSENTIAL CHARACTER.

HERM. Cal. Glume two-valved, one-flowered, outer valve emarginate at the top and sides. Cor. less than the calyx. Stam. three. Style bifid.

MALE as in the hermaphrodites, but with the flowers in the lower side of the same spike standing out more.

SPECIES.

1. *Manisuris myurus*.

Lin. syst. 907. mant. 300. Reich. 4. 318. Swartz prodr. 25.

Spikes lateral, outer valves flat ovate, emarginate at the top and sides, culm ascending.

2. *Manisuris granularis*.

Swartz prodr. 25. Gært. fruct. 2. 468.

Cenchrus granularis. Lin. syst. 907. mant. 575. Reich. 4. 315.

Gramen cyperoides, &c. Sloan. jam. 1. 128. t. 80.

Spikes lateral, outer valves orbicular, callous-dotted, sheaths hairy, culm erect.

DESCRIPTIONS, &c.

1. Culms ascending or diffused, jointed, even, the thickness of a large thread, a foot high, branched towards the base, and with alternate spike-bearing branches at top. Leaves even, sheathing, spreading, narrower; with thickish sheaths, shorter than the internode. Floral leaves at the base of the peduncle, without sheaths, erect, convoluted like the glumes, lanceolate. Spikes (three or four on a culm) solitary, lateral and terminating, peduncled, twice as thick as the culm, fingered, imbricate, more closely so at the back, somewhat jointed, punched with a few holes as it were with emarginate scales; on the lower side (next the ground) jointed and bifariouly squarrose: florets striated, roundish, a little prominent.—Native of the East Indies^p.

2. This has been already described from Linneus's mantissa, under *Cenchrus granularis*, which see. It has however the character of *Manisuris*, and therefore is justly placed in this genus by Swartz and Gærtner. The latter observes, that the calyx of the hermaphrodite flowers when ripe becomes hard, almost like the shell of a nut, inclosing the seed very tight, and not letting it drop: and that the seed is small, roundish, convex on one side, flattish on the other, and red. Sloane's synonym is quoted by Linneus under *Panicum clandestinum*.—It is a native of Jamaica^q.

MANNA ASH. See *Fraxinus*.

MANOBI. See *Glycine*.

MANSANA ARBOREA, Gmel. MANSSANAS of Sonnerat. See *Rhamnus Fajuba*.

MANULEA.

Lin. gen. Reich. n. 830. Schreb. n. 1032. Gært. t. 55. Juss. 100.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Pediculares*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: leaflets linear, erect, equal, permanent.

COR. one-petalled, irregular. Tube cylindric, with the throat rather wider. Border five-parted, awl-shaped,

^p Linn. mant.

^q Swartz.

spreading:

spreading: the four upper divisions more connected at the base; the lowest reflex.

STAM. Filaments four, very short. Anthers the two upper in the throat, the two lower somewhat oblong, within the tube.

PIST. Germ superior, roundish. Style filiform, the length of the lower stamens. Stigma simple.

PER. Capsule ovate, the length of the calyx, two-celled, two-valved: the valves when ripe semibifid. Partition doubled, by the inflex margins of the valves.

SEEDS very many, small. Receptacle oblong, compressed, in the axis of the capsule.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. with a five-parted awl-shaped border, the four upper segments more connected. Caps. two-celled, many-seeded.

SPECIES.

1. Manulea Cheiranthus.

Lin. syst. 569. Reich. 3. 173. mant. 88.

Isobelia Cheiranthus. Lin. spec. 1319.

Nemlia Cheiranthus. Berg. cap. 160.

Cheiranthus africana flore luteo. Comm. hort. 2. 83. t. 42.

Leaves naked, stems almost leafless, pedicels alternate one-flowered.

2. Manulea tomentosa.

Lin. syst. 569. Reich. 3. 173. mant. 420. Curt. magaz. 322.

Selago tomentosa. Lin. spec. 877. amoen. 6. afr. 22. Pluk. phyt. 1. 319. f. 2.

Leaves tomentose, stems leafy, peduncles many-flowered.

3. Manulea microphylla.

Lin. syst. 569. suppl. 285.

Leaves ovate in bundles smooth entire.

4. Manulea integrifolia.

Lin. syst. 569. suppl. 285.

Leaves ovate scattered smooth entire.

5. Manulea heterophylla.

Lin. syst. 569. suppl. 285.

Leaves linear scattered villose entire or toothed.

6. Manulea coerulea.

Lin. syst. 569. suppl. 285.

Leaves linear opposite tomentose toothed, flowers racemed.

7. Manulea cuneifolia.

Lin. syst. 569. suppl. 285.

Leaves elliptically ovate smooth toothed, spikes oblong.

8. Manulea capillaris.

Lin. syst. 569. suppl. 285.

Stem-leaves obovate smooth toothed, branches linear, spikes ovate.

9. Manulea Plantaginis.

Lin. syst. 569. suppl. 285.

Leaves ovate somewhat toothed or entire smooth, heads ovate, branches diffused.

10. Manulea capitata.

Lin. syst. 569. suppl. 285.

Leaves ovate serrate villose, heads globular, branches diffused.

11. Manulea Antirrhinoides.

Lin. syst. 569. suppl. 285.

Leaves ovate toothed smooth, flowers alternate.

12. Manulea thyrsiflora.

Lin. syst. 569. suppl. 285.

Leaves obovate tomentose toothed, corymb terminating elongated compound.

13. Manulea corymbosa.

Lin. syst. 569. suppl. 286.

Leaves oblong toothed smooth, corymb fastigiate.

14. Manulea altissima.

Lin. syst. 569. suppl. 286.

Leaves lanceolate somewhat toothed villose, spike ovate.

15. Manulea rubra.

Lin. syst. 570. suppl. 286.

Leaves lanceolate villose serrate, flowers racemed remote.

16. Manulea argentea.

Lin. syst. 570. suppl. 286.

Leaves obovate wedge-form serrate silver-dotted, flowers axillary.

17. Manulea pinnatifida.

Lin. syst. 570. suppl. 286.

Leaves ovate gash-pinnatifid: pinnae toothed.

18. Manulea hirta.

Gärtn. fruct. 1. 258.

Selago hirta. Lin. syst. 569. suppl. 285?

Rough-haired, leaves obovate, spikes very long.

DESCRIPTIONS; &c.

1. This is an annual. The herb has the stature of Euphrasia. Stem a hand high, branching from the base to the middle in several upright round rugged stemlets. Leaves alternate, obovate-oblong, sessile, serrate, on the upper branches small. Racemes terminating, upright, longer than the plant. Bractes linear, shorter than the calyx. Peduncles also shorter than the calyx. Corollas deep yellow^a.

2. Root biennial. Stem a foot or a foot and half high, and woolly. Branches opposite, not alternate, as Linneus describes them; in this perhaps they may vary. Leaves opposite, sessile, obovate, narrowing to the base, toothed on the edge, which is rolled back a little in the young leaves. Flowers in a long thyrse, from two to five from one common short peduncle: they are at first lemon-coloured or greenish yellow, finally deep orange.

Linneus says that the whole of the plant except the corolla is woolly, the tube even of that is hairy; the segments are smooth with their edges rolled back; the upper part of the tube, in which the stamens are included, is somewhat dilated, as is also the lower part, so that it is narrowest in the middle. The flowers appear from May to November, and are usually followed by seeds, from which the plant may be propagated. The flowers have a singular, but unpleasant smell, not perceivable at a distance. The variety of pleasant colours so conspicuous in the flowers renders this a very desirable plant^b.

Linneus remarks that Selago lychnidea seems to be allied to this species.

Introduced in 1774, by Mr. Francis Masson. It flowers from May to November^c.

These and the subsequent sorts are natives of the Cape of Good Hope. They were mostly found by Thunberg, and are only registered in the Supplementum Plantarum of the younger Linneus, and in Systema Vegetabilium.

18. The capsule of Manulea hirta is described by Gartner as small, ovate-oblong, with a groove on each side: receptacle central, columnar, oblong, compressed a little, not fastened to the partition. Seeds subglobular, obsoletely angular, with small excavations in rows, white. He remarks that not only this, but all the many-seeded Selagos should be removed from that genus.

MANURES.

Every substance that when laid on land or mixed with the soil promotes vegetation, or increases its fertility, is called a manure.

Manures operate in all the different ways by which vegetation is promoted. By communicating to the soil with which they are mixed the vegetable food which they contain. By communicating to it a power of attracting this food in greater plenty from the air. By enlarging the vegetable pasture. By dissolving the vegetable food which it is already possessed of, and fitting it for entering the roots of plants.

Some manures afford nourishment only: as rape-duff, foot, malt-duff, pigeon's-dung, and in general all top or hand-dressings.

Others give nourishment, and also add to the soil; as animal dungs, and all rotten animal and vegetable substances.

Others again open the soil, and do not nourish in their own nature: as lime, light marls, sand, &c.

Lastly, other manures stiffen the soil, and at the same time nourish a little: as clay, clay marls and earth.

Manures are considered by different authors as simple and compound; as natural and artificial; nutritious and stimulating, or solvents and mucilages; mechanical or chemical; as animal, vegetable, and mineral. All these distinctions may have their use, and are each attended with difficulties and liable to objections. Some

^a Linn. mant.

^b Curt. magaz.

^c Hort. kew.

method

method however being necessary in treating a subject which embraces a great variety of objects, manures are here in general thrown into the three great divisions of animal, vegetable and fossil. After these have been treated separately, Composts, and then Improvements not so properly called Manures will conclude this treatise; in which it is not proposed to enter much into the theory of Manures, or to give a philosophical disquisition on the subject, but rather to lay before the reader the result of a variety of experience and practice. The theory may be learnt from Dr. George Fordyce's *Elements of Agriculture and Vegetation*. Home's *Principles of Agriculture and Vegetation*. Hunter's *Georgical Essays*. Cullen's *Lectures on Vegetation and Agriculture*. Ingenhousz's *Treatise on the Food of Plants*, and the renovation of Soils. Headrick's *Essay on Manures*. Kirwan on *Manures*. Hassenfratz *Annales Chymiques*; Duhamel, Tillet, Bergman, Priestly, Lavoisier, Senebier, &c. &c.

Manures are confessedly very different in their nature. Some of them operate in all the ways above-mentioned; and there are none that do not operate in more ways than one.

It is a fundamental mistake to suppose with Tull that Tillage may be substituted in the place of manure. Manures will indeed be of little avail without it; but although good tillage, by separating the soil may bring a greater number of nutritious particles within the reach of the crop, yet the soil cannot possibly continue to be so completely divided as it is by the fermentation excited by dung and other manures; which are found to enrich the best pulverized soil again and again, after it is exhausted by crops; and therefore promote vegetation by increasing the quantity of vegetable food.

Some manures lose part of their strength by being long exposed to the air. Thus after dung is sufficiently fermented, the longer it lies, the less is its value. Cow-dung dried on the pasture, gathered and laid upon other land, has scarcely any effect; whereas the same quantity carried from the cow-house, or collected by folding the cattle, enriches the land. Hence this kind of manure contains the vegetable food in itself, and does not receive it from the air.

Other manures on the contrary operate sooner and with greater violence, the longer they are exposed to the air, before they are used. Lime and marls are of this kind. They are observed to have a strong power of attracting certain qualities from the atmosphere; and operate by communicating to the soil with which they are mixed a power of attracting vegetable food from the air.

Again, some manures exhaust land of its vegetable food, and do not restore it again when immediately applied. This is thought to be the case with Lime. Land thoroughly limed, after having carried many very good crops, seems to be exhausted, and reduced to a worse situation than before. When in this case lime has been applied a second time, its effects have been found to be far inferior to what they were when first applied. This manure therefore seems to operate by dissolving the vegetable food which it meets with in the soil, and fitting it for entering the roots of plants.

It ought however here to be remarked, that exhaustion of land by lime is owing to bad management and unmerciful forcing of it with continued white crops. It is not certain that land will not bear a second liming. It is certain that the effect of the lime may be long kept up by the proper application of dung and other oily manures: and there have been instances of the effect of lime continuing forty, fifty, or even a hundred years.

Certainly all kinds of manures contribute to open the soil. Any person may be convinced of this, who will take the trouble to compare a piece of land on which dung or any other manure has been laid, with a piece contiguous that has not been manured: he will find the former much softer, much more free and open than the latter. It must be allowed therefore that all manures operate by enlarging the vegetable pasture.

^a Hunter's *Georg. Essays*, 18.

Manures are applied to supply either the defective ingredients of a soil, to improve its texture, or to correct its vices.

For *clayey* soils the best manure is Marl, and that which is most calcareous is best.

These soils are defective both in constitution and texture; they want the calcareous ingredient and coarse sand. Calcareous marl supplies the first chiefly; limestone gravel will supply both.

A mixture of marl and dung is still more advantageous, because the dung supplies the carbonaceous ingredient. But the same quantity of marl must be used, as if no dung had been applied; or else the operation must be more frequently repeated.

If marl cannot be had, a mixture of coarse sand and lime perfectly effete or extinguished, or chalk, will answer the same purpose, as it will supply the defective ingredient, and open the texture of the clay: so also sand alone, or chalk, or powdered lime-stone may answer, though less advantageously. Lime alone seems less proper, as it is apt to cake, and does not sufficiently open the soil.

Where these manures cannot be had, coal-ashes, chips of wood, burned clay, brick-dust, gravel or even pebbles are useful; for all these improve the texture, and the former supply also the carbonaceous ingredient.

Nothing perhaps is equal to good stable and fold-yard dung for strong tillage land; because it opens this heavy soil at the same time that it supplies the richest nutriment. But dung is a proper ingredient in the appropriated manures of all sorts of soils, as it supplies the carbonaceous principle.

Clayey Loam is defective either in the calcareous ingredient, or in the sandy, or in both: if in the first, the proper manure is chalk; if in the second, sand; if in both, siliceous marl, or lime-stone gravel, or effete lime and sand.

Chalky soil wants both the clayey, and the stony sandy or gravelly ingredients, the best manure for it therefore is clayey loam or sandy loam: but when the chalk is so hard as to keep of itself the soil sufficiently open, then Clay is the best manure; for in such cases the coarse sand of gravelly ingredients of loams are of no use. Some indeed think, that pebbles in a field serve to preserve or communicate heat; this use however is not sufficiently ascertained. They detain moisture, and thus on chalk lands a complete covering of great black flints insures a tolerable crop in a dry season.

Chalky Loam. The best manure for this soil is clay or clay-marl; because it is defective principally in the clayey ingredient. Light limestone soils, not differing essentially from these, require the same manure.

Sands. The best manure for these is calcareous marl, for they want both clay and calx, and this marl supplies both: the next best is clay-marl, and next to these clay mixed with lime, or calcareous or clayey loams. Lime or chalk are less proper, because they do not give sufficient coherence to the soil; however, when mixed with earth or dung, these answer well, because they form a sort of marl or compound comprehending the defective ingredients.

Sandy Loams are defective chiefly in the calcareous ingredient, and in some degree also in the argillaceous; their texture also is imperfect, as they abound both in fine and coarse sand: chalk or lime would supply the first defect, but leave the texture unamended. Calcareous or argillaceous marls are most proper. Clay, after land has been chalked, answers well, because it remedies the texture.

Gravelly Loams are benefited by the application of marl, whether argillaceous or calcareous. If the gravel be calcareous, clay may be employed. A mixture of effete lime and clay should answer in all cases.

Ferruginous Loam or *Till* and *Vitriolic* Soils necessarily require the calcareous ingredient to neutralize their peccant acid: hence chalk, limestone gravel and calcareous marl are most advantageously applied to them.

Bogs or boggy soils, must be first drained, and then the nature of the soil being explored, an appropriate manure

manure must be applied. In general they should be burned, and then covered with limestone gravel or lime mixed with coarse sand or gravel, because they are usually of a clayey nature; if they are more sandy, lime may answer well, or calcareous marl. If their upper parts contain a sufficiency of the carbonaceous principle, as often happens, they need not be burned.

For all moorish and cold soils, gravel, road-dirt, small stones, coal-ashes, soap's ashes, hog-dung, &c. are good. But in cold wet lands, no manure can be effectual without draining.

Heathy soils should first be burned to destroy the heath, and increase the carbonaceous principle. Lime also will destroy heath. Limestone gravel is the fittest manure when the soil is clayey, lime when it is gravelly. Gypsum also answers remarkably well when the soil is dry^b.

Manure is usually applied in three different ways. The first and most common is that of ploughing it in, and thus mixing it with the whole soil. This is the best system where it is necessary to enrich a field for a succession of exhausting crops; and also in strong heavy lands, which require to have their parts separated as much as possible; which effect is produced by nothing better than by ploughing in long dung or green crops. It may perhaps be questioned whether this be the best means to make the most of the manure, as some valuable parts of it may be ploughed in too deep, and even entirely lost. The second is, spreading or scattering the manure upon young crops, which is called *Top-dressing* or *hand-dressing*. This mode is confined to particular substances, as foot, rape-cake, pigeon's-dung, ashes, &c.; and has been found to answer, especially with crops which tiller, as wheat and barley. Even dung, well rotted and made into a compost with earth, lime or other active substances, may be thus employed, and being applied on the surface, and at a season when the crop stands most in need of it, a much less quantity of manure will be sufficient; but then it will be of little or no use to succeeding crops, and the expense of preparing it will be greater. When crops are sickly or backward in the spring, top-dressings are certainly of great use, except the season should prove uncommonly dry.

The third way of applying manure, is laying it into drills, and sowing the crop upon it. This is used only for particular crops, as potatoes, turneps, &c. which thus receive the whole benefit of the manure, in all stages of their growth.

DUNG.

Is the most common, general, and upon the whole the most efficacious of all manures. It is properly the excrement of animals, but is used also to signify all rotten vegetables, when used as manures.

Dung promotes vegetation by increasing the vegetable food, by enlarging the pasture of plants, by communicating to the soil a power of attracting the vegetable food from the air, and by preparing the vegetable food for the nourishment of plants^c.

Dung of Quadrupeds, is the most common manure in use.

Stable dung is used either fresh or putrified; the first is called *long*, the second *short* dung. It abounds in animal matter, easily putrifies, and serves to hasten the decay of other dead vegetable substances. Its fermentation is promoted by frequent turning and exposure to the air: yet it should be covered to prevent water from carrying off most of its important ingredients; or at least the water that imbibes them should not be lost.

Farm-yard dung consists of various vegetables, chiefly straw, sometimes weeds, leaves, fern, &c. impregnated with animal matter: it ferments more slowly than stable dung, should be piled in heaps, and stirred from time to time: fern in particular putrifies very slowly^d.

Management.

When any considerable quantity of stable or yard dung, or other mixture of animal and vegetable substances is collected together in a heap, and ferments; when this process is completed, if the mass be ex-

amined, we find that the vegetables of which it was originally compounded are decomposed, and in a situation to nourish new plants. The more completely therefore these substances are submitted to the process of fermentation, the more beneficial will be their effects upon the soil. Hence it is an object of the first importance to Farmers to have their dunghills so situated and constructed as to promote their fermentation, and retain all the useful parts of them.

These circumstances have been very little attended to: the greater part of dunghills, being either placed in hollows, and surrounded with water, which effectually prevents fermentation by chilling them; or upon declivities where every drop of moisture runs away: cattle are allowed to spread it by trampling, weeds to exhaust it, and carts and waggons are driven over it. Thus the middle, from being hard pressed, will be imperfectly fermented; and the sides, from being scattered about and dried, will not be fermented at all, but in a condition little better than dry straw.

To promote fermentation in dung, air and moisture are necessary. It is well known to gardeners that in making hot-beds, by laying the dung lightly in heaps, and watering it gently, fermentation is immediately brought on: and that hot-bed dung is as completely fermented in a fortnight, as that in a farm-yard generally is in six or eight months.

The farmer should imitate this practice as nearly as the nature of his situation will admit, and instead of having his dunghill in the yard, and allowing carts, cattle, &c. to disturb it; he should place it in some distinct situation, convenient for his offices, where the urine may be kept with it, or else run into a receptacle, whence it may be thrown back into the dung to enrich it and promote the fermentation, or be carried off in carts to manure his land.

When dung is carried to the dunghill, it should not be driven over the heap as is commonly practised, because the feet of the horses and the weight of the carriage will press it so hard as to exclude the air, and thereby prevent the fermentation: when the quantity also is considerable, the horses are strained, and the harness damaged by the exertions necessary to drag a loaded carriage over a hill of such loose materials. Every load therefore ought to be laid down by the side of the dunghill, at least after the work has made such progress as to render passing over it a matter of difficulty, and afterwards thrown up lightly with a fork; the labour of which is trifling in comparison with the advantage resulting from it.

If dung laid up in this manner contains a sufficient proportion of moisture, it will immediately begin to ferment; if therefore it is too dry, it should be watered, and in summer this will frequently be found necessary: it will thus be completely fermented in six or seven weeks, and will be more valuable by half than that which is made in the common slovenly manner. The situation best calculated for a dunghill is that which is nearest to a level, with a bottom capable of retaining moisture, and covered with a shed.

If the whole be inclosed with a wall, except an open space at one end for carting away the dung, it will be a great improvement. The wall on the south side should be of such a height as entirely to prevent the sun's rays from reaching the dung, on the other three sides six feet in height from the ground will be sufficient. The roof may be thatched, and supported on pillars. If the bottom be not clay or chalk naturally, it must be laid with one of those substances, and the upper part should be paved with broad flags or common paving stones. At the end opposite to the opening a reservoir may be dug to receive the moisture: it should be water-tight, and a pump should be put into it to draw off the moisture daily. This may be thrown back on the dung-heap, or drawn into a barrel on a cart, and either spread immediately on the land, or mixed with other substances in a compost.

Application.

Dung is applied indiscriminately upon all soils, at almost any season, and for every crop. Of all manures commonly in use none can be considered as a more immediate food for plants, and when applied to vegetables

^b Kirwan in Y. Ann. 23.

^c Hunter's Ess. 18.

^d Kirwan in Y. ann. 23. 91.

tables in a growing state, they immediately begin to thrive. On this theory it seems absurd that great quantities of rich dung should be laid upon the fallows at the end of autumn, and still worse about Midsummer, there to remain till the ensuing spring before it can be of any use to the plants: for if the fallow be sown with wheat or any other winter crop, the growth of the plants being stationary, they need little nourishment; in the mean time the salts contained in the dung, after having been spread abroad a month, or perhaps six weeks, dissolving readily in water are carried off by the winter rains; and when the spring arriving the plants begin to vegetate, a great part of what was destined for their nourishment has been washed away and lost.

Farther, where fallows have been well wrought, and the soil thus completely reduced, mixing it with dung in that state prevents it from acquiring a sufficient degree of compactness to shelter the roots of the plants, especially if the soil be naturally of a light open texture, and the dung full of half rotted straw, as is commonly the case. The operation of the winter's frost renders it still looser, so that in spring it is nearly in the state of a mole-hill; the baneful effects of which to a wheat crop are obvious. Now were a portion at least of the dung withheld till the spring, the land would be more compact, the plants less liable to be thrown out of the ground by the frost, and the dung being applied as a top-dressing at the time when vegetation was commencing, the useful parts of the dung would be taken up by the plants, every time it was moistened, as the crop in its progressive growth most wanted it. In this mode of application no part of the dung would be lost, and a less quantity being required for the dressing, three times the quantity of land might be dressed annually; and being applied in a quantity sufficient only for the nourishment of the crop, the plants are fed in the same manner as the animal body, every small dose operating like a meal.

Some are of opinion that the first rank quality of dung is highly beneficial, and its principal virtue. Mr. Belcher on the contrary is inclined to think that it is more or less injurious, greatly so in horse-dung, which is evidently unfit for plants when new. In his opinion the best mode of using all dung, except in compost, on cold stiff ground especially, is to carry it on rough, and to fallow that and the soil together, whereby at the same time that they are incorporated, the seeds of weeds are forced into vegetation, and completely destroyed.

The common practice is to set the dung upon the land in small heaps or hillocks, and to spread it by a man standing on the ground. In some of the Midland Counties the prevailing custom is to spread it out of the carriage, as it is brought into the field, by a man or men standing in the carriage^f.

Dung should never be moved in summer. The immediate action of the sun's rays exhausts it of its moisture, and it is an erroneous idea that this evaporation carries off merely aqueous particles; the salts, the oils rendered miscible with water by alkaline salts, or calcareous earth, and the inflammable air are all dissipated with the water. To turn a dunghill over, then to throw it into carts, expose it in heaps, and to spread it a second time in summer, is to give the sun a power of nearly exhausting its virtues^g.

A Hertfordshire farmer on the contrary never carries dung out to choose in winter, thinking that the rains, &c. damage it much, but in summer he does not think its being exposed to the sun a detriment, supposing the heat to exhale only the watery particles. He has found one load laid on at Midsummer as good as two or three at Christmas. The fresher the dung is used, the better he thinks it for any crop, even for grass, provided it be laid on early in autumn. He has found long dung of only one or two months old to be better, load for load, than black spit dung for turneps. In forming a dunghill, he says the dung will not rot if the carts drive on to it, but if the dung be shot out

of the carts by the side of the hill, and then thrown up, without any trampling, it will rot much sooner and better. This also is the Norfolk practice^h.

At whatever time the dung is carried on the land, it should be spread and ploughed in as soon as possible.

It is said to be a wrong practice to lay dung upon Clover-leys in autumn: for if the field be to remain another year in grass, not only a part of the dung is washed away by the winter rains, but the remainder injures the plants; it being well ascertained that the action of dung upon broad Clover, when the plants are not in a growing state, is fatal to them. But in the spring a light top-dressing of dung is highly useful to broad Clover, though foot is preferable.

If the Clover-ley is to be ploughed for Wheat, and dung be laid on; if the grass crop has been good, the furrow will be turned over entire, and the dung laid flat under it, and as the roots of the Wheat must penetrate through the sod before it can reach the dung, little benefit can be expected from it, allowing the qualities of the dung to remain unimpaired: but in this case the loss from the winter rains will be greater than when dung is laid on fallow; for these being incorporated with the soil, a part of the salts will be entangled with the earth; but upon ley, it is either laid in the bottom of the furrow, or if the sod be set on edge, it remains crammed into the interspaces through which the whole of the rain passes. Whenever Wheat therefore is sown upon ley, the dung ought to be used as a top-dressing in the spring, when every part of the crop will have the benefit of it, and the harrows having loosened the top of the furrow so that the moisture of the dung will readily enter it, no part of the dung will be lost.

If the ley is to be ploughed for Oats, provided the land was well laid down, there is no occasion for dung; but if the land be poor, and dung is required, it cannot be employed in any way so useful, as in the form of a top-dressing at the time when the seed is sown.

Perhaps there is no way in which dung is used where its effects are so certain and visible as upon Potatoes and Turneps. For Potatoes it is laid on when the spring is pretty far advanced, after which there are few heavy rains, of course the strength of the dung is not impaired by washing, and the crop is left in quiet possession of the whole of its fertilizing powers. For Turneps the case is nearly the same; indeed the advantage is still greater, dung not being laid upon Turnep land sooner than June, after which there is seldom much wet weather till autumn, and by that time the crop is in full vigour.

As to laying dung upon Meadows farmers differ in opinion: some preferring the spring, for producing an early vegetation and a plentiful crop; others thinking, that though dressings of foot and fine ashes at that season are of much use, yet that dung ought to be laid on at the end of autumn, not to taint the juices of the ensuing crop.

It is thought to be a good practice by some to spread the dung as soon as the hay is cleared. If laid on in the winter, or early in the spring, the frost will take effect upon the manure before the grass can reap any advantage; and the rains coming whilst the manure is exposed on the surface, washes away its virtues before vegetation is awakened by the sun. But in July, if there be any showers, the quick growth of the after-grass will shelter and protect the manure; and nothing is to be feared but a severe drought. In this case, however, this after-growth should be left through winter, to be fed in the spring, when the value of such feed will be great, and the dung, by means of such a covering will be guarded against the frost in the best possible mannerⁱ.

Mr. Miller, however, reprobates the dressing of Grass ground in summer, soon after the crop of hay is taken off the land: because before Michaelmas the sun will have exhale most of the goodness, if the dressing be of dung, or any other soft manure.

[It is mostly the custom to collect manure of every

^c Belcher MS.

^f Marshall Middl. 1. 198.

^g Y. Ann. 5. 131.

^h Young's Ann. 19. 289.

ⁱ Ibid. 16. 488.

description into one heap. Hence substances very opposite in their nature, and which may be wanted at different times and for different purposes, are laid together, and instead of forming a useful combination, perhaps prevent the dung from fermenting as it ought. Every farmer therefore should have at least two or three dunghills, to be prepared for use, according to the time at which the contents of each may be wanted, and the articles of which they are respectively composed.

If earth, moss, shovellings of highways, &c. can be procured, the bottom of any dunghill composed of rank stable dung or short excremental dung may be laid three or four feet deep with these substances. This will increase the quantity of manure, for the moisture that is pressed out during the fermentation will sink into the earth, &c. and impregnate it with its salts; and if the whole be afterwards turned and incorporated, what was laid in the bottom will be found of nearly equal value with the dung itself. See *Compost*.

Some distinctions are to be made respecting the different sorts of Animal Dung.

Horse-dung is more distinguished for the readiness with which it ferments, than for its intrinsic richness.]

Stable-muck, or horse-dung mixed with straw, properly fermented is of primary use in the kitchen garden, where it supplies the want of the sun's heat in winter; affording at an early season many esculent plants which we could otherwise have only for a short time in the middle of summer, and others which our moist and cold climate would not produce at all in any perfection. As Asparagus, Cucumbers, Melons, Colliflowers, Salad herbs, &c. &c. See *Hot Beds*.

Horse dung is one of the best improvements for cold lands that can be procured in any quantity; yet alone, or when it is too new it is prejudicial to some plants; and if it be spread thin over lands in the summer time, it is of very little service, because the sun draws out all the goodness of it, and it becomes little better than thatch or dry straw. Although too much of it can scarcely be used in a kitchen garden, yet it may be a fault to lay too much on corn-land, because it may be apt to make the corn run too much to straw.

In very moist cold land crops will succeed better, if new horse dung, as it comes from the stable, be buried in it, than if the ground be dressed with very rotten dung.

[Horse dung, in a raw state, is well calculated for Potatoes, because it leaves room for the roots of that plant to spread. But if it be not fermented, it contains much undigested vegetable matter, and consequently the seeds of many weeds which may have got into the food of the animal.

Cow dung is very useful for lean, dry, hot, sandy or gravelly soils. The excrement of a ruminating animal is held to be preferable to that of horses at grass, owing to the quantity of animal juices mixed with their food in chewing: but since it does not contain much undigested matter it will hardly heat. The best way of managing it is to lay it together, and keep it moist till it is sufficiently putrified.]

Being mixed with horse dung it makes a good manure for most sorts of soil, and with mud for some.

Sheep's dung and deer's dung differ not much in quality, and are esteemed by some the best manure for cold clays. Some recommend them to be used as top-dressings to autumn and spring crops, four or five loads to an acre, in the same manner with ashes, malt-dust, &c. See *Folding* and *Top-dressing*.

In Flanders they house their sheep at night in places spread with clean sand, laid five or six inches thick, some being added every day, and the whole cleared out once a week. This mixture makes an excellent dressing for strong, or cold stiff land.

[This method has been adopted in his Majesty's farm at Windsor. In hard weather the flock is penned in a fixed fold, made large, and divided into two parts, pitched in some sheltered spot, laid a foot thick with maiden earth, and daily littered with leaves, moss, fern, stubble, &c. When the sheep leave this fold, a layer of lime, chalk or peat ash is put upon the top, and the

whole being mixed together makes excellent manure for a Turnep crop. Six hundred loads of excellent compost have thus been made in three months from six hundred sheep^k.

In Holland Sheep's dung is carefully collected, cut into small pieces, and sold in baskets at a high price.]

Hog's or Swine's dung is the fattest and most beneficial of all the animal dungs: one load, it is said, will go as far as two loads of other dung. It is the best of all dungs for fruit-trees, especially Apples and Pears in a light soil, and a very rich manure for grass. Mr. Miller affirms that he has often used it to fruit-trees, when it was well rotted, and found it the most beneficial of any manure.

[In the opinion of Dr. Hunter, Swine's dung is the richest of the animal manures. It is commonly asserted that the dung is richer in proportion as the animal is fatter. Hence the superiority of this dung. It is of an oily and saponaceous quality, and when applied with judgment is excellent for arable lands. It should be used with caution on arable lands however, because it is apt to be full of weeds.

Rabbit's dung appears, by an experiment of Mr. Arthur Young to be superior even to that of Pigeons, and to last the longest^l. But this experiment should be repeated before we can give credit to what seems improbable.

Dung of Birds.

Pigeon's dung is certainly a rich manure, but not lasting; it must therefore be renewed the oftener. It is most applicable to cold and deep stiff land. Sometimes it is sown upon wheat crops in the spring. It should always be broke very small, and sown during moist weather, and if circumstances will admit of its being harrowed in, so much the better. Poultry manure is of the same nature, and where it can be had in any quantity, is an excellent top-dressing, particularly for cold land. Columella ranks it next, in point of value, to the dung of pigeons.]

The dung of pigeons, poultry and geese, is also a great improver of meadow land; but before it is used, it ought to lie abroad some time, that the air may sweeten it a little, and mollify the fiery heat of these dungs.

They ought to be dried before they are strewed, being apt to clod in wet: and they should be mixed with earth, sand or ashes, to keep them from clinging together, that they may be strewed thin, being naturally very hot and strong.

They are recommended as the best manure for Asparagus, Strawberries, and any sort of flowers; but for the latter they should be rotted and well mixed with earth.

They are said to be good for trees whose leaves are apt to turn yellow. for this purpose they should be spread an inch thick at the foot of the tree in autumn.

[Considerable quantities of valuable manure might be raised by those who living near large commons keep great flocks of geese, if they were regularly housed at night, and the place were littered with straw, fern, saw-dust, ashes or sand. The same advantage might be reaped by littering the places where other kinds of poultry roost. Every three or four weeks the places should be cleaned out, and the dung laid in heaps to ferment, either alone or mixed with soil^m.

Human Ordure, Night Soil or Privy Manure, says Mortimer, is of all sorts of dung the greatest improver of land, especially if mixed with other dung, straw or earth to give it a fermentation, and to render it convenient for carriage. It sells in foreign parts at a much greater rate than any other sort of manure. In London it may be bought for 5s. a load.

Dr. Hunter affirms that it is the richest manure that can be introduced into the field; that in Flanders they use it with great success, either strewed upon the land in the form of powder, or dissolved in water and thrown on with a wooden scoop; but that it may be best prepared as a top-dressing by filling the pits of necessaries with earth or lime.

^k Berks Survey. ^l North. tour 1. 229. Eastern tour 4. 441.

^m Townley Y. Ann. 1. 277.

In China and Japan wonderful attention is paid to saving this manure, which in those countries is preferred to all others, both on account of its richness, and its being free from weeds: inasmuch that Chevalier Thunberg, the famous botanist, passing through Japan with the Dutch embassy, could scarcely find any other plants in the corn fields but the corn itself. In those countries, the laws prohibit the waste of human excrement, and every house has reservoirs for it, to the great annoyance of the traveller through their towns.

The illustrious Swede's account of the process of manuring in Japan is worth transcribing. There is no part of the world, says he, where manure is gathered with greater care than it is here, inasmuch that nothing which can be converted to this use is lost. The cattle are fed at home the whole year round, so that all their excrements are confined to the farm yards, and it is a common spectacle to see old men and children following horses on the road with a shell fastened to the end of a stick, to collect the dung, which is carried home in a basket. Urine is carefully collected in large earthen pots, which are sunk in the earth here and there in different parts, not only in the towns but even beside the highways. The Japanese does not carry out his manure to be dried up in a fallow field by the sun; but gives himself the disgusting trouble of mixing up the various excrements of man and beast, with water and urine, together with every kind of refuse from the kitchen: this he carries in two large pails into his field, and with a ladle pours it upon the plant, when it has attained the height of about six inches, and receives the whole benefit of it, the liquor at the same time penetrating immediately to the root. By this mode of manuring, and at the same time by the farmer's indefatigable weeding, the fields are so completely cleared of weeds, that the most sharp-sighted botanist would be scarcely able to discover a single plant of another species among the corn.

Mr. Young has found the effect of night-soil (from 160 to 320 bushels on an acre) prodigious, trebling the produce on land unmanured: and he asserts that in all the experiments he has made with this manure, he has found the result almost uniform. In a meadow lately laid down, and in very poor condition, two acres of the worst part being covered after hay-time with four waggon-loads of night-soil, unmixed with any thing and spread directly, the herbage thickened surprisingly, and grew most luxuriantly. The cattle, neglecting the rest of the field, were perpetually feeding on this part; so that by autumn it was pared down like a fine green lawn; the other part being a dusky rough ragged pasture. The part of the field manured with night-soil continued excellent.

How wonderful then does it seem that this manure has been so neglected in most parts of Europe, and particularly in England, where the greatest part of it is suffered to run to waste and poison our rivers.

Lime thrown into the privy will make an excellent mixture with the excrement, and at the same time take off the ill smell and noxious vapours of it. Sawdust, peat-moss, or any common earth will be highly useful in absorbing the urine. Lime will also render the excrement so short and dry that it may be used as a top-dressing.

Two cart-loads of ordure mixed with ten loads of earth and one of lime will be a sufficient top-dressing for an acre, and is excellent upon light lands for wheat or barley: for the former of which it should be used early in the spring; and for the latter it may be either scattered upon the young crop, or harrowed in with the seed. It is particularly convenient for all drill crops.

URINE of every sort is found to be of great use when laid upon grass or young crops early in the spring. The most convenient way of applying it seems to be in the form of a compost, with earth and a small proportion of lime. In this shape it is a good manure for most soils, particularly such as are light, sandy or gravelly.

Great quantities of this article might be saved, and judiciously used would insure one or two good crops; about all farms and great towns it might be collected into reservoirs, with other excremental matters, without much trouble. In some countries this is an object of police, especially in the towns, where reservoirs are established for collecting it. The farmers carry it away in barrels, and either spread it immediately upon their fields, or mix it into composts^p.

Mortimer observes, that if Urine be destructive to vegetables, it is the indiscreet use of it in too large a quantity; and that there is nothing which will improve land, or increase the strength of manure, or help the fermentation of dung more than urine: for which reason in Holland, they are as careful to preserve this as dung; and Mr. Hartlib in his legacy commends it as a great improver of land.

No stable ought to be without a barrel or cistern sunk at the extremity of the paved channel into which the urine runs.

The rich juices of dunghills, says Mr. Belcher, ought to be strictly attended to; for which purpose layers of lime, chalk or its rubbish, should be spread under the litter in the farm-yard. These are better than earth, which is apt to be poachy, unless of a very dry nature; something however should be laid to absorb the urine^q.

The great product, says Mr. Young in one of his experiments, which attends the addition of urine to dung, affords a very important lesson; which is, to manage dunghills in such a manner, as to save, if possible, every drop: this is a point too much neglected, and indeed by most common farmers very little attended to^r.

BONES, Horns, Hair, Wool and Feathers.

Bones are used as a manure, both by themselves, and with other substances. The common way of treating them, is to break them with a mill, into pieces about the size of a marble or nutmeg; they are afterwards laid upon the field in small heaps, at regular distances, and covered with earth; after remaining in this state for some time, they are spread on fallows, on grass, or on turnep land.

The constituent parts of bones are oil, alkaline salts, and animal earth, united by fixed air. The oil is in much greater proportion than the alkali, which renders bones rather a heavy manure.

It does not appear that much pains is taken in adapting them to the soil for which they seem best calculated, being laid indiscriminately upon lands of every description, and for the most part unmixed with any other substance. But bones, being kept together by fixed air, unless they are either laid upon soils possessing principles that are capable of depriving them of this air, or have something of that kind previously mixed with them, the texture of their parts will remain unbroken, and they will be of little use. In Hertfordshire however they are found to be an excellent manure for clay soils.

To render bones useful they should be ground as small as possible. At Sheffield it is a trade to grind bones for the farmer, who will give 16d. a bushel and send sixteen miles for them. Some substance must then be mixed with them that is capable of dislodging the fixed air, and disuniting the principles contained in the bone. For this purpose nothing will be found so useful as quick-lime. Where there is no opportunity of grinding them, they may be mixed with lime in a heap, and will thus soon be reduced to powder. It is also a judicious practice to mix ashes with them; a cart-load to thirty or forty bushels of bones; turning the whole when it has heated twenty-four hours, it may be laid on ten days afterwards.

Bones are sometimes burnt for the ashes, in this operation they are freed from the oil and mucilage, and are merely phosphoric acid united to lime or phosphate of lime: in this state they are merely a stimulating manure. In their unburnt state they are both nutritive and stimulating. Of all manures bone is

^p Report on manures, 35.

^q Young's Ann. 2. 401.

^r Ann. 9. 654.

^s Trav. vol. 4.

^t Annals, vol. 3 and 20.

perhaps the most permanent. What is here said of bone in its recent and burnt state, applies to horns, hoofs, wool, feathers and hair: like bone they consist of phosphate of lime, animal oil and mucilage.

When bones are used in their simple state, without the addition of earth or lime, they ought never to be laid upon any but the sharpest and most active soils; such as limestone chalk or gravel: upon all these they will meet with more or less calcareous earth, which will in some degree disengage their fixed air, and dissolve the oil contained in them; but upon deep clays, tills or loams, they should never be applied in that state.

But when made into a compost, they may be applied with advantage upon soils of every description, by laying it upon or near the surface, when the crop is in a growing state. Upon wheat it should be used early in the spring without harrowing; upon barley and oats it may be harrowed in along with the grain.

For drill crops, such as turneps, beans, &c. they are particularly convenient, as they admit of being put into the drill at the same time with the seed, more readily than most other manures.

Dr. Hunter of York having laid down to grass a large piece of very indifferent limestone land with a crop of corn, selected three roods, which he dressed with bones broken very small, at the rate of sixty bushels to the acre. The crop of corn was greatly superior to the rest. The grass next year was also superior, and has preserved the same superiority ever since, inasmuch that in spring it is green three weeks before the rest of the field.

He dressed two acres with bones in two different fields prepared for turneps, sixty bushels to the acre, and found the turneps greatly superior to the others managed in the common way.

He dressed an acre of grass ground, with bones, in october, and rolled them in. The succeeding crop of hay was an exceeding good one. However he has found from repeated experience, upon grass ground, that this kind of manure exerts itself more powerfully the second year than the first.

He recommends the bones to be bruised by putting them under a circular stone moved round upon its edge by means of a horse, in the manner that tanners grind their bark.

To ascertain the comparative merit of ground and unground bones, he dressed two acres of turneps with large bones in the same field where the ground ones were used. The result of the experiment was, that the unground materials did not perform the least service, whilst those parts of the field on which the ground bones were laid were greatly benefited.

All kinds of bones will answer the purpose of a rich dressing, but those of fat cattle are the best. The London bones are frequently boiled, and must therefore be much inferior to such as retain their oily parts.

Mr. Young however, in his experiments on manures, says that the effect of the London bones was so very great, that he bought all he could get at 10s. 6d. a waggon load of ninety-six bushels in London. With a dressing of twenty-five cart loads the crop was superior to that which had fifty. The land was a miserable soil, which with a summer fallow yielded but thirty bushels of wheat; but with a moderate manuring of bones yielded sixty-three bushels.

On barley he observes, that bones hold a most decided superiority, and that expensive as they are, they pay very amply.

Horns of every kind are an useful manure when cut into small pieces; in their natural state they produce little effect. The proportion proper to be employed varies with the size of the chips or shavings; fewer being necessary when small, but the effect of the larger are longer felt. If they are of a middling size, about sixty stones to an acre is a reasonable quantity. If more be used, the grain is apt to be too luxuriant, and too long in ripening; it is also liable to be hurt by mildew.

The small pieces are chiefly turner's shavings, are bought in London at 12s. or 13s. the quarter, and are

much the most useful. The large ones are refuse pieces of horn, cost about 2s. less the quarter, and are generally ploughed in three months before sowing wheat or barley. They both answer in most soils and seasons, except very dry ones.

Hoofs are of the same nature with horn, and answer the same purpose.

Hair is likewise used with much the same effect. Hog's hair is sometimes to be had in London at about 9s. the quarter.

Wool cannot well be applied as manure in its native state; but very well after it has been wrought into cloth. See *Refuse of Manufactures*.

Feathers would be a good manure, if they could be had in any quantity. A field being ready for sowing wheat, one acre was manured with ten bushels of old feathers procured from an upholsterer, ploughing them in as they were spread: the acre thus manured produced near forty-eight bushels, and the other part of the field not twenty-eight bushels on an average.

Fish, says Evelyn, is spread to great advantage on grounds, and for being quickly consumed, may soonest be applied. It is matter of surprize, says his annotator, that this hint given in 1675, should have operated so little, that at this time (1778) the use of refuse fish is hardly known. It is common however in Cornwall to manure with pilchards; about Leostoff with herring-scales; and whole barge-loads of sticklebacks are sometimes brought to Cambridge, and bought up by the farmers to lay upon their lands, as the whole neighbourhood can witness for a time from the intolerable stench with which they salute the nostrils of the traveller.

The offal of fish would be worth attending to, especially when they are cured in considerable quantities, as at Yarmouth, &c.

The proper way of using fish and its offal is to make it into a compost with other substances, particularly lime or chalk. Lay the fish in heaps for eight or ten days, till it begins to corrupt; then mix it with earth; in a fortnight turn the heap, and add one part of lime to three of fish; let this remain a month, turn it, and add as much earth as is equal in quantity to the whole heap of fish and lime.

Such a compost will be an excellent top-dressing for any crop. For wheat, early in the spring; for barley, either harrowed in with the seed, or applied upon the young crop. It is useful for drilled crops.

All *Recent Animal Substances*, as blood, and the whole refuse of slaughter-houses, shambles, &c. afford a very rich manure. Mixed with earth and fresh horse-dung they make a very rich compost. Blood mixed with saw-dust makes a good land-dressing to be sown upon wheat in the spring. Blood is often recommended to be buried at the roots of fruit trees.

All *Putrid Animal Substances* are good manures if properly managed: when used alone they should always be laid upon the most active soils, such as chalk, limestone, &c. Upon strong clays or deep loams they should only be used in form of a compost.

The most proper way of preparing them for use, is to mix them with chalk or quick-lime; the mixture should be laid in heaps of three or four cart-loads each, and covered with earth; after remaining in this state for eight or ten days, the heap should be turned over, and ten cart-loads of earth added to each cart-load of the mixture. It should then remain for a month in the heap, and then may be applied as a top-dressing, or harrowed in with the seed.

All kinds of animal substances, when well digested and putrified, are the most powerful promoters of vegetation. In this state almost the whole becomes volatile, and is so far attenuated, subtilized and refined, as to be rendered capable of entering the vessels of the minutest plants. Inasmuch that it appears to some, that as the animal kingdom is supported by the vegetable, so the vegetable is by the animal; and that each is reciprocally the support of, and is supported by the other.

* Bath papers, 1. 130.

† Ibid. 3. 171.

REFUSE OF MANUFACTURES.

Under this head a variety of articles may be enumerated:

Fellmonger's cuttings or *Poake*, used in Surry and Kent and about Dunstable. Composed of sheep's trotters, hair, scrapings of the pelts, lime, &c. There are two sorts, the white and the brown; the white is much the best, having more oil, lime and hair in it, but they are both good, and go farther in dressing land than almost any manure, in the proportion of four to one. About Dunstable the price is 6d. a bushel, and they use from twenty to forty bushels an acre.

Furrier's clippings, bought in London at 12s. or 13s. the quarter, weighing about two hundred weight and a half. They are sown by hand from the feed-scuttle on land intended for wheat or barley, and immediately ploughed in; the pieces that are left above ground are pricked in by a stick, to prevent their being devoured by dogs or crows. From two to three quarters are used on a statute acre. They answer well on light dry chalk or gravelly soils, where they hold moisture, and help the crop greatly in dry seasons.

Refuse of Hair manufactures.

Horn shavings. Already mentioned.

Glue-maker's refuse. A very strong manure.

Rags. Woollen rags in London are from 3s. 6d. to 4s. 6d. the hundred weight (in Berkshire about 5s.) or about 4l. 17s. the ton. Being generally in large pieces they are chopped small, about an inch or two square. They are sown by hand, and ploughed in three months before sowing wheat or barley, and the quantity used is from six to ten hundred weight on a statute acre. If with dung, three hundred weight.

Mortimer says they are a great improvement of chalky binding lands; that in his time many loads were fetched from London to Dunstable; that they cost 4d. a bushel in London; that they chopped them small and sowed them just after the sowing of the corn, allowing four sacks (of six bushels each) to an acre.

Woollen rags hold moisture, and are adapted to dry, gravelly and chalky soils; and succeed in dry seasons better than most manures; but do little good on wet soils. London rags are best; but the danger of catching the small-pox in chopping and sowing them deters many farmers from their use.

In Berkshire they are used for dressing wheat and clover-leys, and even upon light soils produce abundant crops. They are said to produce very sensible effects five or six years after they are laid on, and to be better the second or third year than the first.

In Northamptonshire they are found to answer well as a preparation for barley.

Scrapings of oiled Leather.

Shoemaker's Chips.

Soaper's Ashes, Soap-boiler's Waste, or *Ashlep* is much commended as a manure both for corn and grass by Sir Hugh Plat. It contains fifty-seven in the hundred of mild calx, eleven of magnesia, six of argil, and twenty-one of silic.

The effect on cold sward is said to be very great. Mortimer says, he was told of one by Ware, who had a piece of land run over with broom and furze, which he manured with soap-ashes, and sowed six years together with wheat, and had incredible crops. An Essex farmer, in the Bath papers (1. 129.) informs us, that in April he top-dressed half a field of clover with sixty bushels to the acre of this manure, and that this half produced near double the quantity of hay that the other did. He also used it with great success on cold wet spongy meadow-land. It apparently dried it, and made it produce much greater crops of grass.

Sugar-baker's scum. To be had from 5s. to 7s. 6d. a load.

Tallow-chandler's refuse, called *Graves*.

Refuse of Potteries, as a top-dressing for grass, on a clay soil. The riddlings of half-burnt coals and earth from the kilns: which would have nearly the same effect as common coal-ashes. Worn-out moulds of plaster of Paris powdered, might answer as gypsum.

Refuse of Alum-works; called *Slam* in Yorkshire. Used with sea-weed, lime, &c. to make a compost.

OIL, Oil-cake or Rape-cake and Oil-Compost.

Fresh oil alone, so far from being a manure, is a poison to vegetables. Mixed however with lime or alkaline salts it becomes the richest of manures, being thus made miscible with water. Or made to putrify with animal or vegetable substances, it will become a manure.

Oil-cake or Rape-cake has long been used as a manure in Norfolk. Being ground, or broken into small pieces, it is sown by hand out of a common feed-box, upon the last ploughing but one of a summer-fallow for wheat. Alone it answers best on chalky and limestone soils; on heavy loams and clays, much of it will remain inactive, unless it be mixed with lime, &c. If it be intended for a hand-dressing, six parts of rape-dust and one of lime will make an excellent compost, for soils of every description. The lime should be mixed with the rape-dust at least ten days before it is used, and turned every day. It may thus be applied to wheat as a top-dressing in the spring.

On calcareous soils it may be used without lime. On thin limestone at a distance from dung this is an invaluable manure, at the rate of three quarters an acre for barley, and four for wheat, sown by hand, and harrowed in with the grain: if rain fall within a week or ten days after sowing, the crop is generally good; but if no rain fall till long after, it is but little benefited by this expensive dressing; nor is the crop of the succeeding year benefited by it.

The price of this manure advancing so much in price as to render it doubtful whether it will answer to the farmer, Dr. Hunter has invented an oil-compost that comes cheap, and is of easy carriage. It is made of American pot-ash, twelve pounds broken into small pieces, and put into a convenient vessel with four gallons of water. When it has stood twenty-four hours, add of coarse train-oil fourteen gallons. In a few days the salt will be dissolved, and the mixture upon stirring will become nearly uniform. Then take fourteen bushels of sand, or twenty of dry mould; upon these pour the liquid ingredients. Turn the composition frequently over, and in six months it will be fit for use. The above quantity is sufficient for an acre.

For the convenience of carriage no more earth is here directed to be used than will effectually take up the liquid ingredients. But if the farmer chooses to mix up the compost with the mould of his field, he may use a larger portion of earth, by which means he will be enabled to distribute it with more regularity upon the surface.

This oil-compost is only intended to supply the place of rape-dust, foot, woollen rags, and other expensive hand-dressings. It is in all respects inferior to rotten dung: where that can be obtained, every kind of manure must give place to it. For at the same time that dung affords nourishment, it opens the pores of the earth: whereas hand-dressings give food to plants, but contribute nothing towards loosening the soil. This is an useful and practical distinction.

How different is the language of the philosopher from that of the empiric, whose nostrum is adapted to all cases and purposes, and is superior to all others in every thing!

Dr. Hunter recommends it, but with the diffidence of a true philosopher, who depends ultimately upon experience, to be sown immediately after the grain, and both harrowed in together.

He thinks it will answer best for winter crops: for from the unctuousness of its nature it is more than probable that it should lie exposed for a long time to the influence of the weather; which benefit it is deprived of when used for barley, and such crops as are sown late in the spring. For this reason the compost upon turneps has proved generally unsuccessful: but then those parts of the field on which it had been spread produced the best crops of grain the following year. From this slow manner of giving out its virtues, it seems to be an improper dressing for all plants that have a quick vegetation.

All lands that have been exhausted by frequent crops, are robbed of their oily particles, and thus become barren. The oil-compost, by plentifully restoring particles similar to those which have been carried off, should seem to be a proper restorative. To lands under such circumstances, lime is the worst manure that can be applied^x.

Dr. Hunter has followed up his theory with experiments. For corn and horizontal feeders he recommends it to be sown upon the surface with the hand: for cabbages, hops, beans, carrots and all tap-rooted plants, it is best to be worked into the soil by the plough or spade. When distributed upon the surface it is soon meliorated by the action of the air, rains and dews: but when worked into the soil it is deprived of those necessary influences.

Some injudicious enquirers have placed a handful of the compost close to the roots of a cabbage plant: hence death or a feeble vegetation ensued; and an argument was raised against the nutritive power of the compost. Lime, the ashes of burnt vegetables, stale urine, goose and hog dung, when improperly applied, are all poisons^y.

Christopher Baldwin, Esq. of Clapham-park, Surry, purchased sixty gallons of the bottoms or foots of oil, and a rich thick South Sea whale oil at 14d. the gallon; and having made a bottom of twenty loads of mould, with eight loads of dung on it, he carried on three loads of light sandy mould, and one load of brick and mortar rubbish ground fine; having mixed these well, he made a kind of dish of it about five feet wide and ten feet long; into this he put half the oil, in august: the heat of the sun soon made the thick oil sink into the compost, when it was directly thrown up into a heap, broke down again, and by five or six turnings well mixed together, and left in a heap two days, when it was spread equally over the whole dunghill: twenty loads more of good mould were then carried on, eight loads of dung, and the remaining thirty gallons of oil were mixed as before in sandy mould and mortar rubbish, and equally spread over, and the whole was covered by trimming the four sides of the dunghill, and throwing it on the top.

Thus it lay more than two months, when it was cut down by mattocks, carefully broke, well mixed and turned over. The end of march it was carried on a five-acre field, spread and ploughed in: it lay a fortnight, the land was then ploughed again, and on the 22d of april the field was drilled with barley, two bushels to an acre. The crop was sixty bushels on an acre, of the best quality: five quarters were sent into Norfolk for feed-barley, under the denomination of fifteen coomb barley; and it weighed 220lb. the sack, or 55lb. the bushel, Winchester measure.

This barley followed oats upon a lay of six years old. The oats suffered much from the wire worm, which this manure completely destroyed; the barley not suffering from it in the least.

Mr. Baldwin used this oil-compost with success on ridges of summer cucumbers, and on cabbages^z.

Mr. Baldwin had not the same success in Hampshire on a six-acre piece of strong land, with large stones, very poor, that had never been dunged. Five acres were chalked and the whole was sown with oats. December following it was ploughed. In january the oil-compost was carried on that part of the field which had not been chalked, and over half an acre of the chalked part; the remainder was dunged. In february it was ploughed; and in march drilled with hog pease. The chalked part was the best; the unchalked part, where the oil manure was put, though good, was not to compare to the chalked part: and the half-acre chalked and oiled, appeared no better than the dunged part^a.

Dr. Wilkinson of Enfield used Dr. Hunter's oil-compost, as a top-dressing, in spring, on two acres of wheat, the soil a pebbly loam on a gravelly subsoil, very poor, and never remembered to have borne a crop of wheat. The produce however was nearly

three quarters to an acre. The straw was short and light, but the ear was full and heavy. The quantity of manure to an acre was 12lb. of pot-ash dissolved in four gallons of water, and mixed with twenty bushels of dry mould, and fourteen gallons of train oil.

This gentleman tried the same quantity of this manure on two acres of turneps; the soil a wet loam on a clayey bottom. It was all dressed with twelve loads an acre of rotten dung. When the turneps were sown, the two acres had an additional covering of the oil manure. The whole crop suffered from the fly, but the part where the oil had been laid recovered the soonest. The two acres retained their superiority; and the eye could easily trace where the oil had been laid by the more luxuriant vegetation^b.

A Norfolk gentleman farmer recommends an oil-compost of materials different from Dr. Hunter's. Of rape or train-oil six gallons. Sea-sand six bushels. Coarse salt two bushels. Malt-coombs twenty-four bushels. Spread the coombs on the floor four inches thick; sprinkle the salt level; throw on half the quantity of sand, and half the quantity of oil out of a watering-pot; turn it and rake it well: add the rest of the sand and oil; turn it well till thoroughly mixed, and then throw it in a heap for use. The sand and salt not only occasion it to imbibe the oil more freely, but give it a better body for spreading on the land^c.

SEA WEED, *Ware or Ore*, is used as a manure upon almost every part of the coast where it can be obtained in sufficient quantity. In several parts of the kingdom the value of land has increased six-fold from the circumstance of the proprietor or occupier having easy access to it. Upon lands situated on a dry limestone bottom, it has produced the most surprising effects.

The sea-weed commonly used in Scotland is of three different sorts. The best is that which is cut from the rocks, and of which kelp is made. The second is called the peasy sort. The worst is that with a long stalk. The common practice is to spread the weed immediately after it is brought from the shore, either upon the stubbles or grass lands. When laid upon the stubbles it is generally ploughed in as soon as possible. Farmers who can use it fresh do not lay it in heaps to ferment, because a load of fresh ware will be of more service fresh than two loads laid in a heap to ferment.

In most cases sea-weed may be conveniently used in this way, for where a farm is under a proper rotation there will always be ground to lay it upon. During the winter months it may be put upon the ley and stubble fields; in the spring upon the bean and barley lands; during summer the fallows will require all that can be collected; and by the time these are sufficiently manured, the clover fields after the first cutting will be ready to receive the remainder; through the autumn the stubble fields will require all that can be collected. Thus throughout the year this valuable manure may be used as soon as it is thrown upon the beach, and experience proves that its greatest value is in that state.

If however more weed is thrown out than can be conveniently used, it is an object of importance to preserve its qualities as much as possible. This is best done by making it into a compost with earth and a small proportion of lime. If the quantity of earth be great enough to absorb and retain the juices and salts of the sea-weed, the proportion of lime moderate, the whole well incorporated and protected from heavy rains, it will be found nearly as valuable as in a fresh state.

After the compost is properly mixed lay it up in form of a ridge with a pretty sharp angle at top, covered two or three inches with earth, well beat with the back of a spade, and defended from the rains with straw.

This compost will be found a good dressing for young crops of every description, and may be used either at the time of sowing the grain, and harrowed in along with it, or after the plants have made some

^x Georg. Essays, p. 32, 35, 36.

^y Ibid. p. 4.

^z Young's Ann. 13. 502.

^a Ibid. 15. 350.

^b Young's Ann. 15. 343.

^c Bath papers, 1. 149.

progreſs. Upon wheat it ſhould always be uſed to the young crop early in the ſpring. Upon rich deep land it is bad huſbandry to lay ſea-weed or indeed any heavy rich manure; lime, chalk, ſhells, &c. are the proper ſubſtances. This manure ſeems peculiarly adapted to lands that have been hurt by over-liming; the bad effects of which it will more readily correct than any other except oil and animal ſubſtances.

In the neighbourhood of Berwick ſea-weed is uſed in their compound dunghills, with fold-yard dung, ſtable-dung and earth; and thus an immenſe quantity of manure is produced by ſuch farmers as are ſituated near the ſea. Such as uſe the ſea-weed properly, have their lands in ſuch heat as ſeldom to have occaſion for a fallow. This ſpecies of manure is found to be excellent for gardens, as it not only enriches the ground, but alſo deſtroys all kinds of inſects^d.

Sea-weed is much uſed on the coaſt of Norfolk and the eaſtern coaſt of Kent. It is mixed with dung and mould, and after turning ſeveral times over, ſpread on corn land^e.

Much ſea-weed is collected in the Iſle of Thanet at a conſiderable expenſe for manure, which is generally put between layers of dry farm-yard dung and hedge-mould: the moiſture from the ſea-weed contributes to the well rotting of the maſs, and has been the means of making poor barren chalky lands produce excellent crops of barley, ſeeds and wheat. The farmers are ſo very attentive to get the weed the inſtant it comes on ſhore, that the men and carts go in the middle of the night to fetch it up the gate way; and ſometimes even leave off all hands in the height of harveſt to get it, when it comes aſhore at that time^f.

In Cornwall, ſays Mortimer, is a weed called *Ore-weed*, which grows upon rocks under high-water mark, and ſome is broken from the bottom of the ſea by rough weather, and caſt upon the ſhore by winds and floods, with which they improve their barley lands.

Sea-ore being laid on a field, which from its ſterility had obtained the appellation of Starve-lark, in the month of march, it was immediately ploughed and ſowed with oats: the produce exceeded five quarters on an acre. It was ſown again, and the crop of oats exceeded any thing that had ever been ſeen on the land^g.

Ore is probably the ſame word with *Ware*, which being pronounced as we commonly do the word *War*, is not very different from *Ore* or *Orr*.

River Weed. In ſummer great quantities might be gathered, in lakes, in rivers where the water is deep and has no current, and in all wet ditches. Its effects upon wheat and other grain, as well as upon turneps, cabbages, and other green crops are well aſcertained. It may be laid on the land green and ploughed in, or it may be mixed with earth and dung.

The beſt way of preparing it for manure is to let it lay in ſmall heaps for a day or two, to drain off the ſuperfluous moiſture. It may then be put into large heaps of three or four cart-loads each till the fermentation is over; each heap ſhould then have three times the quantity of earth or mud mixed with it. Incorporate them well, and let them remain for a week or ten days; turn them, adding at the ſame time a quantity of hot new-flacked lime. This compoſt will be ready for uſe in a month.

Mortimer ſays, that *Snail-cod* or *Snag-gret* lies frequently in deep rivers, and is full of little ſhells; one load of which is reckoned as good as three loads of dung.

I take this to be what botaniſts call *Chara*.

A conſiderable quantity of river-weed being laid on the bank to drain and ferment, ſhrunk to one-third of their firſt bulk, and underwent a high putrefaction, breeding an amazing variety and multitude of inſects. In this ſtate they were carted on two ſmall pieces, together about two acres and a half, that had been folded for wheat. The crop on that ground had evidently the ſuperiority in groſſneſs and colour. Cattle were fond of eating them^h.

^d Georg. Eff. 4. 402.

^e Young's Ann. 19. 84.

^f Bath papers, 1. 299.

^g Ibid. 7. 39.

^h Ibid. 6. 92.

River-weeds being put in to every furrow that was at the next turn filled up by the plough, on one acre of a piece deſigned for turneps; by the moiſture and fermentation of the weeds the ſeeds vegetated much ſooner than on the reſt of the field, which was manured in the common way. They alſo grew quicker, and were ſuperior both in the ſize of the roots and luxuriance of the leaves, ſo as to render the ſpot very conſpicious in the field. But in the ſucceeding crop of barley there was a manifeſt inferiority in this piece to the reſt of the land.

River-weeds being ploughed in at the end of october on part of a peaſe ſtubble, and wheat ſet by hand upon it, the whole field was a good crop, and the part on which the weeds were laid not at all inferior to the reſt, on which ſtable-dung had been ſpread in the uſual modeⁱ.]

Other Weeds.

Rotten vegetables of moſt ſorts will enrich land. Not only the weeds of ponds, lakes, rivers or ditches, but any other ſorts of weeds, laid in heaps to rot, will make good manure: ſuch as the weeds that too frequently diſgrace the headlands and balks of arable lands, commons, &c. the reſidue of kitchen gardens, &c. Whenever any weeds are uſed for the purpoſe of manure, they ſhould be cut down as ſoon as they begin to flower; for if they are ſuffered to ſtand till their ſeeds are ripe, the land will be ſtored with weeds, which cannot eaſily be deſtroyed: nay ſome kinds of weeds, if they are permitted to ſtand ſo long as to form their ſeeds, will perfect them after they are cut down. The ſureſt method therefore is to cut them juſt as they begin to flower, when they are in the greateſt vigour, and fuller of juice than when they are farther advanced. In rotting theſe weeds, it will be proper to mix earth or mud with them, to prevent their taking fire, as they are apt to do when laid in large heaps. When they are well rotted, they form a ſolid maſs, which will cut like butter, and be very full of oil.

Fern mowed whiſt it is green and tender, and laid in heaps to rot, will make a good manure. [Or it may firſt ſerve the purpoſe of litter in the ſtable or yard, and thus increaſe the quantity of dung.

This, with thistles and other large weeds, may be laid in heaps and burnt to great advantage; the aſhes being an excellent top-dreſſing for any crops.

Mud whether from the ſea, rivers or ponds is an excellent manure on any ſoil, both alone, and with lime, &c. Its greateſt value is upon thin ſoils, the fertility of which it increaſes amazingly, at the ſame time adding to the ſtaple of the land.

All manner of Sea-Ouſe or Ouſie mud, ſays Mortimer, and the mud of rivers, lakes, or the bottom of ditches, the waſh of paſtures, fields, commons, roads, ſtreets, or back-fides in any place where water meets with reſt, or that rain-water has a long time ſettled, or that ſinks run into, are of very great advantage to all ſorts of land, eſpecially dry gravels or ſand, and are mixed with dung.

The ſcouring of old ditches, the mud of ponds, and the ſediment of all ſtagnant waters are particularly excellent upon graſs land. Maiden earth, with oneſeventh of lime, and another ſeventh of rotten dung, added to it, will make it very proper manure for moſt kinds of paſture^k.

Mud ſhould not be laid on freſh, or as ſoon as it is dry, but it ſhould be well turned over and fermented with dung, or mixed with lime, to make the ſeeds in it vegetate, or to deſtroy their vegetation. Innumerable ſeeds fall or are carried into the water, ſink to the bottom, and not being aquatics, if they have much oil in them, are embalmed in the mud for years or ages, to vegetate whenever they ſhall happen to come within reach of the atmosphere in a proper matrix.

It may be dug between hay time and harveſt, and either made into a compoſt when dry, or being turned over and levelled, and expoſed to a winter's froſt, may be dug in ſpring and planted with potatoes.

ⁱ Bath papers, 3. 285. ſee 4. 328. and 5. 257.

^k Kent's hints, 77.

When this crop is cleared, it may be carted upon pasture, and will produce a luxuriant crop of grass¹.

In Yorkshire and Lincolnshire they have what is called Warp land, or land enriched with the sediments of rivers or arms of the sea, when the banks are overflowed. This generally takes place in the winter or early in the spring: they cannot therefore sow wheat, but great crops of spring corn are raised.

In Cheshire, the soil deposited at the extremity of salt-marshes, commonly known there under the name of *Sea-sludge*, after it has been grassed over for a few years, is said to be the most productive and lasting of any sort of manure, containing all the strength of marl and the richness of black dung.

Many of our river's mouths would doubtless supply, in an inexhaustible abundance, a saponeaceous silt impregnated in some degree with salt, which would be an admirable manure^m.

Sweeping of Streets.

This is a mixture of most substances valuable in agriculture, and needs the assistance of fermentation less than any of them to render it fit for use; being made up principally of the offal of houses, dung of horses and cattle; ashes, &c. It may be either ploughed in as dung, or used in the spring to invigorate wheat that is weak from not having been sufficiently manured or from any other cause. It may be employed in general as a top-dressing, or put into the furrow with drilled crops.

Sweepings of Roads.

The dung and sand swept up, or dirt shovelled up on turnpike roads, would make an excellent manure, and at the same time remove a great annoyance to travellers. Where roads are made with limestone, this manure will be particularly valuable; and where they are made with flints it answers for grass land.

Rubbish of Buildings, Walls, &c.

The backs of ditch-banks, the borders of fences in general, the sides of lanes, and the nooks of yards, &c. &c. which are suffered to remain, from generation to generation, the nursery of weeds, turned up into ridges, to rot the roots, &c. make an excellent manure. As does also the rubbish of old buildings, called in Norfolk *mergin*. Sea-stone walls afford a great quantity of this valuable article; which, from its immediate effect and duration jointly, is considered by some as superior to marl, mould, or even dung itself, especially upon scalds and hot burning soils. It is sometimes mixed with dung, but more commonly set on aloneⁿ.

The rubbish of old lath and plaster buildings is incomparable manure for clover leys or grass lands two loads to an acre. It is said to last twenty years^o.

Lime-rubbish is used by gardeners to bottom gravel-walks, to mix with earth for tulips, &c. and to plant vines and figs.

Mud or earth walls acquire considerable fertility, and as they moulder, or fall away become useful in the compost dunghill.

MALT-DUST, Comb or Coombs.

This is reckoned one of the most efficacious manures. It is the dust that separates from the malt in the act of drying: and is used as a top-dressing for barley, for clover, turneps, &c.

Mortimer says it is a great improver of barley, allowing forty bushels to an acre, but that it lasts only one crop.

A piece of land being manured with malt-coombs, at the rate of four quarters to the acre, and sowed with clover and barley; the barley produced near seven quarters on an acre, and the crop of clover was one of the finest that ever was seen^p.

About Dunstable malt-dust costs 1s. a bushel. It is sown by hand, from twenty-four to thirty-two bushels on an acre, at the same time with barley, and harrowed in with the seed. It suits most soils and seasons; but quickly spends itself, and is therefore never

sown with wheat. As a top-dressing to wheat in march, about thirty bushels to an acre, it probably would succeed. Black malt-dust, or such as falls through the kiln-plate in drying, is greatly preferred to the white, on account of the seeds of charlock, with which it abounds being destroyed by the heat^q.]

Mr. Miller says, it is a great enricher of barren ground, having a natural heat and sweetness in it, which imparts to the soil a proper fermentation, especially where grounds are a natural clay, and have contracted a sourness and austerity, whether from having lain long untilled and unexposed to the air, or from water having stood long on them.

OAK BARK or Tanner's Bark.

Oak bark, after the tanners have used it for tanning leather, when laid in a heap and rotted, is an excellent manure, especially for stiff cold land; in which one load of this manure will improve the ground more, and last longer, than two loads of the richest dungs; and yet it is very common to see large heaps of this remaining in the tanners yards for many years, in several parts of England, where manure of other kinds is very scarce, and often carried to a great distance. Of late years this has been much used for hot-beds in several parts of England, and is found greatly to exceed horse-dung for that purpose, the fermentation being moderate and of long continuance; so that a bed of tan, when rightly made, will continue in a moderate temperature of heat for three or four months; and when the heat begins to decay, if it be stirred up with a dung fork, and some fresh tan added to it, the heat will renew again, and last for some months, so that these beds are by far the most kindly for exotic plants; and whatever plants are plunged into these beds, if they are permitted to root the bottom of the pots, they will thrive more in one month after, than they did in four months while they were confined to the pots. Many plants that root through the pots into the tan, send forth roots upwards of twelve feet each way in less than three months, and the plants advance in proportion.

After the tan is used for a hot-bed it may be spread on the ground for manure, and will greatly enrich it: but it is best for cold strong land, because it is of a warm nature, and will loosen and separate the earth. When this manure is laid upon grass, it should be done soon after michaelmas, that the winter rains may wash it into the ground; for if it be laid on in the spring, it will burn the grass, and instead of improving will greatly injure it, at least for that season. Where it is used on corn land, it should be spread on the surface before the last ploughing, that it may be turned down for the fibres of the corn to reach it in the spring: for if it lies too near the surface, it will forward the growth of the corn in winter; but in the spring, when the nourishment is chiefly wanted, it will be nearly consumed, and the corn will receive little advantage from it. Nor will it be proper to have this manure lie too near the roots of any plants, for when this happens it is prejudicial to most of them, but especially to bulbous and tuberous-rooted flowers. But when it is buried just deep enough for the fibres of the roots to reach it in the spring, the flowers have been exceedingly improved by it: and in some places, where this manure has been used in kitchen-gardens, it has greatly improved the vegetables.

[In process of time tan is certainly converted into vegetable mould. When it becomes rotten and is spread pretty thick, it has been found of great use to grass ground. But the most likely method of rendering it useful is to mix it with lime, or perhaps with salt. Or after it is taken out of the tan-pit, and washed, mix it with an equal quantity of fresh horse-dung, including the litter, and cover it from rain, but let the whole be kept moist. When the heat is gone off, mix it with a fresh quantity of horse-dung, to renew the heat: when that is gone off, the whole being made into a compost with chalk, will form a very enriching manure.

¹ Walford in Young's Ann. 19. 190.

^m See Young's Eastern tour, p. 413.

ⁿ Marshall's Norf. 1. 29.

^o Young's Ann. 5. 360. and 18. 435.

^p Bedford in Bath papers, 3. 360.

^q Farey in Young's Ann. 25. 73.

Two waggon loads of tan from the tanners, with one waggon load of unslaked lime, mixed together, and lying for a week, being used as a top-dressing for turneps and grafs, was found to be excellent for both.

Mortimer mentions a piece of land in Cumberland of two acres and a half, let for 11l. annual rent. What improved it to that value was the emptying of the town tan-pits on it.

Soot is used as a manure in almost every part of our island, where it can be procured in sufficient quantities, and is applied in every different shape, and to all crops. In the language of the chemists, it is a sublimate, consisting principally of carbon in a most subtile powdery state, and ammoniac or volatile alkali. Whether the carbon can be observed, is an undecided question; but the volatile alkali operates as a stimulant, and it may even prove nutritious; for it consists of hydrogen and azote.

Used in its simple state, it answers best upon light gravel, chalk or limestone soils: if in a compost, the proper proportions are, two loads of foot, the same quantity of lime, and ten loads of earth. The foot and earth should be well incorporated, and remain in a heap a week or ten days, then turned, and the lime added in stratum as it is turned over; in this state it may remain a month or six weeks, and be again turned, taking care to break every part of it as small as possible, by working it well with the spade: in a week or two more it will be ready for use. This compost may be employed upon every sort of grain, especially wheat or barley; and if rain fall soon after it is laid on, it will immediately begin to operate.

Soot, says Mortimer, is very good both for corn and grafs, especially on cold clays or lands much overrun with moss: but sea-coal foot is the best by much: forty bushels are commonly allowed to an acre, but some lands require more. A hundred bushels have produced an extraordinary crop; but it was a dry season: if much rain had followed, being laid on so thick, it might probably have dissolved the roots and stalks of the plants entirely. If the weather prove dry, a small quantity has little effect, being evaporated or dispersed by the sun and winds.

About Baldock, they bring foot from London, three hundred bushels to a waggon load. The price is from 7d. to 9d. a bushel, very short measure, which makes the price from 9d. to 11d. the Winchester bushel struck. It is laid on a heap on the lands. From this a common seed-scuttle is filled, and a man walking the length of the lands sows the foot as they do corn. The quantity used on a statute acre is from twenty to forty Winchester bushels. In general, thirty bushels are reckoned a complete dressing, when dung or other manure has not been used: but when the land has been dunged, half the quantity of foot is sufficient. Soot is found to answer best on wheat in april. It likewise succeeds on peas or clover in the same month; and has a good effect sown with barley in the beginning of april, and harrowed in. A slight dressing of foot is used at any time in the spring, when grubs or worms appear to injure the young corn. Thinly distributed on newly sown turneps, just before they come up, it prevents the fly or grub from injuring them, provided no rain falls to wash it into the soil; but if sown after the plants come up, it greatly injures them, particularly if the season comes dry.

Soot answers best on light dry chalk soils, and in moderately wet seasons: it does little good on strong or wet land, or in very dry seasons, unless sown earlier than usual. The London coal-foot, is generally mixed with cork-dust, coal-ashes, or sweepings of the streets; yet even in this adulterated state, it is found to answer much better than country foot from wood.

In Norfolk, near towns, foot is used as a top-dressing for wheat in february or march. If it be sown early, and the frost catch it, the strength is thereby lowered: if late, and no rain fall to wash it in, it is thought rather injurious than beneficial. And it is not, in any case, found of much, if any, service, to

* Farey in Young's Ann. 25, 67.

the succeeding crop of barley. The quantity set on is forty bushels an acre.

Their manner of sowing it is this. A favourable opportunity being embraced, when the wind blows gently in the direction of the lands or ridges; the waggon, which is kept under cover till wanted, is drawn in a furrow against the wind; while a man, standing on the outside of the waggon, spreads the foot with a shovel, several yards wide, on either side of him; the height of his situation at once enabling him to spread it wide and even. As he reaches the windward end of the lands, the team wheels round under the hedges, and takes a fresh width.

Soot is an excellent manure for pasture land, in the quantity of forty bushels to an acre. Mortimer says, it produces a mighty fine sweet grafs, and destroys weeds and trumpery.

Lucerne is much improved by it. It is the favourite manure for Saintfoin on the downs of Wiltshire; only ten bushels on an acre: and is in general reputed good for this grafs.

It is commonly reputed to destroy clover, while it encourages the growth of ray-grafs. Dr. Anderson informs us that this opinion is erroneous. He says however, that although it does not destroy clover, yet it promotes not in any sensible degree the growth of it; and that he has used foot as a top-dressing for clover and ray-grafs in all proportions, from one hundred to six hundred bushels on an acre, without perceiving the clover to be in the least degree more luxuriant than in the places where no foot had been applied.

But the effects of this manure upon ray-grafs is amazing, and increases in proportion to the quantity. Hence in fields dressed with foot, the ray-grafs so far overtops the clover, that the latter is not seen, and the whole crop seems to be ray-grafs; although in fact there is as much clover as if it had not been manured at all.

Soot seems particularly favourable to the growth of grafs; for where a heap of it has lain so long on the ground as to destroy all the plants upon its surface, the first plant that appears afterwards is the common quick or couch-grafs: as the first plant that appears where stable-dung has lain is the common knot-grafs or hog-weed.

PEAT-Moss containing an acid nearly in proportion of one-fourth of its weight, its other valuable parts, oil, alkaline salts, and vegetable earth, are not only locked up, but the whole mass is prevented from fermenting, by which process alone it can be rendered useful.

To bring on the desired fermentation, dry the peat-moss well, break it into small pieces, and lay it on the ground to the thickness of three or four inches. Let the whole of the dung from the stables be laid over it. The moisture of the dung will sink down, and not only correct the acidity, but saturate the peat-moss completely with the valuable properties of the dung. Turn the dunghill over, and mix the dung and peat-moss carefully together, throwing them up lightly, and a gentle fermentation will come on. After a few weeks turn it over again; adding one load of lime to five loads of moss; the whole being well broken and accurately mixed. The addition of the lime will hasten the putrefaction of the moss, dissolve the oil contained in it, and give a due degree of activity to the whole.

Another way of effecting this is, to pour the urine of cattle, the moisture of the dunghill, soap-leys, and offal of the house upon the peat-moss; and afterwards to mix it with stable-dung and lime.

A third way of rendering peat-moss useful as a manure, is to mix it with pot-ash, kelp, lime or chalk. In distant parts of the country, in the neighbourhood of bogs where peat-moss abounds, and other manures are scarcely to be obtained, it may be highly important to know, that eighty or one hundred pounds weight of pot-ash is sufficient to saturate a quantity of peat-moss that will manure an acre of land; and

* Marsh. Norf. 1. 64.

* Anderf. Essays, 1. 308.

that if it be well dried, a much smaller quantity of pot-ash will suffice.

For this purpose dissolve the pot-ash in boiling water, half a pound to a gallon, and sprinkle it over the peat-moss, broken small, and laid a foot thick, till it is saturated with the ley: then lay on a fresh stratum, treating it in the same manner. Leave the heap to itself some weeks, and then turn it, adding a quantity of the freshest and most active lime, worked well into the moss with the spade: after some time it should be again turned, and every part of it broken as small as possible. In a month or six weeks, the whole will be ready for use.

Upon thin gravels or sharp active soils, such as chalk or limestone, this compost will be highly beneficial, not only as a manure, but also for thickening the staple. See *Peat-ashes*.

Decayed Vegetable Substances, are all useful as a manure. Some probably are little more than common earth or mould; but others have oily and other particles in them of considerable value. Mortimer reckons the rotten wood of hedges and coppices to be a great improver of the soil, and instances the earth where piles of faggots stand.] Miller remarks, that rotten wood, and saw-dust when rotted, are a very good manure for strong land, because they loosen the earth and render it light. [Saw-dust fresh from the pit, is not worth the carriage, although in a well rotted state it becomes an excellent manure. All these substances may be added to strong heating dunghills. As may also the grass mown from lawns.

Leaves of trees may be collected at the fall and formed into a heating dunghill. They have been found to answer as a manure for potatoes.

The surface earth of woods, coppices and plantations, being formed chiefly of rotten sticks and leaves, is very useful to the gardener for his flowers, mixed with sand, loam and rotten dung.

CHARCOAL

Has been successfully used as a manure. It is one of the substances which Mr. Arthur Young has employed in his experiments, and found to do good. See *Annals*, vol. I. 151, &c.]

PLOUGHING IN GREEN CROPS.

Many sorts of vegetables may be sown, in order to be ploughed in when they are in full growth, to enrich the land. The ancients ploughed in Lupines for this purpose, and that practice is still continued in Italy and the South of France; but they are too tender for our climate, and we have better plants for the purpose, as Peas, Beans, Buckwheat, Turneps, Vetches, Clover, Spurrey, and other moist and juicy plants, as Mustard, Coleseed and other large-growing plants, cut before they form their seeds; when they are in full bloom, and abound most in sap.

When we consider at what small expense of prime cost, carriage, and other charges this manure is obtained; and how it completely smotheres the weeds; it is wonderful that it has not more generally been adopted. It might no doubt be used on many occasions, in place of a complete summer fallow, as a preparation for wheat: in which case the price of the seeds, which is almost the only expense, would be amply repaid by the saving in the article of labour.

Their value might be much improved, by laying on a certain quantity of lime, chalk or marl, according to the nature of the soil; which would tend greatly to hasten the fermentation, and bring the land sooner into a proper state for affording nourishment to the succeeding crop of wheat.

EARTH.

Maiden or untried earth, such as is found six or seven inches deep under turf on commons, headlands, and by the sides of roads in many places, when it is of a good quality, is of inestimable value as a manure for fruit-trees, raising shrubs and trees in nurseries, all sorts of crops in kitchen-gardens, and ornamental flowers, as well as corn and grass. The nursery-men near London send many miles for a loamy maiden earth, as absolutely necessary for their purpose. Mr. Lawrence recommends it in preference to dung for both fruit and

kitchen-garden, particularly for *Asparagus*, laid a foot and half deep, without any dung whatsoever.

Mixed with dung or lime it makes excellent manure for corn or turneps. See *Compost*.

Fuller's earth, being of a very fat nature; though not much used for the improvement of land, on account of the profit it yields for cleansing and scouring woollens, &c. is recommended as a great improver of some sorts of land, by Sir Hugh Plat, Markham, Mortimer, and others.

Doubtless there are many sorts of Earth that might be employed with success besides those in common use, if they were examined by men skilled in their respective properties, and applied by those who are versed in their operations.

LIMESTONE.

In remote parts of the country, where limestone abounds, without fuel to burn it, if means can be found to break it small at no great expense, it will be found useful as a manure. Attempts have been made in Scotland by Lord Kaim to pulverize it. Where quarries of limestone or marble are worked, the dust and chippings may be collected; but the only means of employing it on an extensive scale is to pulverize it by a machine going by water or steam, upon a principle similar to the large hammers used at iron mills. Chalk, other sorts of stone, marl, crag and sea shells, may be pounded in the same manner. Mons. Duhamel found by accident that the powder of marble is a good manure for grass.

The ill-burnt unflakeable lime-stones, thrown out from the sifted lime in building, upon part of a field in a moorish soil, the whole of which had been pared and burnt for turneps, and the other part manured for dung: the lime-stoned part had much the best produce; and afterwards when tilled for oats and sown with clover, and even after that for several years, had always a manifest superiority over the dunged part.

Limestone is calcareous earth indurated, with a small quantity of quartz and argillaceous earth. Not only the common limestones, but Portland, Purbeck, &c. belong to this class. They all effervesce with acids, fixed air entering largely into their composition: they will not give fire with steel: and contain a small quantity of iron. They are all reducible to lime by the application of heat.

Limestone gravel is a marl mixed with large lumps of limestone, which when spread upon the ground, gradually fall into smaller pieces. If the pieces are large, and dissolve slowly, the quantity applied ought to be great, and the effects will be slow and lasting; but if they are small, it will operate more quickly, and last a shorter time. This is a considerable article of manure in Ireland, but is little known in England.

CHALK

In its native state is useful as a manure upon the same principle as Limestone; but it is more easily pulverized, and lighter or more porous. Nearly the whole of it is calcareous earth; whereas no marl contains more than a fourth part of that substance.

Chalk is in high esteem in the southern counties of England, where it abounds. Its best effects are upon deep soils, which contain no calcareous earth. It is observed to have very little effect upon lands where the substratum is chalk; and if the soil be thin, it does mischief. When used upon light soils, it is made into compost with earth and dung. When this is well mixed and duly proportioned, it produces valuable crops, and its influence continues many years.

The common method of using this compost, is either to lay it upon fallows for wheat, and mix it intimately with the soil, or upon grass as a top-dressing: in both cases it answers well; in the latter it destroys moss rushes and all coarse aquatic plants that grow in four or wet lands; in the former it opens and pulverizes the soil, and never fails to produce good crops.

Chalk should be broken as small as possible. It should be dug near the end of autumn, and laid

^u Gullet in Y. ann. 4. 492.

^x Wilkinson in Y. ann. 21. 192.

^y Anderf. essays, vol. 1.

on immediately; at that season the air is generally moist, the moisture will be absorbed by the chalk, this will occasion it to swell and break in pieces, and if frost come on, it will accelerate the business: but when it is dug in summer, it loses its moisture, and acquires a hardness, which in a great measure prevents it from being of any use.

Chalk should in no case be ploughed in till its parts are properly separated; and then it should be completely harrowed in, and well mixed with the soil.

If the soil be thin and light, a certain proportion of dung will be useful; but if it be heavy, the dung will only lessen the operation of the chalk. It is generally thought that lands which have been completely chalked, will not bear a repetition of it. A compost of it however may be used to great advantage. In the southern counties a field has been chalked and dressed with chalk and dung mixed in pieces alternately; and the former has produced a very bad crop, and the latter a very good one.

Chalk beyond a certain quantity will not only cease to operate as a manure, but even prove hurtful. It ought therefore be used with caution, and due pains taken not only to ascertain the strength of the chalk, but the quality of the soil upon which it is laid.

In some parts of Essex they lay from five to eight waggon loads of chalk on an acre, either upon a clover ley while feeding, or on a summer fallow: a very thin dressing of it is seen immediately to an inch, like rotten dung, and lasts twenty years, fifteen in good heart. The soil is loam; they have little clay and no sand: on gravels the effect is but slight.

They bring the chalk from Malden, whither it is brought by sea from Kent, and a waggon load costs 10s. at the quay. It is rather hard; the sharpest frosts leave many lumps unbroken; these they break with pickaxes. The effervescence with vinegar is pretty considerable; but in water it scarcely falls at all.

It is a general opinion in that country, that land which has been once chalked will not take it again; they acknowledge however that mixed with earth and dung it is even then excellent. They observe, that laying a slight dressing of chalk and earth or dung on a field never chalked, will take so much effect, that the same field will not answer to chalk completely. They observe also, that the chalk presently gives the land a red colour. They are of opinion that chalk is a great enemy to good grass; and affirm that a field which before chalking will run of itself to a fine head of white clover, no longer does it after chalking.

There is no saying anything against experience: only we should not draw general conclusions from partial experiments. Much of the effect of manures depends upon the soil on which they are laid. About Enfield the same chalk does wonders, which at North Mims has very little effect: the one is a rich loam, the other a poor gravel^z.

Near Sandwich in Kent chalk has been found in a very high degree to improve a sandy soil, giving it tenacity, and totally exterminating that pernicious weed the Corn Marigold, provincially called Yellow bottle or buddle, or Golds, so abundant in sandy soils. They lay on forty loads of forty bushels each to an acre. Upon pasture land it does nothing^a.

In Hertfordshire it is thought that chalk makes the land plough much better, and renders all manures much more effectual. If a field be divided in parts, one chalked, a second chalked and manured with dung or foot, ashes, &c., and a third dunged or ashed without chalk; although chalk alone has no effect, yet the other manure on the chalked part, will have a much greater effect than on the part where no chalk is laid^b.

The action of chalk on the soil is either chemical or mechanical. It acts chemically as an absorbent, contributing to preserve dry those lands which are poachy and wet; and by its attraction for acids, it may hasten the putrefaction of vegetables. It acts mechanically, by entering into the composition, and totally

altering the nature of clay, converting it by proper pulverization into a species of marl: by insinuating itself between the particles of clay, it destroys their adhesion; thus preventing it from becoming too hard in summer, and too wet in winter^c.

LIME

Is calcareous earth deprived of its fixed air and water, but which has acquired in calcination a considerable proportion of fire. Quicklime, like salts and earths, perhaps is not itself nutritive, but like alkaline salt, stimulates the vegetable, and thereby accelerates its growth, applied in due quantity and at a certain period of vegetation. If it be applied in larger quantity, it kills animals in the soil, and also small vegetables; and from the destroyed and decayed animals and vegetables a soil is rendered fertile, because impregnated with mucilage. The superabundant lime does not prove hurtful, because it becomes mild calcareous earth, by attracting carbonic acid from the atmosphere. A most satisfactory example of the effect of lime is to be found in Derbyshire, about Buxton, &c. where by throwing lime upon the heath, that shrub has been destroyed, and excellent grasses, particularly white clover, have sprung up in its room^d.

It is a common notion that lime enriches land, by supplying a salt fit for the nourishment of plants; but it contains no salt. By the fermentation it brings on, the earth is opened and divided, and by its absorbent and alkaline quality, it unites the oily and watery parts of the soil. It also readily forms the acid which it collects from the air into a neutral salt, of great use in vegetation. Viewing lime in this light, it probably may tend to rob the soil of its oily particles, and in time to render it barren, unless it be supported with rotten dung, or other manures of an oily nature. Light sandy lands containing only a small portion of oil, should not be overdone with lime, unless we can assist them liberally with animal manures. Its great excellence on a sandy soil, is its mechanically binding the loose particles, and preventing the liquid parts of the manure from escaping out of the reach of the crop. On clay, by means of the gentle fermentation which lime produces, the stubborn soil is opened; the manure readily comes into contact with every part of it, and the fibres of the plants have full liberty to spread. It is often said that lime answers better upon sand than clay; but let the farmer treble the quantity, and he will be convinced that lime is better for clay than sand. Clay well limed becomes a marl, falling in water and fermenting with acids: the air, rain and dews are freely admitted, and the soil retains the nourishment of each. In consequence of a fermentation raised in the soil, the fixed air is set at liberty, which in a wonderful manner promotes vegetation. It is the nature of lime to attract oils and dissolve vegetable bodies. Upon these principles we may account for the wonderful effects of lime in the improvement of black moor land, which consists of dissolved and half dissolved vegetable substances, and is full of oil. Lime assimilates the one, and dissolves the other^e.

Respecting the proper quantity of lime, it may be observed in general, that the greatest should be used upon the deepest and richest soils, and the least upon those that are thin and light. Upon strong clays and deep loams there is a substantial body for the lime to operate upon, containing abundance of rich substances, and consequently a considerable quantity will be required to pervade and give due activity to the whole; but as the soil is lighter, the quantity must be less, and the after-management with regard to crops, extremely cautious. In liming a single field, an attention to the quantity will often be found necessary; the soil of the higher parts being for the most part more light and free, and that of the lower more deep and compact, where the ground is unequal. On some soils, particularly where the bottom is chalk, limestone or marl, lime will be pernicious, especially if the soil be thin.

^z Young's Ann. 2. 39.

^a Legrand in Y. Ann. 4. 411.

^b Young's Ann. 19. 288. and Walker's agric. survey of Herts, p. 31.

^c Wilkinson in Y. Ann. 21. 191.

^d Pearson, rep. on Man, app. 2. 25.

^e Hunter.

Application of Lime.

First upon Fallows. It is found to produce the best effects in this case when laid on early in the season, and well incorporated with the soil.

Secondly for Turneps. By the assistance of lime whole districts, formerly useless, have been made to produce not only good crops of turneps, but also valuable crops of corn and broad clover. Its greatest value however seems to be upon light soils for these crops; inasmuch that where lime is the principal manure, they seldom sow turneps, clovers, peas or beans, except upon lands that have been previously limed. Instances of this are often met with on the uplands; where if any of the broad-leaved crops are sown, where a part has been limed, and a part not, the parts where the lime has been laid will produce a valuable return, while that which has been dunged only will hardly repay the expense of seed and labour.

Farmers differ in their methods of using lime upon turnep-lands. Some lay it on only before the last ploughing, and plough it in without harrowing: they also lay it in heaps, hot from the kiln, without being slaked. But the sooner it is laid upon the land, and the more ploughings and harrowings it receives before the seed is sown, the better it will be incorporated with the soil, and the more certain and valuable will be its effects.

Thirdly, upon Clover-ley for Oats. This is perhaps the worst way in which lime can be used. It is generally laid on in the autumn, and ploughed down in the spring; and the returns are inadequate to the expense.

Fourthly, as a top-dressing in spring, upon grass, or wheat and other grain. Upon the latter it is dangerous, unless the lime be made into a compost with dung or earth: in this form it will not only be safe but profitable. Upon the former it is no better, except upon coarse meadows, abounding with rushes and other trumpery, which it destroys.

Upon light soils, if several white crops be taken in succession after liming, the land will be worn out. A white and a green crop should be taken alternately. Upon clay lands a summer fallow is sometimes indispensable; in that case the lime should be laid on in July or August, and completely harrowed in before ploughing; two or three ploughings at least are required to incorporate it well with the soil, and a suitable harrowing with each.

Considering lime as a substance operating upon the living substances in the soil, as well as mechanically upon the soil itself, we perceive the necessity of applying a sufficient quantity at once, in order to produce these effects: for if the quantity employed be small, and the soil deep, its effects will be scarcely perceived. Many farmers imagine that lime will not answer upon their lands, because they have laid it on in small quantities, whereas in all probability they would have found a larger dose highly beneficial. On clay four or five hundred bushels are laid on for wheat, but it can scarcely be expected to answer the expense. On moss, bog, moor, &c. to be reclaimed from a state of nature, the more is laid on, the better it is.

The beneficial effect of lime on sandy land may be explained from its binding quality. But when such lands are first broke up from their state of heath, the vegetable matter is acted upon, and reduced to manure by the corrosive power of the lime. On such lands, the first crop of rie has more than paid the expenses. By attracting water lime lays land dry.

By insinuating itself between the particles of clay, it destroys their adhesion, breaks the stiffness of the soil, and gives readier access to the operation of manures, and to the extension of the growing roots of plants.

By attracting fixed air, water and acids, and by its corrosive properties, it destroys the texture of bodies, and reduces vegetable matter to a state of manure. It unites strongly with oils, and renders them miscible with water.

By being destructive to insects and vermin, it may contribute to preserve the springing corn from their ravages.

If the lime is to lie in a heap for any length of time, it should be covered with earth, to preserve it from the air and rain.

It is observed that the benefit of lime is not apparent in a dry summer, and that it does not act as a manure till it has been thoroughly slaked in the soil, by continued rains.

In Essex an excellent practice prevails, of forming a compost of lime, turf and ditch earth, at the gate of every field, ready to be applied as a manure when wanted.

Twenty bushels of lime mixed with forty bushels of sand, form an excellent top-dressing for an acre of wheat, if laid on early in the spring.

Lime is apt to subside beyond the depth of the common furrow: deep-ploughing in this case is the only remedy applicable^f.

In some midland counties a fallow is seldom made without being dressed with lime; under an idea that it mellows the soil, and makes it work well, while in tillage; and sweetens or improves the quality of the herbage, when laid down to grass. For this purpose it is fetched eighteen or twenty miles.

Two sorts of lime are in use. The Breedon lime, burnt from a very hard stone, and of singular strength as a manure; and the common lime burnt from common stones, and called Ticknall or Walsal lime.

The load heaps are generally watered as they are thrown down from the waggon; and always turned over to complete the falling more effectually.

If a quantity of lime be fetched in autumn or early in winter, to be used in the spring, when team-labour is more valuable, it is thrown up into a regular roof-like heap or mound, and thatched as a stack; a small trench being cut round the skirts to catch, with an outlet to convey away, rain water. Thus the heap is prevented from running to a mortar-like consistence by the snows and rains of winter, and thereby rendered useless as manure.

A turnep fallow was manured with Breedon lime in general five quarters to an acre; part had double that quantity, and part had none. The turnep crop received no obvious advantage, but its effects on the barley were evident. The part not limed was the worst crop, nearly in the proportion of four to three. But the part limed with ten quarters to an acre was the best crop. Whence the common notion that more than five quarters of Breedon lime to an acre is ruinous to crops, seems to be ill founded^g.

Lime is in good repute, though not in general use in Norfolk, as a manure; different opinions being entertained respecting the value of it. This difference of opinion will ever remain, while general conclusions are drawn from particular incidents. It is used by many judicious farmers even after marl, with success. Upon hot burning soils it is generally found of the greatest efficacy, and is perhaps the most effectual cure of scalds or burning patches of land that has yet been discovered: from these and other circumstances lime is here considered as a cold manure.

The general method of applying lime is to let it fall in large heaps, and to spread it out of carts upon fallowed ground either for wheat or barley. The quantity set on is about three chaldrons an acre: the price 9s. or 10s. a chaldron. From experiments made on turneps, barley and wheat, it appears that lime does not act as a manure until it has been thoroughly slaked in the soil; and it seems as if the rains of summer were necessary to promote its operation^h.

In some parts of Yorkshire Lime is used invariably on every species of soil, and in most cases with great success.

On the higher drier lands its utility is evident. At Malton, it is laid on the calcareous quarry soil with success. Its use to the loose sandy soils is fully established.

The prevailing crop is wheat on fallow. It is also pretty generally set on for rape, turneps or other crop,

^f Wilkinson in Y. Ann. 21. 195.

^g Marshall's Midl. 1. 198. and 2. 229.

^h Marsh. Norf. 1. 30, 161. and 2. 55.

after sod-burning, and spread among the ashes. It is also sometimes set on for barley. But its effect to the first crop, except of wheat or rape, is seldom perceptible.

The benefit of lime to grass is a matter of dispute; it is even thought by some to be detrimental. It seems however to be a generally received idea, that lime laid on grass is not thrown away; for whenever the land is turned up again, its benefit to corn will have full effect.

Their methods of liming are various. The worst is, laying it in large heaps, and suffering it to run to a jelly before it is spread.

Next to this, is setting it about the land in small hillocks: for although they are spread before they approach to a state of mortar, yet this method is injudicious. Lime falling in the open air, breaks into small cubical masses, which being once buried in the soil, remain in it for ages, without being mixed intimately with it. Lime ought therefore to be spread in a state of perfect powder.

It is therefore the practice of judicious husbandmen to set lime upon the land in load-heaps, and spread it over the soil out of carts, as soon as it is sufficiently fallen. Or the load-heaps are turned over, not so much to finish the falling, as to gain an opportunity of burying the granulous surface of the heaps; by which means the fragments are at least lessened, if not reduced to powder.

In the Moorlands the heaps are interlaid and covered up with moist turf or peat-mould, which bringing on a rapid fall, the whole is set on fire, and the surface kept free from granules by a covering of dry ashes.

The heaps, therefore, whether great or small, should be covered up with soil, either of the field they are set in, or that of lanes or ditches carried to them for the purpose; and if a speedy fall be required, throw water over this covering.

If lime be used on fallow for wheat, it is generally spread in July, harrowed in as fast as it is spread, and ploughed under with a shallow furrow as soon as convenient. The usual quantity is three or four chaldons to an acre¹.

Mr. Young, from various minutes made in his Eastern tour, concludes, that lime agrees with almost all soils: that it fails however on a thin loam on limestone; that it seems inefficacious on old pasture; that it has a strong effect in killing weeds; and that the greatest effect is on heath and moor-lands; where, as in the Peak of Derbyshire, it converts waste soils into fine pastures, without tillage; but the sort is a strong stone lime, burning soft and soapy, and the quantity laid on is very great, rising to three hundred and sixty or even one thousand bushels; but the common quantity is about four hundred bushels. There is great reason to attribute much of the benefit to quantity: in wastes especially, too much can hardly be laid on, because dissolving the roots of heath, and other spontaneous growth requires a powerful agent. Of their strong lime three hundred and sixty bushels are probably equal to five hundred or six hundred bushels of chalk lime. What then are five or six quarters, which is no uncommon quantity, laid upon an acre.

The Derbyshire mode of using lime in improving their heaths or moors, is first to pare the ground in the beginning of March about an inch and half thick, to turn it about in dry weather, when dry to gather it into heaps, and burn it into ashes, to spread them even over the ground, to set their lime, to spread it and harrow it all together, to plough the ground very thin, and to sow it with turneps or rape: then the spring following to sow with oats or barley, and good grass seeds: another good dressing with lime after the first crop of seeds is got; and then it may lay for pasture. Spreading the lime in a slaked state, is by far the best method. The summer months are preferred, because fewer coals are necessary for burning; in other respects the winter months are just as good for laying the lime upon the ground.

¹ Marth. Yorksh. 1. 347.

Dr. Anderson is very copious upon the subject of Lime, both as a cement and a manure, in his Essays relating to Agriculture. It is remarkable that Mr. Miller has not mentioned Lime as an article of Manure; though Mortimer and other old authors on husbandry have written sensibly about it.

MARL

Has been long celebrated as a manure. Our writers on husbandry of the last century treat largely on it. Gervase Markham has a treatise expressly on the subject entitled, *The Enrichment of the Weald of Kent*; in which he says, that Marling was the practice of our forefathers many centuries back, even in the time of Edward II. He enumerates four sorts, "grey, blew, yellow and red; all which be profitable, if they be earthy and fat, or slippery as sope: and most times little worth, if they be mixed with sand, gravel or stone."

Walter Bligh has shown the nature and use of Marl, with experiments of his own upon it, in his *English Improver Improved*, 1653.

Mortimer also has a long and good chapter on the subject, in which he mentions that there are five sorts of Marl in Cheshire.

Few substances appear under a greater diversity of forms than this, and writers on Agriculture enumerate the several varieties as distinct manures; they may all however be reduced to two sorts: Earth or Stone Marls, and Shell Marls.

The first, when they are soft and of an uniform texture are called Clay Marls; when firm and hard, Stone Marls; when they assume a thin foliaceous appearance, Slate Marls. They all agree in this, that if they be exposed for a sufficient time to the action of the air, they crumble into smaller parts, and fertilize the earth to which they are properly applied. Dr. Ainslie has shown that they all contain a considerable proportion of clay, united with calcareous matter, not differing in any respect from that in limestone.

When marl is exposed to the air, the clay in its composition absorbs the moisture of the air and rains, swells, becomes soft, and gradually crumbles to pieces.

When sand is mixed with the clay, it becomes a stone, more or less firm according to the quantity of sand, or other circumstances. But where there is any clay in the composition, it will be gradually softened by water: and it is owing to this circumstance alone, that stone-marls fall to pieces in time, when exposed to the air.

But if marl be exposed to the action of a moderate fire, the clay becomes hard, and no longer capable of absorbing water; so that the marl, if not of a very pure sort, or such as contains only a very small proportion of clay mixed with the sand, will become firmer after burning, and be in this state with more difficulty reduced to powder. Marl therefore is fit to act as a manure without any other preparation than digging it from the pit, and spreading it upon the ground; whereas lime-stone requires to be reduced to a powder by burning or otherwise, before it can be used in this way. As lime-stone is at once reduced into much smaller parts by calcination than marl can be brought to at first, a much smaller proportion of lime may be equally spread over a piece of ground than of marl; and will produce, in equal quantities a much more sensible effect. Hence a much larger quantity of marl than of lime is applied at one dressing: from one to two hundred cart-loads being a common dressing for an acre, that is from three thousand to six thousand bushels, whereas three or four hundred bushels is a very great dressing of lime upon an acre.

In so large a quantity it is reasonable to think, that the effects of the marl will be longer felt than those of the lime: for the marl being gradually broken into smaller pieces every year, will successively mix with the soil, and produce an effect similar to an annual dressing with lime.

It may likewise be expected that a full dressing of marl, will produce more improvement upon light spongy grounds, than an ordinary dressing of lime; because, independent of the calcareous matter, the large proportion of clay applied in this manner, may produce

produce some alteration on the quality of the soil. This alteration however will be different, according to the nature of the extraneous matter contained in the marl.

But all marls containing clay, it is natural to think that clay-lands will not be benefited by this circumstance; the calcareous matter alone in these cases being an useful addition to such soils. Hence light land will be in general more highly benefited than clay-land: according to the old rhyming saying—

“ He that marls Sand, may buy land,
“ He that marls Moss, shall suffer no loss,
“ But he that marls Clay, flings all away.”

Clay however is as much benefited by the calcareous matter in marl as sand is: so that a rich marl may be nearly equally beneficial in both cases.

Some clays however, free from any mixture of sand, assume the appearance of marl, and are so called, although they contain little or no calcareous matter. These may perhaps be a useful addition to light soils, but cannot be of any service to clays.

Whether lime or marl should be preferred as a manure, must depend upon the situation of the place, the purity of either respectively, the price, expense of carriage, &c. If marl be rich, and near at hand, it is in general more advantageous to him who has a prospect of enjoying his farm for a long time than lime. But when it must be brought from a distance, lime will be the cheaper manure^k.

Shell Marl is a whitish powder formed by the gradual decomposition of shells. It is therefore a calcareous substance, and is mixed with mud or parts of of the mossy stratum, under which it is generally found, fragments of rotten wood, &c. From this extraneous admixture it is more or less pure. It is usually a light spongy substance, very slightly coherent. Since it admits of being spread as equally as lime, it may in general be carried with profit nearly as far; except that shell-lime of the best sort wants a great proportion of its moisture, air, &c. which greatly diminishes its weight.

Shell-lime is however a great treasure wherever it is discovered; and where fuel is scarce and dear, is of much greater value than even the best limestone, since it produces the same effect upon the soil with lime, can be as equally spread, and can be obtained at a much smaller expense^l.

Dr. Hunter has an elaborate essay on the nature and properties of Marl. From his analysis and experiments it appears that marl consists of clay, or a mixture of clay and sand; and of a real calcareous earth, differing in no respect from that of limestone and the shells of animals. According to him, the essence of marl consists in this calcareous earth. All bodies however which have calcareous earth are not marl. To entitle them to this name, they must fall into powder upon being exposed to the air. Hence the purity of marls will be in proportion to the quantity of calcareous earth in their composition.

The different proportions of the constituent parts of marl in the several varieties of it, making a choice of marls for particular soils a matter of consequence; it is desirable to know the process for discovering this proportion.

Having dried and powdered the marl to be examined, pour upon any given weight of it a small quantity of water. To this mixture well shaken add a little acid of sea salt, or any other mineral acid, except the vitriolic; and when the effervescence is over add a little more. Repeat this addition at proper intervals, till no more effervescence ensues. Then put the whole, with an equal or greater proportion of water, into a filter of gray paper, the weight of which is known. When all the fluid parts have passed through, fill up the filter again and again with warm water. Thus the dissolved particles of calcareous earth, adhering to the residue, or entangled in the pores of the paper, will be washed away, and nothing but what is really insoluble will remain in the filter. This residue,

with the filtre must be dried and then weighed. The difference between its weight, and the original weight of the filtre, gives the weight of insoluble parts. This being known, the proportion of calcareous earth in the same marl is evident. The proportions of clay and sand in it are discovered by subjecting the residue to a proper elutriation or washing, which is thus performed.

Having weighed the dry residue, mix and shake it well with a sufficient quantity of water. After allowing a little time for the subsiding of the grosser parts, let the water with the finest particles of clay suspended in it, be gently poured off. Add more water to the remainder, and after sufficient mixture and subsidence, pour that off likewise. In the same manner repeat the operation again and again till the water comes off perfectly pure. The substance which then remains is sand, mixed perhaps with some flakes of talc; and whatever this substance wants of the weight of the residue, is the weight of pure clay, carried away by the water in the washing.

The effervescence ensuing upon the application of acids to marl, although it shows the existence of calcareous earth, yet is no indication of the quantity of it: for the effervescence varies, according to the strength of the acid employed; but still more according to the penetrability and other more latent qualities of calcareous bodies.

The calcareous earth of marl is equally calcinable to quick-lime, whether it is exposed to the action of fire before or after its separation from the other earths which it contains.

Marl indeed has a very intimate affinity to limestone. A gentle gradation from one to the other may be easily traced out; and it will be difficult to establish the precise limits of either. Both are found in continued strata; both dissolve in part with considerable effervescence in acids, and both yield by calcination a quick-lime. There are however two remarkable differences: marl, by being exposed to air, falls into powder; limestone retains its original stability. On the contrary, limestone, after undergoing the action of fire, is reduced to powder by the application of water; marl suffers no change^m.

In Norfolk it is well known, that through the fertilizing quality of marl judiciously applied, lands which were a scanty maintenance for sheep and rabbits, have been rendered capable of fattening bullocks, and bearing great crops of corn.

The principal marls used in this county are the Chalk-Marl, such as that of Thorp-Market in the hundred of North Erpingham: and the Clay-Marl, such as that of Hembsby, in the hundred of East Fleg. The soft Chalk also of Thorp next Norwich, commonly called Norwich Marl, and the hard Chalk of Swaffham, are used as marls.

1. The Chalk-Marls or White Marls are not found in strata, but in nodules or distinct masses, irregular, of different forms and sizes, having the appearance of a dirty, rough, friable chalk. One hundred grains contain eighty-five of chalk, ten of sand, and five of clay.

2. Clay-Marl is found in extensive beds of considerable depth. Its colour, when dry, somewhat lighter than fuller's-earth. Its contexture that of gritty fuller's-earth, interspersed with granules of white chalk. One hundred grains contain fifty of clay, forty-three of impure chalk, and seven of sand. They both fall in water, without dissolving in it; they both break readily in the open air, and mix freely with the soil: in the fire, the first burns to lime, the second to brick. In acid of sea-salt, part of the first is dissolved, but the greater part is indissoluble; of the second almost the whole is dissolved.

3. The soft Chalk, forming a bank of the river Yare, is a pure calcareous earth, ninety-eight grains out of a hundred being soluble in acid of sea-salt. The celebrated chalk of Betchworth-hill, which is fetched twelve or fourteen miles as a manure by the Sussex farmers has a residue of more than one-tenth of its weight, whereas this affords only one-fiftieth.

^k Anderson, Essays 1. 416.

^l Ibid. 1. 426.

^m Essay 16.

4. The hard chalk of Swaffham is nearly a pure calcareous earth. They neither fall nor dissolve in water, and burn to lime in the fire. They are not marls, but are used for manure as such.

The name of Marl is in some places applied to all white unctuous earths, whether they contain any calcareous matter or not. Clay-Marls are commonly called Clays; and the operation of marling with these is called Claying. Hence one seeing the good effect of Clay-marl, supposes that all clays are fertile; and using a bed of strong brick-earth for manure, which he finds of no service, concludes that all clay-marls are unprofitable. Another seeing this, fetches marl from a great distance, while he has perhaps, on his own land, an earth of a quality equally good with that which he is at the expense of fetching.

In Norfolk the quantity of marl set on an acre, where it is fetched from a great distance, is ten or twelve loads; but where it is on the farm, twenty to thirty loads, or tons, and sometimes forty, are allowed to an acre.

When it is known or supposed, that land, from having been recently marled, or from some other cause, is not improveable by marl alone, it is made into a compost with dung; and this has been found to answer.

They judge that land requires marling, by its producing Buddle or Corn-Marigold, and Smart-weed (*Polygonum pensylvanicum*). Marl certainly extirpates these weeds, and checks quicks, quich or couch (*Triticum repens*).

Marl is set on for turneps, for barley, and frequently upon the second year's lay for wheat.

The expense of marling must vary with the quantity, distance and state of the pit. Supposing twenty-five loads an acre to be set on, the distance from a quarter to half a mile, the expense of casting 3d. a load, and that a team draws out and sets on the twenty-five loads in two days, the whole expense of marling an acre will be 40s.^a

Mr. Young concludes from the minutes made in his Eastern tour, that marl agrees with both stiff and light soils. The great success attending it in Norfolk shows how well it answers on sands and light sandy loams: but numerous experiments on heavy and light land, prove it best on the former. It has a strong effect in mellowing the land, and making it work better; by which we are to understand that it renders wet lands drier, and stiff ones more friable; so that both may be ploughed earlier in the spring, and one earth have the effect in pulverization of several. It also appears to clean the soil of weeds; though whence this arises is difficult to conjecture, since it is a weak solvent in comparison with lime.

From experience of marl on various poor sands in Norfolk, it appears not merely to improve by giving them tenacity, but to be a great fertilizer: it is difficult to comprehend how mere adhesion of parts, naturally poor, can produce such great crops; but the quantity of rich soil carried on is so great, that it creates in a manner a new staple. The duration of the effect indeed seems to depend much on quantity. On sand in Norfolk it lasts twice as long as on loam in Surry, &c. The same quantity will last longer on a stiff soil than on a loose one; as a dressing of yard dung lasts longest on a stiff true tile clay.

The expense of marl at some places is very great. About Yarmouth, in Norfolk it is 7s. 4d. a cart-load. About Colchester they have it from Kent, it costs them from 7s. to 9s. a waggon-load; they carry it ten miles, and lay seven waggon-loads on an acre.

Marl has been much used in Staffordshire for ages back. In many places, they say, the land has been over-marled and is rendered harsh; this is restored by fallowing and liming. It is in general only in loamy soils that a true marl is found; in mixed gravelly soils they have a friable brick clay; which is used on such soils with good effect: the quantity laid on is generally one hundred and twenty-eight cubic yards on an acre, which adds nearly an inch to the staple of the soil; the

^a Marsh. Norfolk.

expense is about 25s. an acre, besides carting out, which is worth 50s. an acre more. It is thought to be much more adapted to tillage than pasture, and its good effects on corn-lands are long visible: in thin light lands it endures for ever, as it not only consolidates the soil, but gives it staple.

Marl is the foundation of improvements in agriculture in Lancashire and Cheshire. They have several varieties of it, valuable in proportion to the calcareous matter which they contain, or the nature of the soil to which they are to be applied. To stiff clay-lands the blue or reddish slate-marl, or shell-marl, containing much calcareous earth with some sand, are more beneficial, but to light sands strong clay-marl is more genial.

Barren sands and poor heaths have been rendered productive by marl, but at a great expense: indeed there is reason to believe that the greatest part of the southern district of Lancashire has been reclaimed by it.

The general custom is to lay upon the great Cheshire acre of eight yards to the rood, from three to seven roods of sixty-four square yards each. From four to five roods may be considered as the average quantity; but it ought to be in proportion to the quality of the soil and of the marl. A Cheshire acre contains two acres, eighteen perches and a half statute measure. They lay it upon grass-land, which is intended to be broken up the ensuing spring. Sometimes a coat of marl is spread upon the green-sward, and left unploughed many years; in this case the grass sometimes receives considerable detriment, the marl sinking down in a body without incorporating with the soil: though when marl has lain several years in this state, the subsequent crops of corn have been enormous.

The general rule is to begin marling in May or June, in short when spring feedings are over, continuing as opportunity serves during the summer months: it is not however unusual to take a crop of hay first. In either instance, the effects of the marl become speedily visible by the rich verdure of the grass. Marl is spread immediately, but left in a rough lumpy form, that it may be exposed as much as possible to the weather: if it contains much clay, it will remain many weeks or months; but in general the rains of autumn and the frosts of winter reduce it to an unctuous but friable material, the dispersion of which is easily effected with clotting beetles, spades or harrows, a week or a fortnight before ploughing. By this long exposure it is more than probable that the marl may acquire by attraction its most nutritive qualities. The turf, when ploughed under, answers the purpose of a rich vegetable manure.

Many of the Lancashire farmers ruin the land thus manured, by taking repeated crops of oats, with the interval of one summer fallow for wheat, by way of cleansing the land; after which barley and oats again, so long as the land will produce any thing; and then laid down again with weeds and couch-grass. Whereas their land would be kept in heart, if they would take one crop of oats; plough the stubble immediately to expose the marl to the influence of the frost; fallow with manure for turneps: then barley, clover, wheat, turneps fed off with sheep, and barley again with well-dressed hay-seeds and white clover and trefoil for a perennial hay, or at least for some years. The land thus husbanded will produce in a most exuberant degree, and at the same time is rendered perfectly clean from all weeds, without being in the least harassed. Even poor sandy soils are thus rendered capable of producing the best herbage, and under proper management may be depended upon in all seasons.

Leicestershire farmers object to marling, because it is unfavourable to grass. In Lancashire they can have no good grass without it. This difference arises from the application. If marl, according to the Leicestershire system, be put upon a turnep fallow, and immediately ploughed under in its crude state, no wonder it produces no grass and little corn. In Lancashire it is exposed at least five months, and always to a winter's frost; hence arises its benefit to grass.

^a Pitt, Survey of Staff. 127.

The original marlers in Norfolk, and their successors grew rich: at present we are told, that the land will not bear marling twice; an idea utterly discountenanced by the Lancashire practice. And from this idea it arises that Norfolk is said to require another system of cropping; that turneps and clover come round too often, &c. What are we to infer from this? Probably that the same material, properly applied, that caused the original improvement will restore the land to its former fertility: at any rate the experiment is worth trying.

In Lancashire they think it a much better practice to have the marlings repeated, with a gentle covering, than to lay a strong thick coat to last many years.

Marl does not produce its full effects upon the soil, till it is incorporated with it by several ploughings, and dung or other oily manure mixed with it.

One hundred grains of Lancashire marl contains from forty and a half to thirty-two seven-tenths of flinty sand, from thirty-nine to forty-seven three-tenths of clay and silicious earth, and from nineteen and a half to twenty-two calcareous earth^p.

Mr. Kirby, near Ipswich, manured an old sheep-walk with clay-marl, eighty loads an acre of thirty-six to forty bushels each. It is left a year on the walk before breaking up, and then ploughed for peas.

Mr. Coke, of Holkam in Norfolk, who has marled many hundred acres, always spreads the marl on the new lay, that is on the seeds after the barley harvest, from eighty to one hundred loads an acre, and on these dry soils it does little injury to the grasses. By this mode, the marl is on the ground at least three years before the plough enters, which is far better and more durable than ploughing it directly^q.

Mr. Macro, of Barrow in Suffolk, is convinced, that about seventy square yards or loads of marl is the properest quantity to be laid on an acre, pole measure. If more be laid on, it will be longer before it incorporates with the soil, and therefore before any benefit can be received from it. The effect however of a larger quantity will continue longer.

In open fields marling seldom answers the expense, for this is only a beginning of improvement: by going on directly with a course of ploughing, which cannot well be avoided in shiftable fields, the marl is often buried and lost, before it mixes properly with the soil, especially if turned in too deep the first earth, of which great care should be taken. Marling therefore can only or chiefly answer on inclosed land, that can be managed as the occupier pleases. In that case, it should be laid down with clover, ray-grass and trefoil, the spring twelve-month before laying on the marl, and remain at least six months after, that it may have time to sink into the flag, before it is ploughed up, and then there will be little danger of losing it, as it will be in some measure incorporated with the soil.

No pains should be spared to break all the lumps, and to get it fine by repeated harrowings and rollings, and to have the stones picked and carried away, that the grass may get through, for stock to be grazing upon it, which is the great and finishing improvement.

After the land has been got fine, and laid six or eight months or longer; in february or the beginning of march, break it up, and sow it with peas. Then fallow for turneps, giving it four or five earths, with harrowings, &c. After feeding off the turneps upon the land, sow barley, and lay it down again with clover, trefoil and ray-grass.

Let it lay two summers, after which, by either folding or dunging it, if not too poor a sand, there will be a good chance for a crop of wheat: after which fallow again for turneps and barley, or rape-seed and oats; and so on, always bearing in mind, that taking two following crops of corn, without a fallow or summer grazing, will soon bring new improved land to its former impoverished state^r.

Let us not suppose either that Marl is of modern application in agriculture, or that no one before our

^p Höl's Reports, 111 to 125.

^q Young's ann. 2. 117, 370.

^r Ibid. 1. 286.

times could make an experiment. That good old practical writer Walter Blith calls it a gallant manure. Observes that slipperiness or greasiness is no infallible sign of its goodness; but that the truest sign is its *incompoundness*; "and if it slack also immediately after a shower, and shortly after turn to dust after it is dry again, and doth not congeal and conglutinate like to tough clay, but dissolve; fear not the operation, adventure the experimenting of it, the fruit will be answerable to thy hopes."

He then relates an experiment of his own upon a miserably poor gravelly pasture with some red marl; which he found in an old clay pool. On part he laid the mud from the pool, some he dunged, some he folded, the rest he marled except one land which he did not manure at all. He brought the whole into good tillage, and sowed it with wheat and rie mixed. The folded land produced the best crop, the next that which was dunged, the mudded land came in third, and the marled land last, though the crop on that was reasonably good: but on that he laid nothing, he reaped nothing, not so much as straw. The next year he sowed barley, and upon his marled land was most gallant corn, so was his mudded land, the mucked land was the worst by far; on the unmanured land he sowed oats, and reaped nothing. Then he marled the lands that had been mucked, and the land which had not soil laid upon it; which brought forth as gallant corn as England yielded. After three or four crops the mud decayed also; he then marled it, and had the same fruit as aforesaid. The marled land he kept in tillage nine years, without any addition of compost or soil, and had as goodly corn as ever grew; and ever since, with some small addition of fold or manure, that has out-stripped all the rest^s.

It has been shown above that true Marl consists of calcareous earth, clay and sand in different proportions in the several varieties. The calcareous earth is involved as it were in coatings of the clay. May not this covering, by defending it from the sudden action of the acids contained in the ground, and preventing the too rapid effects of the calcareous earth itself on the putrescent and oily matter of the soil, account for the greater permanency of this compound than of calcareous earth alone either in a caustic or mild state? For although it appears that marl does not form any salt with the acid of the air, even from long exposure to the atmosphere, yet it is probable that when powdered and mixed with the soil, it will not only unite with the acid which it may find there, but also attract it from the air.

This suggested to Dr. Hunter, an idea that where natural marl could not be obtained, an artificial composition might be made, that should answer nearly the same purposes in agriculture.

Many countries which contain no marl, have plenty of clay, where lime or chalk may be procured at an easy expense; and sand, which is of less importance, and not always found in marls, is to be met with in most districts. Clay, by the addition of water, becomes soft and ductile; in this state it may easily be mixed with any portion of chalk or slaked lime, and a due quantity of sand. The proportions may be different, according to the nature of the land to which the marl is to be applied. For light lands a greater quantity of clay will be proper: for stiff strong land more calcareous earth and sand; and for very strong clay it may be sufficient to apply a mixture of calcareous earth and sand, with little or no clay.

The lime should not only be slaked, but exposed to the air, and often turned for several months.

The quantity of clay and sand together in good marls is not great; in some one-third, in some one-fifth, in others not above one-sixth or one-seventh of the whole mass.

This artificial marl may be made, either by incorporating the chalk or lime with the moistened clay by treading or beating; or else by throwing layers of lime or chalk and clay alternately, and then exposing the heap during the winter to the weather, by which

^s England's improvements, p. 137.

means it will moulder down, and become a sufficiently uniform mass.

When we consider the solvent power of quick-lime, this mode of producing an union between the calcareous and argillaceous earths will appear very feasible¹.

CRAG.

Is a sort of Shell-Marl, being chiefly shells whole or in a decaying state mixed with calcareous earth, which probably is nothing but the shells perfectly decayed. The benefit of it, in Suffolk, for turneps, on a poor sand, has been found equal to that of dung; yet the greatest effect was on a moory bottom. The Sandlings, a tract of ground in that county near Woodbridge, seems to be upon a foundation of this red shell-marl or crag. There are very large deep pits on every farm in this district, whence immense quantities were dug for its improvement, when first broken up from its waste state of heaths at 4d. an acre, to fields covered with fine crops of turneps, carrots and corn, at 5s. 10s. and 15s. an acre. The use of crag is however dropped here, except for taking in walk land, as they call it, or sheep-walks. On old improved lands they never lay it on alone, but mix it with dung, earth or ouze; thinking that it makes light lands blow more².

Mr. Young, in his Eastern tour, says that Crag is dry and not in the least soapy, that it does not effervesce in acids, and does not fall in water; that notwithstanding this, all the effects and even more produced in Norfolk by sixty, eighty and one hundred loads of Marl, are gained in Suffolk by ten or twelve of this; and that it lasts even longer, which they have discovered from an idea, probably a false one, that land once cragged, will not bear a repetition of it, except in a compost with dung; and accordingly they have many fields, in which it has lasted with such additions, fifty, sixty and even one hundred years. The nature of the poor sands in that country is quite changed with it, and they gain an adhesion, which they retain for ever. It is also a great fertilizer, as appears from the great and sudden increase in the crops after it.]

SHELLS and SHELL-SAND.

Sea-sand and shells are in several parts of England used to great advantage, especially in Devonshire, where they are at the expense of fetching the sand and shells on horses backs, twelve or fourteen miles. The land on which they lay this manure, is a strong loam inclining to clay.

Coral, and such kind of stony plants which grow on the rocks, are very beneficial to land; but as these bodies are hard, the improvement is not the first or second year after they are laid on the ground, because they require time to pulverize them before they can mix with the earth to impregnate it. Therefore dressings of this kind are seldom used by tenants, who want to reap the fruit of their labour as soon as possible. But these manures are much better for cold strong land, than for that which is light and sandy. In some countries, at a great distance from the sea, have been discovered great quantities of fossil shells, which have been dug out of the earth, and used as manure, which have improved the ground a little, especially strong land.

Where the land lies near the sea, so that either sand, shells, corals, wrecks, or sea-weeds can be obtained at an easy expense, they are by far the best kinds of manure, because they enrich the land for several years; for as their salts are closely locked up, they are communicated by degrees to the land, as the heat and cold causes the bodies to pulverize, and fall into small parts; so that where sand and smaller kinds of sea-weeds are used, if they are laid on land in proper quantities it will enrich it for six or seven years; but shells, corals, and other hard bodies, will continue many years longer.

[Mortimer mentions three sorts of sea-sand used in the West of England for manure. That about Plymouth and the southern coasts is blue, or gray like ashes. Westward, near the Land's-end it is very

white, and in Scilly glittering. On the north sea, from about Padstow, and eastward to Lundy, it is of a brown, reddish, yellowish colour. In Falmouth, near St. Maw's there is a sand or rather coral, that lies under the Ouse: the red is reckoned the best, the blue next, and the white worst. All these sands are composed chiefly of shells. When they lie near they put on about sixteen tons upon an acre, and less, as low as one ton, as the distance is greater. They spread it as soon as it is got home, commonly take four crops of corn from it, and then lay the land down for pasture, for six or seven years, before they plough it up again³.

Shell-sand is very common on the east coast of Scotland. All along the coast of Fife, especially about St. Andrew's. On the north coast of Aberdeenshire. In Banff-shire, and all along the coast of Sutherland and Caithness, the sands upon the shore consist almost entirely of shells⁴.

Cockle-shells are laid on stiff clays in the Isle of Shepey thirty cart-loads to the acre.

All shells are principally calcareous earth, and when burnt afford the best of lime. In a recent state they are of little value as a manure, unless they are broken very small; but in a decayed state they resemble shell-marl.

Upon deep loams and strong clays their operation is similar to chalk or marl; but upon light gravels or sands, little benefit is to be expected from them, unless they are previously made into a compost with dung, clay or loam. When such lands are in grass, top-dressings of such a compost will produce great effects; and if judiciously treated afterwards with dressing of any of the different earths, their value will be much improved; and the thinner the soil, the greater will be the profit arising from this management. On clay pastures, shells in their simple state will correct acidity, destroy rushes, and render the soil less retentive of moisture.

When shells are burnt they are in the state of lime, and must be used as such.

Sea-sand is an excellent manure on a summer fallow for wheat: but being repeated two or three times loses much of its good effects, without a change of tillage⁵.

Straw being scarce at Yarmouth, they litter their stables with sea-sand; as the bed becomes soiled or wet, fresh sand is scattered on, until the whole is in a manner saturated with dung and urine; the stall is then cleared, and a fresh bed of sand laid in. Thus muck of a quality singularly excellent is produced⁶.

Sea-sand is much used by florists in Holland, where they draw their parterres into ridges before winter, and spread it on the tops of them.

SAND.

Can scarcely be considered as a manure; it is however beneficial upon all clays, and other tenacious stiff land, by separating their parts, and destroying their cohesive quality; by which means the sun, air, and frost penetrate them the better.

Sand is likewise of great use upon rough coarse meadows; nothing fines the surface more, or produces a thicker sward of Dutch clover⁷.

The best sand is that which is washed out of highways, or from hills by the rains, or that which lies in rivers.

Mr. Bligh advises, for the increasing of soil in winter, where sheep cannot be folded, to have a sheep-house to feed them in, into which he would have brought twice a week several loads of sand out of the highways, streets, or sand-pits, which by the fatness of the sheep's-dung and urine will make an excellent manure for cold clay-lands⁸.

One hundred and sixty loads of sand upon moorish pasture land, and forty upon clay land, wrought wonderful effects, and produced white clover in great abundance⁹.

¹ Husbandry, ch. 10. p. 85.

² And. Ess. 1. 431.

³ Jenkinson in Y. ann. 6. 247.

⁴ Marth Norf.

⁵ Kent's hints, 78.

⁶ Mortimer, ch. 9. p. 83.

⁷ Legrand, Y. ann. 4. 413.

⁸ Geor. Essay, 19. 449.

⁹ Young's Ann. 2. 119, 130.

In a conversation which I had with Kliyog, the Swiss rural Socrates, as he is called by Dr. Hirzel, I found that the mixture of sand with his stubborn clay land was one of his principal improvements. I examined the sand, and could not find that it had any fertilizing qualities in the smallest degree; it acted therefore merely by separating the parts of the clay.

CLAY.

As Sands are an improvement to Clays, so on the contrary Clays are an improvement to gravelly and sandy lands, by making them more solid and tenacious. I have frequently remarked clayey and sandy grounds lying almost contiguous, without any attempt having ever been made to make an experiment on this obvious interchange of soils.

Mr. Legrand of Gilton-house near Sandwich has used clay with astonishing success upon a soil almost entirely sand: but it is not a single or slight dressing that will do any good: one hundred and sixty loads an acre make a wonderful improvement^e.

It must be remembered that Marl and Clay are often confounded, and that marling is frequently called claying.

The extent to which claying has been carried in the sand districts of Suffolk is very considerable. An excellent cultivator near Bury, though not on a very large farm, has carried 140,000 loads. But when this clay is not of a good sort, that is, when it has very little clay in it, but is rather an imperfect hard chalk, there are great doubts how far it answers, and in many cases it has been certainly spread to little or no profit. The usual quantity is from sixty to eighty, and sometimes one hundred loads, of thirty-two bushels, to an acre. The duration, and indeed the whole effect, depends much on the course of crops. If the plough be too freely used, and corn sown too often, it answers badly, and the effect is soon lost; but with good management it lasts twenty years. In many cases, a course of fallow and rye or light oats is converted to fine barley, clover and wheat, and the produce multiplied twenty fold: but the cases in which the return has been inadequate are not a few: and on soils that will yield faintfoin, it is more profitable to cultivate that, than to clay the land for corn^f. Probably this clay was more properly a clay-marl.

In stiff deep clays, where manure is not to be had in sufficient quantities, and fuel is cheap, it may be no bad process to burn some of the clay, which will not only break the cohesion of the soil and make it more easily cultivated, but will also render it less retentive of moisture, and thus more friendly to vegetation. Upon thin soils, it is evident, any attempt at burning would be highly improper.

Mr. Belcher informs me that he has found a surprising effect in half-baking earth, which renders dead barren earth immediately productive. It must be only half-baked; for if fully baked, it in a great degree reverts to its pristine sterility. He does not mention whether it was clay or vegetable earth that he baked: the nature of the latter we know from paring and burning, but we have not had experiments enough to ascertain the effects of burning clay.

GYPSUM, *Plaster or Plaster of Paris*

Is calcareous earth united with the vitriolic acid. It does not effervesce with acids, and is not without difficulty soluble in any. When heated a little below ignition, it undergoes a motion similar to that of ebullition, from the dissipation of its aqueous parts, and falls into powder. If taken up, when this motion ceases, and sprinkled over with water, it soon concretes, and hardens by reason of its sudden crystallization. It is entirely soluble in a large quantity of water, and may be composed by saturating the vitriolic acid with calcareous earth. What we commonly call hardness in water is owing to gypseous selenites dissolved in it.

Gypsum has lately been extolled in several foreign publications, as a manure of the highest value in Germany and particularly in America, where, according to

Mr. Chancellor Livingston, of New-York, it has produced a new era in agriculture^g.

This gentleman, after having continued his experiments three years, concludes, 1. That Gypsum in small quantities has no visible effect on wheat or rye.

2. That it is uniformly beneficial to Indian corn, unless in very rich or wet soils.

3. That it is beneficial to flax, on dry poor sandy land.

4. That it is peculiarly adapted to the growth of clover on all dry soils, or even on wet soils in a dry season.

5. That limestone pulverized has similar effects with gypsum.

6. That the effects of gypsum as a manure are hardly perceptible in the vicinity of the sea.

In the experiments of George Logan, Esq. it appears that gypsum was useful even to crops of wheat and rye. This gentleman remarks, 1. That there is no difference between the American gypsum, and that which he had from Europe; 2. That it acts as an immediate manure to grass, and afterwards in an equal degree to grain. 3. That one dressing will continue in force several succeeding crops.

He adds, that its not producing any remarkably beneficial effects, when used as a top-dressing to grain, may arise from two causes; first from the small quantity made use of, which is lost in the rough ground; and secondly, from the short time of its application. That it has been found of advantage to Indian corn, but that it is necessary to apply it immediately to the corn, as it appears above ground, and that in a considerable quantity. That early in April is preferable to any other season for applying it to pasture; for the grass being just shooting at this season, the small particles of the gypsum are retained about the roots, and prevented from washing away. On stiff clay soils it will produce an increase of vegetation, but not sufficient to pay the expense of the manure^h.

In general it is said to have had great effects on what they call their worn out lands in America.

After having broken the plaster into small pieces by a hammer or stamping-mill, they reduce it to powder in a common grist mill, and in this state spread it upon the ground in a calm day. In misty weather it will spread to most advantageⁱ.

The most approved quantity for grass is six bushels to the acre. It has been used in the state of Pennsylvania ever since the year 1778, if not sooner, and lasts from seven to ten years; but its continuance very much depends on the nature of the soil to which it is applied^k.

By a letter to Capel Loft, Esq. it appears that Plaster was come into general use as a manure in Pennsylvania, in the year 1789; and that the grounds within ten miles of New-York, which were deemed old worn out fields, have by the use of this manure been so recovered as to support fifty head of cattle, where in its former state one could not live^l.

When I was in Switzerland in the year 1778, I found it in common use on their artificial pastures of lucerne, &c. at least in the neighbourhood of Geneva.

It is said to have been discovered as a manure in Europe by Mr. Meyer, a clergyman of uncommon merit in Franconia, in the year 1768. It has been applied with signal success in Germany, Switzerland, France, &c. and if it has not met with the same success in England, it must probably be, because the calcareous principle prevails here so generally^m.

Sir Richard Sutton and others who have tried gypsum here, have not been able to trace any effects from it. Mr. Proctor Anderdon of Henlade, Somersetshire, concludes from some experiments, that on many plants, or in many soils, gypsum powder will have no effect; but that it has some effect on old clover in a loamy soil; and that a greater effect may reasonably be ex-

^g Wilkinson in Y. ann. 21. 200.

^h Young's ann. 20. 88. American Museum, vol. 6.

ⁱ Y. ann. 10. 316, 319.

^k Ibid. 15. 89.

^l Ibid. 16. 300.

^m Kirwan, Mem. Irish Acad. and Y. ann. 23. 146.

^e Y. Ann. 4. 412.

^f Young's Survey, 28.

pected from it, when applied to younger plants of the same sort or nature.

This agrees with the American accounts, Clover there being the crop more benefited by gypsum than any other. Calcareous earth indeed is generally acknowledged to be favourable to the growth of clover: but the addition of the vitriolic acid, a suspected poison in agriculture, would naturally have induced the agricultural chemist to have rejected gypsum as a manure^a.

According to Kirwan, the rationale of its effects may be deduced from its extraordinary septic power, for it is found to accelerate putrefaction in a higher degree than any other substance.

Mr. Smith, of Woodstock near Sittingbourne in Kent, affirms (in the year 1795) that from the trials he has made of it for three years past on chalky and dry calcareous soils, laid down with saintfoin or clover, the effects have been astonishing, and entirely correspond with the American accounts^b.

He applied six bushels to an acre; the Americans seem to have been using smaller quantities, even so low as one bushel to an acre.

Mr. Belcher recommends six bushels of gypsum powder to be sown on an acre, from the middle of april to the middle of may, and affirms that it has astonishing effects on clover, saintfoin and other leguminous plants, commonly called artificial grasses.

In the few instances where gypsum has hitherto been used in England, it is said to have produced astonishing effects in some, in others no visible advantage has been derived from it, and in several it seems to have done mischief.

Upon lands where no stimulating substance has been applied, and which contain little or no calcareous earth, gypsum will be a good manure: accordingly in America, where the soil in most places is composed almost entirely of vegetable earth, from decayed herbs, leaves and branches, and where scarcely a particle of calcareous earth is to be met with, gypsum will produce good effects: but upon lands which have been long in a state of cultivation, which have been frequently manured with substances containing much alkaline matter, its effects will not be perceptible: but where acid prevails, its bad effects will be visible at once. Gypsum therefore is a manure that can seldom be used with advantage in this country upon arable lands; there being few situations in which the soil does not either contain calcareous matter in itself, or has received it as a manure.

ASHES,

Of all kinds of vegetables, are an excellent manure or top-dressing for land.

Pot-ash, or fixed Vegetable Alkali.

In places far removed from the means of improvement, a substitute for common manures, that is of easy carriage, and can be had at a moderate expense, must be valuable.

From experiments that have been made it appears that 200lb. of pot-ash are sufficient for an acre of strong land; for lighter soils much less is required, if laid on by itself; on these however a compost of this and oil, incorporated with mould, will be the best way of employing it. Upon strong clays and deep loams however, it ought always to be applied by itself. When the expense of carriage is considered, pot-ash will often be found a cheaper manure than lime. In one respect it is superior, for the union of pot-ash with all the different acids forms a neutral, which is in some degree useful in vegetation; whereas when lime meets with the vitriolic acid, it is almost entirely lost.

A considerable part, if not the whole of what is used in manufactures, glass excepted, will be useful as a manure, after the purpose of the manufacture is served; particularly in bleaching; the alkali of which will be found improved, in consequence of the mucilage or oil which it has imbibed from the cloth.

Kelp is a mixture of fossil alkali or soda, and sea-salt, besides earth or stones. All marine plants abound with this alkali.

^a Wilkinson in Y. ann. 21. 202.

^b Young's Ann. 24. 359. and 25. 334.

The operation of kelp depends upon the same principles as lime, pot-ash, &c. Like them, it produces the best effects upon deep loams or clays; and the benefit will be still farther increased, if lime be made use of along with it. Kelp should be broken very small with large hammers, or by passing it through a mill.

Bleacher's ashes or *refuse*, consist principally of the hard undissolved parts of pot-ash, kelp, weed-ash and barilla. Alone they are too stimulating, and ought never to be used but with earth or earth and dung; they answer well with blood, garbage, and putrid animal substances. They are generally laid upon fallows for wheat. The greatest advantage derived from them is upon clay or deep loams. Upon rushy grounds, or coarse wet meadows they will be found particularly useful.

Soap-ashes are in some measure the same as the refuse of bleach-fields. They principally consist of lime, which is used by soap-makers to deprive the alkaline salts of their fixed air: the addition of lime to soap-ashes is therefore unnecessary. They are generally made into composts with earth and well fermented dung, in the proportion of two loads of dung to one of earth; the ashes are then added, in the quantity of one load to ten of this mixture, turning and incorporating the whole completely.

The quantity necessary for strong clays or deep loams is ten cart-loads to an acre. If the dung has been well fermented, perhaps the most profitable way of using this compost will be as a top-dressing harrowed in with the grain; taking care however that the caustic quality of the ashes is properly blunted by a sufficient mixture of dung and earth.

These ashes, when beat small, may be made into a rich compost with oil and earth, and used as a top-dressing for young crops. They will destroy slugs and vermin of every description: and are therefore highly valuable on lands where the early wheat is injured by the worm. Laid upon grass-lands in the end of autumn, this manure produces a deep verdure during the winter, and an early vigorous vegetation in the spring; it is therefore particularly calculated for cold wet pastures.

Soap-ley consists of alkaline salts and oil, and is produced by the solution of soap in water. The quantity of this that is daily wasted is immense, and forms a contrast to the strict economy of the Chinese, where even the soap-suds of the barbers are said to be carefully preserved. It should all go to enrich the compost dunghill.

Fern-ashes. No vegetable affords so much pot-ash as Fern, but it is better to use it as litter for manure, than to burn it for the ashes.

Fern-ashes ought not to be used by themselves, unless upon the heaviest and deepest soils, for corn-crops, or upon wet four meadows: upon other lands they should be mixed with dung and earth.

Fern ought to be cut before it decays, either for litter or the ashes; for all plants that contain much fixed alkali, when withered, are liable to be robbed of it by every shower that falls^c.

Peat-ashes are principally employed as a top-dressing upon clover or clay-lands, and when rain falls immediately, the crop is benefited by the use of them: but upon thin soils, when dry weather succeeds, they produce no effect, or even do harm, especially if they have been prepared from the richest sort of peat.

The peat of some mosses contains a considerable quantity of fixed alkaline salts, whilst that of others contains scarcely any. All peats however agree in affording more or less alkali when burnt, and the value of their ashes depends entirely upon the quantity of fixed alkali which they contain; for the burning of peat, like every other vegetable substance, is utter destruction to its other component parts: the oil being dissipated in smoke, and the vegetable earth rendered entirely useless.

The fixed alkali contained in peat is from a twenty-second to a thirty-second part of its weight. Where

^c Bath papers, 1. 113.

the peat is so rich as to afford a twenty-second part, it is an object to burn it for the ashes; but less trouble and very small expense will subject it to the process of fermentation, by which the oil and vegetable earth will be saved. This however can be done only in the neighbourhood of a moss, the carriage of the peat in substance to any considerable distance being too heavy an expense.

Eight or ten bushels of rich peat-ashes are sufficient to dress an acre. They should be laid on in the spring, before the plants have attained any great size, in wet or at least cloudy weather. Or they may be sown and harrowed in with the grain; in which case a greater quantity will be requisite than when they are used as a top-dressing¹.

Ashes burnt from fat black peat, such as is dug about Newbury in Berkshire, and in some parts of the Isle of Ely, are so rich, that farmers are afraid to lay them on barley, nor do they dress their wheat with them till late in the spring. If sown too thick, and a dry season should ensue, they are apt to burn the tender fibres of the corn. They destroy slugs on peas, &c. better than any thing².

Peat-ashes are an excellent improver of grass lands, particularly of clover and saintfoin: the quantity from fifteen to twenty-five bushels, according to the condition of the land. They are bought on the spot from 2d. to 4d. a bushel, according to their goodness.

This manure has been known in Berkshire near a century: they fell into disuse from having been laid on in quantities too great, but are now generally adopted by every farmer within a reasonable distance of the Berkshire peat-mosses³.

Peat-ashes are delivered on the land, about Dunstable, at 4d. $\frac{1}{2}$ the bushel, struck: forty bushels is a complete dressing for an acre, and costs about 16s. They greatly improve dry chalk soils, but do little good on wet land or cold sward, or on hot sandy lands.

Peat-dust, or peat ground to powder, answers equally well with the ashes, in the same quantity. It is esteemed the best manure for asparagus, onion beds, and flowers, mixed with dung; and destroys thistles, if laid on in sufficient quantity, or repeated⁴.

Wood Ashes are useful as a manure, principally on account of the pot-ash which they contain. The ashes of fir, pine, &c. have very little of it; but oak, ash, and most of the hard woods abound in pot-ash.

Except upon the strongest and most tenacious soils, the rich kinds of wood ashes are too stimulating, and are best used in a compost with earth and dung or any animal substances.

They effectually correct four soils: consequently upon poor meadows or rushy grounds, they produce effects similar to lime; and if mixed with quick-lime, their beneficial effects will be heightened.

Coal Ashes are well adapted to clays and deep loams, by breaking the tenacity of the soil. On light soils they should never be used but in form of compost with earth, or earth and dung. Where much sea-weed, or the refuse of mustard manufactures can be obtained, an excellent top-dressing may be made with these, the shells of the mustard-seed and lime⁵.

Coal-ashes cost in London from 6s. to 14s. the waggon-load. They are distributed on the land about Dunstable with a shovel from a cart or wheelbarrow; but the common way is to sow them by hand.

From fifty to sixty bushels is a complete dressing for a statute acre. They succeed well sown on clover in march or april, on dry chalk lands; and do much good to sward, applied during any part of the winter or spring. They are never used, about Dunstable, on wheat. In very dry seasons they do little good except on cold sward, which they always improve. They require rain after being sown to set them to work⁶.

Coal-ashes are of great use in the kitchen garden, where the natural soil is too strong and stubborn.

¹ Report on manures. Young's ann. 8. 81.

² Bath papers, 2. 73.

³ Pearce's survey of Berks.

⁴ Farey in Young's ann. 25. 69.

⁵ Agric. report on manures. 82.

⁶ Farey in Young's ann. 25. 68.

Mortimer and Bradley both agree that they are one of the best and most lasting manures for cold lands; and the fittest to kill worms, &c.

Even so early as Worlidge's time they were thought to form an excellent compost with horse-dung; and to kill moss and rushes in wet grounds.

Ashes from kilns of any sorts, but particularly where wood, straw or furze are burnt, are a good manure for most kinds of soil⁷.] In short the ashes of all vegetables are an excellent manure; so that where ground is overrun with bushes, brambles, heath, &c. if these be grubbed up in summer, and spread abroad to dry, then gently consumed to ashes, and these ashes spread on the land, they will greatly improve it. [See more of this under *Paring and Burning*.

It is much to be lamented that farmers suffer thistles and other great weeds to grow on headlands and in wastes till they fill the fallows with seeds; when by cutting them down in full vigour, and either fermenting them with dung, or burning them for the ashes, they might obtain a quantity of valuable manure.

Sea Salt.

It is a subject of dispute whether this, or any other neutral salt be of any use as a manure. There are many experiments and conclusions on both sides. In those which are favourable, it was the refuse, that is, the part most loaded with bittern, that was used.

From Sir John Pringle's experiments, it appears that sea-salt, if below, or exceeding a certain proportion, is a powerful septic. Now whatever promotes putrefaction must be a manure. But the septic quality of sea-salt is far inferior to that which the bittern or muriate of magnesia, and the muriate of lime, salts which abound in the refuse of sea-salt, possess. These are perhaps the most septic of any bodies with which we are acquainted, and from their extreme attraction for water, have a tendency to keep land perpetually moist. Reasoning then from the qualities of bodies, we should esteem the *refuse* of salt at least, a powerful manure. But applied in such quantity as to saturate the soil, it would kill every plant, and continue to prevent vegetation, until its excess be washed away.

However this may be, so much is certain, that sown upon pastures, salt or its refuse, if it did not increase the herbage, would at least render it highly palatable to cattle.

Nitre or *Saltpetre*, as appears from Dr. Home's experiments, mixed in the proportion of one ounce to six pounds of earth, rather retards than promotes vegetation; yet when added in small quantities dissolved in water, it promoted vegetation considerably.

When a plant is so situated, that it is compelled to draw up any salt into its substance; or when the roots cannot extend themselves without coming in contact with saline particles, it soon languishes and dies: yet every process by which the saline ingredients in a soil are made to decompose, and assume new arrangements, contributes highly to its fertility. Of these no process is more beneficial than that by which nitre is formed. Although therefore this salt should not of itself greatly promote vegetation, yet the putrefactive process excited in the soil, and which generates nitre, is the real cause of its fertility.

Any salt whatever that is capable of exciting putrefaction, and that powerfully attracts and retains moisture, may be usefully applied as a manure. No salt promotes vegetation by entering into the substance of plants, but acts upon the soil itself. Many other salts possess the properties of nitre in a greater degree, and the most beneficial of them may be procured at small expense. All salts with metallic bases, being of a caustic nature, must be excepted⁸.

Refuse salt may be had in London for 3l. 10s. the ton. It is therefore much cheaper than oil-cake. Would it not answer better? Might it not be sown and harrowed in march or april on land intended for turneps? but certainly never with the feed, as oil-cake is. There can

⁷ Bath papers, 2. 70.

⁸ Hendrick on manures; agric. report, 4. 31, 32.—Scandellia *ibid.* add. n. c.

be no doubt of the propriety of throwing salt into all dung-hills, when they are turned over; or when the yard-dung is shovelled on to heaps. Suppose ten loads to be the quantity of dung for an acre; five, with a quarter of a ton of salt, would probably be better; but great attention would be necessary in mixing and spreading^a.

The result of some experiments made by Mr. Young were highly in favour of salt when dissolved in water, and added to dung: and suggest an important lesson for the addition of salt-water to dung-hills^b.

Mr. Legrand, of Guilton-house, near Sandwich, having tried foul salt upon a sandy soil, found sixteen bushels to be a proper quantity for an acre. He used it upon a barley tilth; sowing the salt immediately after the barley. The event was perfectly satisfactory. It is noxious both to weeds and vermin^c.

Salt remaining after it has been used for preserving pilchards, has been employed with great success in Cornwall, in the cultivation of turneps^d.]

COMPOSTS

In husbandry and gardening signify several sorts of soils or earthy matter, lime, dung, &c. mixed together, in order to make a manure for assisting the natural earth in the work of vegetation.

Composts are various, and ought to be different, according to the different nature or quality of the soils which they are designed to meliorate: and according as the land is either light, sandy, loose, heavy, clayey, or cloddy. A light loose land requires a compost of a heavy nature, as the scouring of deep ditches, ponds, &c. A land that is heavy requires a compost of a more sprightly nature, that will insinuate itself into the lumpish clods.

For Gardens.

The great use of composts in gardening is for such plants as are preserved in pots or tubs; or in small beds or borders of flower-gardens. As some plants delight in a rich light soil, others in a poor sandy soil, and some in a loamy soil; there should be different composts prepared, in all those gardens, where a great variety of plants are cultivated: and this is much more necessary in countries at a great distance from London, than in the neighbourhood of it, because there is so great variety of lands, within ten miles round London, which have been so long dressed and cultivated, that a supply of earth fit for all sorts of plants, may be easily procured; but in some places which are at a distance from large towns, it is very difficult to procure a quantity of earth proper for the choicer sorts of flowers and plants; therefore the composts will require more care, and should be mixed a considerable time longer before they are used; that they may have the advantage of heat and cold, to meliorate and improve them; and should be frequently turned over, that the parts may be well mixed and incorporated, and the clods well broken and divided.

Almost every one who has written on this subject, has directed the procuring the upper surface of earth from a pasture ground, as one of the principal ingredients, in most composts for plants, which is certainly a very good one, provided it has time to meliorate before it is used: for if this is mixed up hastily, and put into pots or tubs, before it has had a winter's frost, and summer's heat, to loosen the parts effectually; it will unite and cake together, so hard, as to starve the plants that are put into it. For all earth when put into pots or tubs, is much more apt to bind, than when it is in beds; therefore should be in proportion made looser, according to the nature of the plants for which it is designed, than when it is intended for beds or borders. So that if this earth from a pasture, cannot be prepared and mixed at least one year before it is used, it will be much better to take the earth of a kitchen-garden which has been well wrought and dunged; but this should be clear from all roots of trees and bad weeds. If this earth is well mixed with the other composts six months, and often turned over, it will be fitter for pots and tubs, than the other will

in twice that time, as I have frequently experienced. This earth being the principal ingredient in those composts designed for such plants as require a rich soil; the next is to have a quantity of very rotten dung, from old hot-beds; or for those plants which delight in a cool soil, a quantity of rotten neats-dung is preferable. The proportion of this must be according to the quality of the earth; for if that is poor, there should be one-third part of dung, but if it be rich, a fourth part or less will be sufficient. These, when well incorporated and the parts divided, will require no other mixture, unless the earth is inclinable to bind, in which case it will be proper to add some sand or sea-coal-ashes to it; if sea-sand can be easily procured, that is the best, the next to that is drift-sand; but that from pits is by no means proper. The proportion of this must be according to the nature of the earth, for if that is stiff, there must be a greater proportion used, but this should not exceed a fifth part, unless it is very strong, in which case it will require more, and a longer time to lie, and must be often turned over before it is used.

The next compost, which is designed for plants which do not require so good earth, and naturally grow on loose soils, should be half of the before-mentioned earth from a pasture, or that from a kitchen-garden; and if these are inclinable to bind, there should be a third part sand, and the other part rotten tan, which will be of great use to keep the parts divided, and let the moisture pass off.

The composition for most of the succulent plants, is prepared with the following materials; the earth from a common, where it is light, taken on the surface, one half, the other half sea or drift-sand, and old lime-rubbish screened of equal parts; these, well mixed and often turned over, I have found to answer better than any other compost, for most of the very succulent plants.

The other sort of compost, which is designed for plants that delight in a very loose, light, rich earth; should be made of light earth taken from a kitchen-garden, which has been well dunged, and thoroughly wrought, like those near London, one half; of rotten tanners-bark one third, and the other part mud from the scouring of ditches, or from the bottoms of ponds, where the soil is fat: but this mud should lie exposed in small heaps a whole year, and be often turned over before it is mixed with the other, and afterwards frequently turned and mixed, for eight months or a year before it is used.

In all mixtures, where rotten wood may be required, if the rotten tanners bark, which is taken from old hot-beds is used, that will answer every purpose of the other; and wherever sand is necessary in any compost, the sea sand should always be preferred to all other; but this should not be used fresh, because the salts should be exposed to the air, which will loosen the particles, and thereby render them better adapted for the nutriment of vegetables.

There are some who have directed the use of rotten leaves of vegetables, as an excellent ingredient in most composts; but from many years experience, I can affirm, they are of little use, and contain the least quantity of vegetable pasture, of any dressing which is used. Others, who never have had any experience in the culture of plants, have directed different composts for almost every plant: and these composts consist of such a variety of ingredients, as greatly to resemble the prescriptions of a quack doctor; no person who has been conversant in the business of gardening, could be guilty of such gross absurdities: for it is well known, that a few different composts will be sufficient for all the known plants in the world. But those who pretend to give direction for the culture of plants from theory only, begin at the wrong end, for the true knowledge of gardening or agriculture, must be from experience.

In making any compost, great care should be had, that the several parts are properly mixed together, and not to have too much of any one sort thrown together; therefore, when three or four several sorts are to be mixed together, there should be a man or two placed to each sort, in proportion to the quantity of each; for

^a Young's Ann. 2. 378.

^c Idem, 5. 143.

^b Idem, 3. 118.

^d Idem, 27. 200.

for if two parts of any one sort are requisite to be added, there should be two men put to that, and but one to each of the other: and these men must be careful to spread each sort in such a manner over each other, as that they may be exactly mixed together. Another thing which should be observed is, never to lay these composts in too large heaps, but rather continue them in length, laying them up in a ridge, so that the sun and air may more easily penetrate through it: and, as these composts should (if possible) be made a year before they are used, they should be frequently turned over, which will prevent the growth of weeds, and expose every part of the heap equally to the sun and air; and the more they are exposed to the influence of these, the better will they be prepared for vegetation.

[For Fields.]

Something has been already said under several of the preceding articles, on the application of various composts in agriculture, but more must be added on a subject of so much importance, so little understood, and even yet so partially practised, though it is gaining ground every day.

Composts are usually made by mixing various substances with stable or yard dung: and hence in some countries are called Mixens. The most common materials for this purpose are turf pared from waste places, virgin earth, peat earth, lime, the scourings of brooks, ponds, and ditches, weeds, rubbish of buildings, coal-ashes, &c.

That dung alone, properly managed and applied, is a most valuable manure is beyond all doubt, but it certainly is not equally useful in all soils and situations. It is much better calculated for active than inactive soils. On limestone, chalk, &c. it meets with abundance of active materials; but upon clays, deep loams, &c. it operates best in conjunction with lime or some other stimulating substance.

When dung is intended for a compost, no attempt should be made to add a large quantity of lime, earth, &c. till it is properly fermented, every addition of this kind checking the fermentation. The lime, earth, &c. should be added after the fermentation is finished, and the whole then carefully mixed and laid up together. In a few days a second fermentation will come on, and if the mixture has been properly turned over and thoroughly incorporated, it will be fit for use in a month or six weeks.

Some judgment and attention will be requisite, with regard to the quantity of lime and other active principles employed: for if the quantity be small, their action upon the rich substances in the dung will be partial and imperfect; and if too great, a considerable loss may be sustained by their over action. If the quantity of earth also be such as to press the dung too hard, the air will be excluded and the second fermentation be impeded or prevented. It is certainly a right method to lay a good coat of earth as a foundation for the dunghill, into which the moisture of the dung may soak down: and it is no bad way to make a heap of such substances as can be readily obtained, apart from the dung, and to throw the moisture of the dunghill and the urine of cattle over it.

Composts are formed in various ways. In some places, where there is a head or foot ridge, too high to admit the water to be rapidly discharged from the field, they plough it, then fill it full of lime, dung, or both, and after frequent ploughings, spread it upon the field. After the lime is sufficiently mixed, the earth may be gathered into a heap with the spade, and mixed with dung; or the whole operation may be performed with the spade, which is still better.

The earth or mud gathered from the bottom of ditches is excellent for composts. It is usually the lightest part of the soil carried thither by water, and frequently contains a portion of vegetable matter. To this may be added the cleanings of roads, especially where they are laid with limestone. One of the best materials for composts is Peat. This fills up the pores of a sandy or gravelly soil, without diminishing its friability. Even when applied by itself to such soil,

^c Report on manures.

peat increases its fertility. But in a hard clay soil, it should be fermented with lime, or dung, or both, and frequently turned to make it mix properly. Without this precaution it dries, hardens, and cannot be properly mixed afterwards.

In making composts, if only one sort of manure be used, it is only necessary to put the manure and earth in alternate layers in a long ridge; and top it so that rain may not wash through it. When both lime and dung are used, a layer of earth should be interposed between every two beds of lime and dung: for lime, if mixed with dung in the first stage of its putrefaction corrodes and dissipates its effluvia. After the first fermentation of the dung is completed, the whole should be turned to mix the ingredients; and this operation should be repeated until the mass be sufficiently pulverized; which is done by cutting the compost with a spade in perpendicular slices.

All the weeds should be collected from the neighbouring fields, before they run to seed, and mixed with the compost. The weeds also that grow upon it, should be buried down in it.

Such composts may be used for any crop; and when sufficiently pulverized are excellent for a top-dressing to pasture; the parts being gradually crumbled down, and beaten into the soil by the feet of cattle or washed in by rains.

Some are of opinion that no advantage results from mixing dung with earth: a bottom of earth however must always be useful to detain the moisture that flows from the dung. Quick-lime mixed with the dung is useful, by keeping the mucilage in a proper state, and preventing the putrefaction from proceeding too far.

The following is a good method of making a Compost. In a field conveniently situated, plough and harrow a headland, till the soil is well divided and in fine tilth; then take a cart-load or forty bushels of lime fresh from the kiln, and place it in little heaps, about a bushel in each, along the middle of the headland, at four feet distance from each other. Cover the heaps with four or five times their quantity of pulverized earth, and pat it down close with the back of a shovel, so as to exclude both rain and air. In a few days the moisture of the earth will have dissolved the lime, and reduced it to a powder. If the heaps have any fissures in them, they should from time to time be filled up, by having more earth thrown upon them, and patted down close. When the lime is perfectly reduced to a powder, that and the earth must be chopped down with a spade, and intimately blended together. This is most conveniently done in form of a long bank or ridge, in the middle of which a large furrow or opening must be made sufficient to receive five cart-loads (forty bushels each) of good spit dung; when the earth and lime must be thrown over the dung so as to cover the whole. In this manner it must lie some months, or till the dung is in a state of dissolution. When arrived at this state, it must be turned over again, well mixed, and formed into a heap or clamp to be kept for use. Earth, lime and dung thus managed, constitute an unctuous mass of great fertility.

In Essex they are particularly industrious in this practice; where, as the skirts of inclosures seldom produce any corn on account of the shade and dripping of the hedges, and what it does produce is of little value, because the birds prey upon it; they generally sink these borders at least a foot deep, and mix them into compost, for the benefit of the rest of the land, which is more exposed to the sun, and less liable to be preyed upon by birds.

Next to these borders of inclosures or banks of roads, the scouring of old ditches, the mud of ponds, and sediments of stagnant waters are valuable, especially on grass land; and a small mixture of lime is well bestowed upon it. Any maiden earth, with one seventh part of lime, and another seventh of rotten dung is good manure for most kinds of pasture.

^f Headrick in app. to report on Manures, n. 4. 34.

^g Wimpey in Bath papers, 3. 182.

^h Kent's hints, 76.

In Norfolk the making compost dunghills is a general practice. The principal source of them is the shovelling of ditches, which is found there to be singularly fertile. It is not the sediment of water from the inclosures, but consists entirely of dead weeds, leaves of the hedge, and the mouldering of the bank and sides of the ditch. The most barren substratum exposed a few years in the face of a ditch bank, is changed into a rich black mould. Perhaps the sea air, acting upon a loose porous soil, may assist in producing this change. Other sources of manure are useless turf, the backs of ditch-banks, the borders of fences in general, the sides of lanes, the nooks of yards, &c. which in many places are suffered to remain the nursery of weeds. These are turned up into ridges, to rot the roots of the grass and weeds, and to receive the melioration of the air; which done, it is carted in due season to the dung-heap to be incorporated with it¹.

An effectual mode of raising a large quantity of compost manure, is to bed the farm yard about two feet deep with earth, and on this to cleanse the stables, cow-houses, hog-sties, &c. and to move the cribs in which loose cattle are fed with straw about it. This bed of earth will retain the urine; so that when the whole is mixed together, it will all be nearly of equal goodness, and admirably adapted to gravelly and loose soils in general, through which the essence of dung alone will be washed in one season; a top-dressing of foot, pigeon's dung, &c. will last but one crop, and very rotten pure dung is little better.

On binding pebbly loams, having so strong an adhesion, as to be what farmers justly call unkindly land, having the tenacity of clay without any of its excellencies, small quantities of dressings however rich, are of little benefit; a pound of the essence of dung might be so fast locked up in a large clod as to be rendered totally useless for a whole season: a rich top-dressing of foot, &c. is often quite lost on such land. Nothing does so well with it as composts not kept long, carried on in very large quantities. Perhaps twenty loads on an acre may do little good, when forty loads may be effectual: for there must be quantity enough to keep the clods and loose earth from uniting, or else the manuring is of little service. Small quantities also raise no fermentation, and it is obvious of what consequence a strong fermentation completed in the soil must be to such land.

Another method of raising compost dunghills is by making them into clamps. Make a layer of hedge earth from a grubbed border, two feet deep and about twelve feet square, in the beginning of november; the quantity of earth will be about twenty-six loads of sixteen bushels each: on this clean all the yards and sheds. The yard, not being bedded with earth, should be well littered to soak up the urine, and to be made into dung by the hogs and loose cattle; this may be cleaned once a fortnight, and the sheds once a week; and piled regularly on the foundation of earth, until the heap is about seven feet high; and when one clamp is thus filled up, another foundation of earth may be laid adjoining to it. In order to enrich the compost, the flowings of the heap should be prevented from running off, and thrown up occasionally on the heap.

By thus piling the compost in clamps, it will be in very good order for arable land early in the spring; which will not be the case, if it be left to be trodden flat over the whole yard, and every particle to be washed by the rain. Fermentation goes on much quicker in this method, and it would be better still if the heap were made under a roof, to keep off all water but what is thrown up.

Another advantage of this method is, that any part of the compost may be used, by taking a division of the hill that has been the longest finished^k.

All sorts of animal substances mixed with earth, litter, or any vegetables, make a rich compost. Saw-dust mixed in layers with the blood and offal of a

slaughter-house, and incorporated till the whole becomes a moist fetid mass is a rich compost. Two loads of it, with three loads of earth will be sufficient for an acre of wheat or spring-corn. Being a kind of top-dressing, it should be put on at the time of sowing, and harrowed in with the grain.

This manure is best adapted to lands of an open texture. Tough clays require lime and plenty of dung to break the cohesion of their parts. As this compost takes up little room, it is very convenient for the use of such farmers as are obliged to bring manures from a distance. It is also extremely rich, and will probably continue longer in the land than yard or stable dung.

All animal substances being of the same nature, the refuse of whale-fat, after the oil is boiled out, will make a rich compost with fresh dung, which will reduce the blubber speedily into a putrid state, or with earth and dung. Having marked out the length and breadth of your intended dunghill, make a layer of earth (as moor-earth, or that of ant-hills) about a foot in thickness; over this put a layer of yard or stable dung of the same thickness; then a layer of blubber; and over that another layer of dung. Repeat the operations till the heap be raised about six feet, then give it a thick covering of earth, and coat the heap with sods. In about a month turn the whole in the usual manner; and when turned, coat with earth as before to confine the putrid steam. In a month or two the heap will be considerably fallen, when it should have a second turning. This operation must be repeated at proper intervals, till the whole becomes a uniform putrid mass. In general this compost should not be used till it is a year old. The heap must be guarded from dogs, swine, &c.

This compost may with great advantage be applied to all purposes where good rotten dung is required. It is excellent for cabbages and for meadow ground. One hoghead of whale refuse will make eight loads of dung; and must be of importance to such farmers as lie at a distance from manure, but within reach of those places where train-oil is prepared. We shall hope therefore not to hear any more of this precious offal being thrown into the sea¹.

It is obvious that the refuse of all sorts of fish, and fish itself when in shoals too great for consumption may advantageously be made into a compost in the ways above described.

These are local advantages; and are mentioned principally with a view to put farmers upon searching diligently for such substances as may be within their reach, that are capable of assisting the sheep-fold and common dung-hill, upon which in many places they rely wholly, however inadequate to their wants. Abundance of good manure, properly managed, being the life and soul of husbandry.

Where there is a deficiency of materials for making good composts proper for the soil, in many cases a mixture of different soils may answer the purpose. Thus where clay predominates, the addition of sand, where it is happily within reach, is often sufficient to ensure fertility; and where sand prevails, the addition of clay or chalk will answer the same purpose. Gravel enriches peat-moss, and that in return improves gravel. The farmer therefore should search every where, above ground and below for such substances as may improve his several soils by a due mixture.

TOP-DRESSINGS.

Much has been already said about these under several of the foregoing articles. They are principally foot, rape-cake, pigeon's dung, peat-ashes, and the like, but well-rotted dung, and composts in general when sufficiently mixed and pulverized by frequent turning, may be used in the same way.

Top-dressings answer particularly well on crops that tiller, as wheat and barley: and when these are sickly and backward in the spring, in consequence of a bad seed-time, immoderate wet, severe frosts, and other causes, help them prodigiously; by quickening their vegetation, and thus enabling them to cover the soil

¹ Marshall's Norfolk, 1. 28.

^k Young in Bath papers, 3. p. 4. &c.

¹ Hunter's Essays, 4. 354, 385.

from the ensuing drought of summer. They are peculiarly applicable to poor, light, sandy and gravelly or limestone lands.

The advocates for top-dressings in preference to ploughing in manure affirm, that when a considerable quantity of dung is laid upon land, and mixed with the whole soil, a great proportion of its richest salts will be carried down by rains, and not only be lost to the present crop, but if the sub-soil be of a loose and porous nature, will very soon escape beneath the reach of the plough. Whereas if stable-dung and other enriching manures were mixed with lime or other active substances into a compost, and thus employed as a top-dressing, a much smaller quantity than is usually applied might probably be found sufficient. By thus laying manures upon or near the surface, they sink by slow degrees, their beneficial effects are exerted upon the crop in their passage downwards, and very little, if any, of the fertilizing parts penetrate beyond where they are useful.

Top-dressings however are frequently attended with great expense; their effects are not permanent; and in very dry seasons they do little or no good^m.

When top-dressings are applied, the nourishment of the plants only is considered, no regard being had to loosening the earth; they are not therefore sufficient for heavy lands. Stiff loams and clay require lime and dung to break the cohesion of their parts.

Beans also, and tap-rooted plants in general require such manures as are worked into the land by the plough; for top-dressings operate but a little way within the surface, except on thin soils, where they are certainly of great use. They are very beneficial on turneps, by pushing the young plant hastily into rough leaf, and thereby securing it against the fly; but no fartherⁿ. See the articles *Soot*, *Ashes*, &c. &c.

PARING and BURNING, BURN-BAKING, or DENSHIRING,

Is not only a very great, but a very ancient way of improvement, according to Mortimer, who treats largely on the subject. It is not proper, says he, for rich soils, or dry stony lands, or chalky clays; nor is it a thing too often to be repeated on any soil, especially where the soil is shallow; nor must corn be sown too long on such lands. It is most proper for those lands that have lain long untilled, and have contracted a sour juice, which causes it to run to unprofitable trumpery, as sour grass, quitch, rushes, heath, gors (furze), fern, broom, &c. and land that runs too much to straw, and yields but a lank short ear, is much improved by burning.

Whether this operation be right upon the whole has been a subject of much dispute, which I presume not to determine. According to Mr. Kirwan it reduces the roots of vegetables to coal and ashes, and thus prepares both a stimulant and nutriment for plants. It is commonly objected to the practice that it diminishes and consumes the soil, repeated experience however has shown the contrary, at least where the operation is judiciously managed^o.

Mr. Young relates that Colonel St. Leger has practised paring and burning for several years in Yorkshire; and that he also breaks-up old turf in that manner, however thin the soil may be. He pares it as thin as possible, because the roots make the good ashes, not the earth. He is clear that it does not diminish the soil, for on various lime-stone lands, where the soil is not four inches thick, paring and burning has been regularly practised for several ages; and had it been attended by such an effect, the whole staple of the soil must long since have totally disappeared: whereas he has constantly found that with good management it ensures very great crops. The farmers indeed generally take four or five crops of corn after it, and with the last sow any vile rubbish called hay-seeds: many do not sow any thing, but leave the soil to turf itself. Thus it lies for a sheep-walk twenty or twenty-one years, and then they pare and burn again with the same system.

^m Agric. Report on Manures, 12. 15.

ⁿ Hunter's Essays, 19. 282. and 4. 307.

^o Young's Ann. 23. 94 and 145.

To condemn paring and burning from such mismanagement, is to argue against the use of a good thing from the abuse, which is a mode of reasoning by no means uncommon. Or if we should allow the possibility of paring and burning being hurtful to the soil, yet the evils arising from the mismanagement of common farmers are by no means to be received as proofs of such supposed prejudice: they are effects of bad husbandry, not of paring and burning.

Colonel St. Leger recommends the pared and burnt land always to be sown with turneps; to be kept in tillage seven years, in a good course of crops; and then to be laid down again to grass, with plenty of good seeds; and soon after to be well manured^p.

Skirting and *Beat-burning* have been practised several centuries in Cornwall and Devonshire: and whether it is intended to sow wheat or turneps, this is the uniform mode of breaking up grass lands. *Skirting* is a sort of half ploughing; as two or three inches of surface of the ley is left unturned, and is covered by the furrow, cut very thin, with the grassy side downwards; so that the grass side of the furrow, and the narrow balk which is left unturned, being in contact, soon rot by the fermentation of the sward. If for turneps it is turned thin about midsummer, and is immediately worked: if to lay to rot for wheat, in the fall of the year it is turned a little deeper. The operation is performed by a wing turned up the furrow side of the plough-share, which cuts the furrow any breadth that is chosen; generally about four inches and a half. This operation is sometimes performed by spading, or paring with a breast-plough; sometimes also with a mattock: but skirting with the plough is generally practised. The best time for this operation is before Christmas, if the grass can be spared: the winter frosts bring it into fine order, but in general it is done in summer. After laying some time, it is cross-cut with the plough and well worked with harrows, and then either left to rot, or again harrowed and rolled with much care and labour, until the broken sward is made very light, and the earth shaken from the grassy roots and weeds, which are then raked together by hand into heaps and burnt; which process is called *beat burning*^q.

Whatever ill effects paring and burning may produce in bad hands, and with such great mischief has certainly been done, where a system of corn crops is the object in view; there is no doubt of its expediency in situations that are elevated or remote from markets, where the great object of the cultivator ought to be to get the land as quickly as possible into good pasture. Where the surface is covered with very coarse herbage or heath, rest-harrow, fern, &c. or if the soil consists of moss to a considerable depth, this operation is very properly employed to destroy the rubbish, and render the land workable. It may then be reduced by fallow, and sown with grass and white clover, either with or without a crop. Lime harrowed in with the grass seeds, will much increase the richness and sweetness of the pasture. But a series of white crops will exhaust the land, and should always be guarded against by the landlord, where paring and burning is practised.

FOLDING

Is resorted to by all open-field farmers as the preparation for wheat, and their chief dependence is upon this species of top-dressing, where the quantity of farm-yard dung is insufficient for their purpose. This mode of manuring is peculiarly adapted to farms where there is a considerable extent of hill or common pasture, or grass lands that never come under the plough. In such farms, by bringing the sheep in the evening to the fold, a considerable quantity of manure will be made, that would otherwise be lost. If the pasture upon which the sheep feed through the day be good, they may be folded without much detriment to the animal for a great part of the year; but where the pasture is scanty this cannot well be done, for the sheep will not be able to pick up a sufficiency of food

^p Eastern tour, 1. 282. See Annals, 24. 521.

^q Frazer's Agric. Report of Devon, 21.

through the day to enable them to bear the fatigue of travelling to and from the fold, and fasting all night. And unless the sheep have turneps or hay during the winter, their dung will be of small value.

It is a bad practice to crowd more sheep into a fold than can lie down at their ease, and it is equally bad to confine young and old, strong and weak in the same fold. It is far better to afford them room enough, and to let them remain on the same spot two or three nights till it is sufficiently manured.

Feeding sheep in a fold can only be practised upon light dry soils. Here it is still more necessary neither to crowd the stock, nor to put in the weak with the strong; for they will tread down and waste the food, and in the contention for it the strong will deprive the weak of their proper share.

On light dry soils sheep will do good by giving it cohesion with much treading: but on clays or strong loams this does much injury to the land; turneps, &c. cannot therefore be fed off in such soils, except in dry seasons, but must be pulled and eaten upon a dry stubble or pasture.

Upon farms entirely arable, where artificial grasses make a part of the rotation, to bring the flock from the pasture, to fold it upon a fallow, is only enriching one part of the farm at the expense of another^r. Or, as Mr. Bakewell always called folding, *robbing Peter to pay Paul*. It is well known that heaths and sheep-walks that have been fed time out of mind, but the sheep constantly folded on other lands, continue as miserably poor as they ever were at any former period.

But besides this, lambs and ewes are damaged by folding, to the amount probably of at least 1s. a head. Now the benefit arising from their dung is estimated at about 1s. 6d. a head; which leaves only 6d. each for the advantage of this practice. But there is still another deduction to be made on the number kept and losses on stock. Divide one thousand sheep into ten flocks of one hundred each, by means of inclosures, and twelve hundred would be kept easier than a thousand were before; and as to many of the distempers and accidents to which flocks are liable, some of which are contagious, they result very much from this practice of folding^s.

If folding be supposed necessary on account of the manure, where farm-yard dung is not made in a sufficient quantity, and other manure is not readily to be obtained; might not a greater stock of muck be raised, by littering a dry part of the yard, or a warm corner of some pasture with straw, fern, or whatever litter could be had in greatest plenty, penning them and feeding them there in hard weather, and letting them run into the adjoining pasture only during the day in fine weather. A great quantity of manure might thus be raised in winter from a flock, and provided they had ample room in the pen, and were to be well supplied with dry litter, the sheep might sustain less injury in thus lying warm and dry, than from being folded on naked land, often wet, and in an open exposure.

If indeed we expect other good effects on land besides the dung and urine of the sheep, as their treading, and a certain warmth communicated to the soil by their breath, their perspiration, and the natural heat of their bodies, then folding may be adviseable.

WATER

May fairly be considered as a manure, if we attend to the effects of stagnant and putrid water, and the watering of meadow lands.

Water, if allowed to remain stagnant is disposed to putrefy, from the animal or vegetable matters contained in it; and when it has undergone a putrefaction, it deposits a mucilaginous substance. Water therefore may be rendered an excellent manure, by making a pond or reservoir near a house and farm-yard the common receptacle of the drains from the kitchen, scullery, and wash-house, or of the yard, stables, &c. or else by throwing into it weeds and all

offal of the garden. By either of these means there may always be a large supply of putrid water, with which, particularly in dry seasons, meadow and pasture land may be watered with great effect, by means of water-carts, such as are used on the roads near London^t.

The water in which flax or hemp is steeped might be used advantageously in the same manner; and in general, where there are any pits or pools, the water might soon be rendered putrid and fit for manuring pasture or even arable lands, by throwing into them a large quantity of green vegetable substances. In Devonshire it is a practice to enrich ponds by the drain of an adjoining yard, with the addition of a bag of lime at different times.

Watering of meadows is a most important improvement, where it can be accomplished, and is well understood. A well-watered meadow is in spring a hot-bed for grass. The practice of this valuable improvement may be learnt from Mr. Davis's Agricultural Survey of Wiltshire, copied in the article MEADOW.

This, together with Fallowing, Draining, &c. is in some degree connected with the present subject as improvements of land, but not being properly manures, are here omitted.

The basis of the preceding dissertation on Manures is the outlines of the proposed general Report from the Board of Agriculture on the subject of Manures, together with the Appendix. To this is added a variety of practical information from Dr. Hunter's Geographical Essays, Mr. Arthur Young's Annals of Agriculture, Mr. Marshall's Rural Economy of Norfolk, the Midland Counties, &c. The Papers of the Bath Agricultural Society. The Surveys of Counties printed by direction of the Board of Agriculture, &c.

MAPPA. See *Ricinus*.

MAPPIA. (From *Marcus Mappus*, Professor of Medicine at *Strasbourg*. He published *Catal. plantarum horti acad. Argentinenfis*, 1691, 12mo. *Hist. plant. Alsaticarum*, a posthumous work by *Ehrmann*, 1742, 4°.)

Lin. gen. Schreb. n. 1755. *Soramia. Aubl. guian.* 552. t. 219.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted, permanent: *parts* roundish, concave, coloured within.

COR. *Petals* five, roundish, having claws, spreading, scarcely larger than the calyx.

STAM. *Filaments* numerous (sixty) capillary, broader at the tip, the length of the corolla, inserted into the receptacle. *Anthems* ovate.

PIST. *Germ* globular, superior. *Style* columnar, incurved, permanent. *Stigma* capitate.

PER. *Berry* ovate, one-celled.

SEED single, ovate, large, involved in a thick, viscid aril.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled. Germ superior. Berry one-seeded. Seed arilled.

SPECIES.

1. *Mappia guianensis*.

Soramia guianensis. Aubl. guian. 552. t. 219.

DESCRIPTION, &c.

This is a shrub, with branches full of little tubercles, ramping over trees, to their very tops, and dividing into many alternate branchlets, which are long and hang down. Upon these are leaves, which are alternate, smooth, thick, narrowing at the base, where they terminate in a petiole, an inch in length, thick, convex underneath and channelled above: the largest are six inches long, and three inches and a half wide: they are divided by a longitudinal nerve, prominent beneath, with several lateral nerves springing from it. Flowers in little bunches from the axils of the leaves, or on the tubercles of the branches and branchlets. Peduncles long, reddish, slender. Calyx also reddish within. Corolla white. Berry red, the size of a

^r Agric. Report, p. 50.

^s Young's Ann. 19. 460. 22. 131.

^t Bath papers, 1. 168.

M A R

Cherry; the skin fleshy, firm, slightly acid.—Native of Guiana, on the banks of the river of Sinemari, flowering and fruiting in may^a.

MAPROUNEA. See *Ægopricon*.]

MARANTA. (So named by Plumier from Bartolommeo Maranta, friend of Fallopius, pupil of Luca Ghini. He writ three books on simple medicines, chiefly with a view of illustrating Dioscorides. He was esteemed a man of considerable genius and observation; and died in 1554.)

Lin. gen. n. 5. Reich. n. 5. Schreb. n. 7. Plum. t. 36. Juss. 63.

Class. 1. 1. Monandria Monogynia.

Nat. order of Scitamineæ. Cannæ, Juss.

GENERIC CHARACTER.

CAL. Perianth three-leaved, lanceolate, small, superior.

COR. one-petalled, ringent. Tube oblong, compressed, oblique, bent in. Border six-cleft: alternate outer segments ovate, equal, smaller; one of these the lowest, two the uppermost: two alternate lateral very large, roundish, representing the lower lip: uppermost small, two-parted.

STAM. Filament membranaceous, resembling a segment of the corolla. Anther linear, fastened to one edge of the filament.

PIST. Germ roundish, inferior. Style simple, the length of the corolla. Stigma obsoletely three-cornered, bent in.

PER. Capsule roundish, obsoletely three-cornered, three-celled, three-valved.

SEED single, ovate, wrinkled, hard.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. trifold. Neet. three-parted, the third part bearing the anther on its upper side.

SPECIES.

1. Maranta arundinacea. Indian Arrow-root.

Lin. spec. 2. Reich. 1. 4. Willd. 1. 13. hort. cliff. 2. Swartz obs. 8. Fabric. helmst. 2. Brown. jam. 112.

M. arund. canna cori folio. Plum. gen. 16. Mart. cens. t. 39.

Canna indica radice alba alexipharmaca. Sloan. jam. 1. 253. t. 149. f. 2. Raii suppl. 573.

C. ind. angustifolia pediculis longis, &c. Pluk. alm. 79.

Culm branched herbaceous, leaves ovate-lanceolate somewhat hairy underneath.

2. Maranta Galanga.

Lin. spec. 3. syst. 51. Reich. 4. mat. med. 35. Mill. dict. n. 2.

Alpinia Galanga. Lin. spec. Willd. 12.

Amomum Galanga. Lour. cochinch. 5. Diet. nostr. n. 11.

Culm simple, raceme terminating loose with alternate flowers; lip of the neetary emarginate, leaves lanceolate.

[3. Maranta Tonchat.

Aubl. guian. 3. Lin. spec. Willd. 13.

Donax Arundastrum. Lour. cochinch. 15.

Arundastrum. Tonchat feytam. Rumph. amb. 4. 22. t. 7.

Culm branched shrubby, leaves ovate smooth.

4. Maranta? malaccensis.

Burm. ind. 2. Lin. spec. Willd. 14.

Galanga malaccensis. Rumph. amb. 5. 177. t. 71. f. 1.

Culm simple, leaves oblong petioled silky-pubescent underneath.

5. Maranta comosa.

Lin. suppl. 80. syst. 51. Willd. 14.

Stemless, scape spiked comose, leaflets of the coma reflex.

DESCRIPTIONS, &c.

The generic or natural character of Maranta is given differently from Schreber's as above, by Swartz in his observations.

CAL. Perianth three-leaved, superior. Leaflets lanceolate, longer than the tube of the corolla, contiguous.

COR. one-petalled, ringent. Tube cylindric, compressed, oblique, gibbous. Border trifold. Divisions equal, lanceolate-ovate; one lowest, two lateral.

^a Aublet.

M A R

Neetary three-parted, connate with the tube: two lower divisions oblong, lateral, larger, representing a lower lip: the third upper larger, vaulted, serving for a filament.

STAM. Filament none. Anther linear, fastened to the upper edge of one of the segments of the neetary.

The rest as before, except that the style is crooked in the middle.]

1. This has a thick, fleshy, creeping root which is very full of knots, from which arise many smooth leaves, six or seven inches long, and three broad towards their base, lessening towards each end, terminating in points. They are of the consistence and colour of those of the Reed, and stand upon reed-like foot-stalks, which arise immediately from the root; between these come out the stalks, which rise near two feet high; these divide upward into two or three smaller, and have at each joint one leaf of the same shape with the lower, but smaller. The ends of the stalks are terminated by a loose bunch of small white flowers, standing upon peduncles near two inches long. The flowers are cut into six narrow segments, which are indented on their edges; these fit upon the embryo, which afterwards turns to a roundish three-cornered capsule, inclosing one hard rough seed. It flowers here in June and July.

[Browne says that it grows from a thick fleshy root, and shoots by a simple foliated stalk to the height of two or three feet, terminating in a loose and somewhat branched flower-spike. It is called Indian Arrow-root, because it was thought to extract the poison from wounds inflicted by the poisoned arrows of the Indians.

It is considered in the West Indies as a warm alexipharmic, and is thought to resist the force of poisons very powerfully; but its chief effects seem to depend on its absorbent and lenient nature, having few warm particles in its composition.

The root washed, pounded fine and bleached, makes a fine powder and starch. It has been sometimes used as food when other provisions were scarce, and is frequently administered in infusions to the sick^b. The flower in milk is recommended as a proper food for infants, and is gelatinous like Salep. It has lately been introduced into England.

It is a native of South America, and is cultivated in the West Indies.] It was first discovered by Plumier. Dr. Houstoun found it in great plenty near La Vera Cruz, and sent the seeds to England [before 1732.]

2. Miller says, this is very like the first, but has a single stalk: the flowers are smaller, and the segments of the petals are entire.

This plant, not agreeing in character with Maranta, as described by Linneus, Loureiro removed it into the genus Amomum; where it is also placed in this work. Swartz suggested that it is an Alpinia; and Willdenow has placed it in that genus. See the description, &c. under Amomum.

3. Culm round, solid, very regular, shining, without knots at bottom, divided at top into spreading branches, eight feet high. Root creeping, horizontal, tubercled, woody. Leaves broad-ovate, subacuminate, quite entire, alternate, obliquely striated. Petioles round, slender, longish. Flowers white, subterminating, in large, scattered, nodding panicles^c.

Native of the East Indies, Cochinchina, the Island of Cayenne and Guiana; where it is used for making baskets^d.

It seems doubtful whether it belongs properly to this genus.

4. This is a doubtful plant. Costus malaccensis, described by Koenig, in Retz. fasc. 3. 71. seems to be allied to it.

5. Leaves radical, petioled, even, like those of Canna. Scape leafless, round, even, the thickness of a swan's quill, three feet high. Coma terminating: leaflets clustered, numerous, sessile, ovate, reflex; the lower gradually smaller. Flowers among the lower leaflets of the coma, sessile, each with bifarious bractes,

^b Browne jam.

^c Loureiro.

^d Aublet.

M A R

in three pairs: the upper valves two-keeled, the lower equal. Florets in threes. Perianth caducous; leaflets petaloid, the length of the corolla: the tube of which is almost the length of the calyx: the border five-parted, four segments lanceolate, the fifth bifid. Filament short, placed on the tube. Anther erect, oblong. Germ short. Style filiform, club-shaped, fastened to the tube below. Stigma narrow, simple. Seeds very many.

Native of Surinam, where it was found by Dalberg. Perhaps it may constitute a new genus; the appearance is certainly very different from that of the others.

Aublet has several other species of Maranta, but his descriptions of them are too short to enable us to form any judgment concerning them. Probably some do not belong to this genus.]

PROPAGATION AND CULTURE.

These plants being natives of a warm country, are very tender, and therefore will not live in this climate, unless they are preserved in stoves. They may be propagated by their creeping roots, which should be parted in the middle of march, just before they begin to push out new leaves. These roots should be planted in pots filled with light rich earth, and plunged into a moderate hot-bed of tanners bark, observing now and then to refresh them with water; but it must not be given to them in large quantities, for too much moisture will soon rot the roots, when they are in an unactive state. When the green leaves appear above ground, the plants will require more frequently to be watered, and they should have free air admitted to them every day, in proportion to the warmth of the season, and the heat of the bed in which they are placed. As the plants advance in strength, they should have a greater share of air, but they must constantly remain in the stove plunged in the tan, otherwise they will not thrive; for when the pots are placed on shelves in the stove, the moisture passes too soon from the fibres, which generally spread on the sides and bottoms of the pots, so that the plants do not receive much nourishment from the water. But where they are constantly kept in the tanners bark, and have proper air and moisture, they will thrive, so as from a small root to fill the pot in which they were planted, in one summer. About michaelmas the first sort will begin to decay, and in a short time after the leaves will die to the ground, but the pots must be continued all the winter in the bark-bed, otherwise the roots will perish; for although they are in an unactive state, yet they will not keep very long from shrinking, when taken out of the ground; and if the pots are taken out of the tan, and placed in any dry part of the stove, the roots often shrivel and decay; but when they are continued in the tan-bed they should have but little water given to them when their leaves are decayed, lest it rot them. The first sort flowers constantly in july or august, and will often produce ripe seeds in England; but the second sort does not flower so constant, nor do the flowers appear so conspicuous, being very small and of a short duration. This sort never has produced any seeds in England, nor could I ever observe any rudiment of a seed-vessel succeeding the flower. The green leaves abide on this sort most part of the winter, seldom decaying till february; and sometimes will continue green until fresh leaves come up, and thrust the old ones off.

[MARASAKKI. See *Bafella*.

MARATTIA. (So named by Swartz, in honour of Giovanni Francesco Maratti, an Italian Botanist, author of several treatises on cryptogamous plants, and especially of the existence of flowers in Ferns.)

Lin. gen. Schreb. n. 1623. Swartz prodr. 128.

Smith ic. ined. 2. 46, 47, 48. Myriotheca.

Juss. 15. (excluso Cænopteride Bergii).

Class. 24. 2. Cryptogamia Filices.

Nat. order of Filices or Ferns.

ESSENTIAL CHARACTER.

Capsules oval, gaping longitudinally at top, with several cells on each side.

* Linn. suppl.

M A R

SPECIES.

1. Marattia alata.

Swartz. prodr. 128. Smith ic. ined. 2. 46.

Rachises scaly, the partial ones winged; leaflets sharply ferrate.

2. Marattia lævis.

Smith ic. ined. 2. 47.

Rachises even, the partial ones winged; leaflets bluntly ferrate at top; the uppermost confluent.

3. Marattia fraxinea.

Smith ic. ined. 2. 48.

Rachises even simple; leaflets lanceolate ferrate all distinct.

DESCRIPTIONS, &c.

1. Frond bipinnate, with the pinnae generally opposite. Rachis almost four-cornered: scales scattered, linear, acute, membranaceous, dusky. Partial rachises with more frequent scales: wings narrow, the same substance with the leaflets, but veinless and quite entire, contracted and evanescent at the insertion of the leaflets. Pinnules generally opposite, sessile, ovate-lanceolate, acutely ferrate, especially towards the top, veined, the veinlets almost always bifid near the origin, ending in the tips of the ferrations, sometimes, like the central nerve, minutely scaly. The lower pinnules are lobed, the upper ones entire; the terminating one elongated, acuminate, ferrate-lobed. Capsules solitary, placed on the partial veins beyond the middle, before they open roundish or oval, the size of Poppy seeds, even, with a longitudinal cleft above, which afterwards gapes, and discovers a double row of little holes, about five on each side, communicating with the cells of the capsule. Finally the rim of the capsule becomes cloven and sublobed.

Native of Jamaica, where this Fern has been remarked by Roger Shakespear, Everard Home, and Olaus Swartz.

2. Frond subtripinnate, with the lower pinnae alternate. Rachis roundish. Partial rachises flattened, winged above: wings the substance of the leaflets, veinless, quite entire, contracted at the insertion of the leaflets, towards the top of the pinna much wider than in *M. alata*. Pinnules alternate, very seldom opposite, lanceolate, smooth, ferrate-lobed, most frequently also pinnate at the base, ferrate at the tip, ferratures somewhat bent in, blunt not acuminate, veined; veins smooth, usually simple except in the partial leaflets; the upper ones oval, bluntly ferrate not lobed: the end one elongated, acute, bluntly ferrate, lobed at the base, with the lobes confluent in the uppermost pinnules. Capsules usually solitary, often two on a lobe of the pinnules, each placed on its proper vein, roundish or oval, little more than half the size of the preceding, even, opening longitudinally, with four (seldom five) little holes on each side, the rim always entire, never cloven or lobed.

Native of St. Domingo, where it was found by Thierry.

3. This is a very large Fern, with a handsome leaf like that of the Ash. Frond unequally bipinnate, with the pinnae alternate. Rachis half-round, channelled, smooth; partial rachis with little or no membranous wing towards the top. Pinnules alternate, scarcely petioled, lanceolate, acuminate, ferrate, even, uniform, gradually smaller towards the base of the pinna. Partial veins numerous, simple and divided alternately, spreading, ending in the tips of the ferratures. Capsules towards the edges of the pinnules, solitary, placed on the veins, before they open oval, the size of the seeds of *Lepidium sativum*, even; when these split open longitudinally about six little holes appear on each side.

Native of the island of Mauritius. Thouin^f.

MARCGRAVIA. (From George Marcgraaf of Leibstadt in Germany. Author of a voyage to Brasil in 1648.)

Lin. gen. n. 640. Reich. n. 696. Schreb. n. 871.

Plum. 29. Jacq. amer. 156. Juss. 244.

Class. 13. 1. Polyandria Monogynia.

Nat. order of Putamineæ? Capparides, Juss.

^f Smith.

GENERIC CHARACTER.

- CAL.** *Perianth* six-leaved, imbricate, permanent: *leaflets* roundish, concave: the two outmost larger.
- COR.** one-petalled, conic-ovate, entire, closed like a calyptré, parting at the base, caducous.
- STAM.** *Filaments* very many, awl-shaped, short, spreading, deciduous. *Anthers* upright, large, ovate-oblong.
- PIST.** *Germ* ovate. *Style* none. *Stigma* headed, permanent.
- PER.** *Berry* coriaceous, globular, many-celled, many-valved.
- SEEDS** numerous, small, oblong, nestling in soft pulp.

ESSENTIAL CHARACTER.

- Cor.* one-petalled, calyptré-shaped. *Cal.* six-leaved, imbricate. *Berry* many-celled, many-seeded.

SPECIES.

1. *Marcgravia umbellata*.

Lin. spec. 719. *fyst.* 487. *Reich.* 2: 562. *Swartz obs.* 205. *Jacqu. amer.* 156. *t.* 96. *piet.* 77. *t.* 143. *Plum. gen.* 7. *ic.* 173. *Brown. jam.* 244. *t.* 26. (opt.) *Sloan. jam.* 1. 74. *t.* 28. *f.* 1. (Phyllitidi affinis.)

DESCRIPTION, &c.

This is a shrubby creeping plant, but not properly parasitical; at first it is radican, like some Ferns, whence Sloane has given a figure of a young plant among his Ferns. As it advances the stem becomes shrubby, adhering still by its fibres to the trunk of some tree, to the top of which it frequently runs, at length dividing into several subdivided loose pendulous branches, commonly terminated by flowering umbels. The leaves of a young rooting plant are roundish, subsessile, slightly emarginate, with an entire margin, and glandular dots. Leaves of the branches distich, alternate, on short petioles, ovate, lanceolate or ovate-lanceolate, of a thick consistence, deciduous, smooth. Umbels nodding, with many, simple, one-flowered peduncles. In the centre of the umbel utricular glands, spreading, oblong, ventricose, helmet-shaped, deciduous, coriaceous^a. Flowers ascending naked. Receptacle, after the flower is fallen, entire not five-lobed^b. Capsule usually divided into ten cells. Seeds and pulp of a shining scarlet colour^c.

Native of the West Indies, in the cool woody mountains. Browne says it is frequent in the woods of Jamaica, and appears in such various forms that it has been mistaken for different plants in the different stages of its growth.

MARCHANTIA. (So named in honour of Nicholas Marchant, M. D.)

Lin. gen. n. 1198. *Reich. n.* 1315. *Schreb. n.* 1661. *March. aff. gall.* 1713. *t.* 5. *Mich.* 1. *Juss.* 9. *Schmid. ic.* 9. 29. 31. 34. *Hedw. theor.* 96. *t.* 24, 25. *Hepatica. Mich.* 2. *Lunularia. Mic.* 4. *Lichen. Dill. musc.* 515.

Class. 24. 4. *Cryptogamia Hepaticæ.*

Nat. order of Algæ. Hepaticæ, Juss.

ESSENTIAL CHARACTER.

MALE. *Calyx* salver-shaped: *anthers* numerous, imbedded in its disk.

FEM. *Calyx* peltate, flowering on the under side. *Capsules* opening at top; *seeds* fixed to elastic fibres.

Seven species of *Marchantia* are recited in *Systema Vegetabilium*. Of these five are natives of Britain. *M. polymorpha* is very common in wet places; as on shady walls, and by the sides of wells and springs. In figure it somewhat resembles an oak leaf. The peduncles are in the angles of the lobes, from one to three inches high. Capsules greenish, dividing into eight or ten segments. On the upper surface are here and there glass-shaped conical cups, on short pedicels, with a wide scalloped margin, and inclosing about four little bodies, very finely serrated at the edges^d.

Mr. John Lindsay, surgeon in Jamaica, sowed that part of the fructification of this Alga, composed of fine elastic filaments and small globules, heretofore considered as the male parts, where none of the plants had ever been seen before: and in a short time raised several young *Marchantiæ*, which grew freely.

^a Swartz.^b Linn. spec.^c Jacquin.^d Weis, Pollich, Withering.

The *Marchantia* bearing seeds of another kind in small sessile cups, which also readily grow, may have the appearance of superfluity. But may not these be considered as in some sort analagous to those luxuriant productions in many vegetables, hence called viviparous; as in the Grasses, the genus *Allium*, &c.^e

MARE'S-TAIL. See *Hippuris*.

MARGARITARIA. (From *Margarita*, a pearl; the kernels of the berries being of a shining white, like pearls.)

Lin. gen. Schreb. n. 1533. *Suppl.* 66. *Juss.* 430.

Class. 22. 7. *Dioecia Octandria.*

GENERIC CHARACTER.

* Male.

CAL. *Perianth* one-leaved, four-toothed, minute, permanent.

COR. *Petals* four, roundish, inserted into the calyx.

STAM. *Filaments* eight, bristle-shaped, patulous, longer, inserted into the receptacle. *Anthers* roundish, small.

PIST. *Germ* superior, roundish. *Style* bristle-shaped, the length of the stamens. *Stigma* blunt.

* Female, on a distinct individual.

CAL. as in the male, permanent.

COR. as in the male?

PIST. *Germ* superior, globular: *Styles* four or five, filiform. *Stigmas* simple, permanent.

PER. *Berry* globular, crowned with short patulous styles.

SEED. *Aril* four or five-grained, four or five-celled, cartilaginous, very shining; with two-valved lobes. *Seeds* ovate, compressed inwards.

ORS. *Calyx* always four-cleft. *Styles* and *Arils* four or five.

ESSENTIAL CHARACTER.

MALE. *Cal.* four-toothed. *Cor.* four-petalled.

FEM. *Cal.* and *Cor.* as in the male. *Styles* four or five. *Berry* cartilaginous, four or five-grained.

SPECIES.

1. *Margaritaria nobilis*.

Lin. fyst. 890. *suppl.* 428. *Pluk. phyt. t.* 176. *f.* 4.

DESCRIPTION, &c.

In the male the branches are round, brachiate, flexuose. Leaves opposite, petioled, ovate, even, quite entire, of a firmer consistence, the size of *Euonymus* leaves. Panicle of compound racemes, with great abundance of small flowers, as in *Spiræa Aruncus*. *Germ* blunt, minute, abortive, with a simple style.

In the female the branches are alternate. Leaves always alternate. Peduncles axillary, simple, always one-flowered. *Calyx* always flat, four-cleft. *Styles* four or five, spreading above the germ, permanent. *Berry* globular, but the nucleus four or five-grained, shining remarkably and the colour of pearls.—Perhaps these may be of different genera?

Found in Surinam by Dalberg^f.

MARGUE: See *Rhizophora*.

MARICA.

Lin. gen. Schreb. n. 81. *Cipura. Aubl. t.* 13. *Juss.* 58.

Class. 3. 1. *Triandria Monogynia.*

Nat. order of Ensatæ. Irides, Juss.

GENERIC CHARACTER.

CAL. *Spathes* bivalve.

COR. six-parted. *Petals* three outer ovate, three inner smaller; all connate at the claws.

STAM. *Filaments* three, very short, inserted into the tube of the corolla. *Anthers* oblong, erect.

PIST. *Germ* inferior, angular. *Style* three-cornered. *Stigmas* three, petal-form, simple, acute.

PER. *Capsule* oblong, angular, three-celled.

SEEDS several, angular.

ESSENTIAL CHARACTER.

Cor. six-parted, with three alternate segments as small again as the others. *Stigma* petal-form, trifid, with the three divisions simple, acute. *Caps.* three-celled, inferior.

SPECIES.

1. *Marica paludosa*.

Lin. spec. Willd. 246.

Cipura paludosa. Aubl. guian. 1. 38. *t.* 13.

^e Linn. transf. 2. 313.^f Linn. suppl.

DESCRIPTION, &c.

Root a fleshy bulb, covered with several membranes as in Saffron. Leaves from the bulb four or five, surrounding and covering it with their bases, more than a foot long, narrow, pointed, thin, striated. Stem stout, with two leaves at the top, and some others that are shorter; from the middle of these issue several flowers, each inclosed in a membranous spathe. The three intermediate segments of the corolla hollowed like a spoon, are very small: the colour is white or blue. Style and stigmas blue.

Native of the moist meadows of Guiana, at the foot of the mountain Courou: flowering in august^a.

MARIGOLD. See *Caltha*.

MARILA. (*Μαρίλα*, ashes or embers.)

Lin. gen. Schreb. n. 1756. Swartz prodr. 84.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets oblong, blunt, spreading.

COR. Petals five, obovate, waved at the edge, spreading, longer than the calyx.

STAM. Filaments very numerous, inserted into the receptacle, a little connate at the base, filiform; the inner ones the same length with the corolla, the outer gradually shorter. Anthers ovate.

PIST. Germ linear, four-cornered, superior. Style short, thick. Stigma blunt, subcapitate.

PER. Capsule subcolumnar, incurved, four-cornered, four-celled, four-valved.

SEEDS very numerous, like saw-dust, ciliate.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petaled. Caps. four-celled, many-seeded. Stigma simple.

SPECIES.

1. Marila racemosa.

Swartz prodr. 84.

Native of the West Indies; as Montserrat and St. Christopher's.]

MARJORAM. See *Origanum*.

[MARISCUS. See *Kyllingia*, *Schoenus*, *Scirpus*.

MARMELOS. See *Cratæva*.

MARQUIAAS. See *Passiflora*.

MARRAM. See *Arundo*.]

MARRUBIASTRUM. See [*Ballota*, *Leonurus*, *Stachys*.]

MARRUBIUM, (of Pliny; from a town in Italy. Lin.)

Lin. gen. n. 721. Reich. n. 779. Schreb. n. 976.

Tournef. t. 91. Juss. 114. Pseudodictamnus.

Tournef. t. 89.

Class. 14. 1. Didynamia Gymnospermia.

Nat order of *Verticillatæ*. *Labiata*, Tourn. & Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, salver-shaped, rigid, ten-freaked: mouth equal, patulous, often ten-toothed; toothlets alternate, smaller.

COR. one-petaled, ringent. Tube cylindrical. Border gaping, with a long tubular opening. Upper lip erect, linear, bifid, acute: lower reflex, broader, half-three-cleft; the middle segment broader, emarginate, the lateral ones acute.

STAM. Filaments four, shorter than the corolla, concealed beneath the upper lip, two longer. Anthers simple.

PIST. Germ four-cleft. Style filiform, of the same length and in the same situation with the stamens. Stigma bifid.

PER. none. Calyx contracted at the neck, spread out at the mouth, inclosing the seeds.

SEEDS four, somewhat oblong.

OBS. In *Marrubium* T. the upper lip of the corolla is erect. In *Pseudodictamnus* T. the upper lip of the corolla is arched. Some species have only five teeth to the calyx.

M. crispum has the upper lip entire.

M. hispanicum has the upper lip of the corolla trifid or quadrifid.

ESSENTIAL CHARACTER.

Cal. salver-shaped, rigid, ten-freaked. Cor. upper lip bifid, linear, straight.

^a Aublet.

SPECIES.

* With five-teethed calyxes.

1. *Marrubium Alysson*. Plaited-leaved white Horehound. Lin. spec. 815. Syst. ed. 15. 574. Reich. 3. 64. hort. cliff. 311. Sauv. monsp. 151. Kniph. cent. 9. n. 63. Vahl symb. 2. 65.

M. album, fol. profunde incis, flore cæruleo. Mor. hist. 3. 377. f. 11. t. 10. f. 12.

Alysson verticillatum, fol. profunde incis. Baub. pin. 232. Raii hist. 557.

Alysson Galeni. Clus. hist. 2. 35. Ger. 379. emac. 465. Park. theat. 590. 4.

Leaves wedge-shaped five-toothed plaited, whorls without any involucre.

2. *Marrubium peregrinum*.

Lin. spec. 815. Syst. 537. Reich. 3. 64. hort. cliff.

311. 3. Gron. orient. 73. Crantz. austr. 274.

Jacqu. austr. 2. t. 160. Kniph. cent. 7. n. 54.

M. hispanicum supinum, fol. sericeis argenteis. Tournef. inst. 192. Dill. elth. 219. t. 174. f. 215.

M. album latifolium peregrinum. Baub. pin. 230.

Mor. hist. t. 9. f. 8. Raii hist. 556. 2.

M. alterum pannonicum. Clus. hist. 2. 34. Raii hist. 556. 3.

β. M. creticum. Mill. dict. n. 3. Dalech. hist. 962.

Ger. 562. emac. 693. 4. Park. theat. 45. 3.

M. album angustifolium peregr. Baub. pin. 230.

Raii hist. 556. 4.

Leaves ovate-lanceolate serrate, toothlets of the calyxes bristle-shaped.

3. *Marrubium candidissimum*. Woolly White Horehound.

Lin. spec. 816. Syst. 537. Reich. 3. 65. hort. cliff.

312. n. 4. Retz. obs. 2. 19.

M. fol. rotundo candidissimo. Boerb. lugdb. 156. Dill. elth. 218. t. 174. f. 214.

M. alb. cand. & villosum. Tournef. cor. 12.

Leaves subovate woolly emarginate-crenate at top, calyxine toothlets awl-shaped.

4. *Marrubium astracanicum*.

Lin. Syst. 537. Jacqu. misc. 2. 306. ic. rar. t. 7.

Leaves ovate crenate tomentose very much wrinkled, calyxine teeth awl-shaped, upper segments of the corolla acute.]

5. *Marrubium supinum*. Procumbent White Horehound.

Lin. spec. 816. Reich. 3. 65. hort. cliff. 312. Sauv.

monsp. 151. Scop. carn. n. 713. Barr. ic. 685.

686. Bocc. mus. 2. 78. t. 69.

Calyxine teeth bristle-shaped straight villose.

** With ten-teethed calyxes.

6. *Marrubium vulgare*. Common White Horehound.

Lin. spec. 816. Reich. 3. 65. hort. cliff. 342. Fl.

suec. n. 531. mat. med. 150. Woodw. med. bot.

265. t. 97. Hudf. angl. 261. Wither arr. ed. 3.

533. Engl. bot. 410. Relb. cant. n. 442. Hall.

helv. n. 258. Neck. gallob. 257. Pall. it. 1. 25.

Scop. carn. n. 712. Pollich pal. n. 570. Kniph.

cent. 5. n. 56. Sabb. hort. 3. t. 59. Crantz.

austr. 273. Krock. files. n. 948. Villars dauph.

2. 390. Fl. dan. t. 1036. Clus. hist. 2. 34. 1.

Dod. pempt. 87. 1. Besl. exst. Zorn. ic. t. 27.

M. album. Baub. hist. 3. 316. Ger. 561. 1. emac.

693. 1. Raii hist. 556. syn. 239. Petiv. brit.

t. 32. f. 3. Riv. mon. t. 66. f. 1. Blackw. t. 479.

M. alb. vulgare. Baub. pin. 230. Mor. hist. f. 11.

t. 9. f. 1. Park. theat. 44. f. 1. Tournef. inst. 192.

Garid. 306.

M. Fuchf. 590. Matth. 828. Lonic. 1. 110. 2. Lob.

obs. 278. 3. ic. 1. 517. 2.

M. candidum. Trag. 8. 2.

β. M. album villosum. Baub. pin. 230. prodr. 110.

Raii hist. 557.

Teeth of the calyx bristle-shaped hooked.

7. *Marrubium africanum*. African White Horehound.

Lin. spec. 816. Syst. 537. Reich. 3. 66. hort. cliff.

311. Retz. obs. 2. 19. n. 58. Kniph. cent. 7.

n. 53. Pluk. phyt. t. 306. f. 2. Comm. hort. 2.

179. t. 90. (Pseudo-Dictamnus).

Leaves cordate roundish emarginate-crenate.]

8. *Marrubium crispum*. Curled White Horehound.

Lin. spec. 1674. Syst. 538. Reich. 3. 66. Herm.

par. t. 200? Bocc. mus. 2. 152. t. 129. & in

titulo.

Leaves

Leaves cordate roundish, crenate-subdentate, calyxes ten-toothed awnless.

9. *Marrubium hispanicum*. *Spanish White Horehound*.
Lin. spec. 816. *fyst.* 538. *Reich.* 3. 66. *hort. cliff.* 312. *upf.* 169.

M. album rotundifolium hisp. *Herm. par. t.* 201.

M. subrotundo fol. *Barr. ic.* 797. *Bocc. mus.* 2. 167. *t.* 122.

Borders of the calyxes spreading, toothlets acute.

10. *Marrubium Pseudo-dictamnus*. *Shrubby White Horehound*.

Lin. spec. 817. *fyst.* 538. *Reich.* 3. 67. *hort. cliff.*

312. *upf.* 169. *Kniph. cent.* 8. n. 65. *Sabb. hort.* 3. *t.* 47.

Pseudodictamnus. *Dod. pempt.* 281. *Ger.* 651. 2.

emac. 795. 2. *Park. theat.* 28. *f.* 2. *Raii hist.*

557.—*verticillatus inodorus*. *Baub. pin.* 222.

Borders of the calyxes flat villose, leaves cordate concave, stem shrubby.

11. *Marrubium acetabulosum*. *Saucer-leaved White Horehound*.

Lin. spec. 817. *fyst.* 538. *Reich.* 3. 67. *Barr. ic.* 129. (*Dictamnus*).

Pseudo-dictamnus acetabulis moluccæ. *Baub. pin.*

222.—*alter Theophrasti, Ponæ*. *Park. theat.* 28.

f. 3. *Raii hist.* 558.

Borders of the calyxes longer than the tube membranaceous, the greater angles rounded.

DESCRIPTIONS, &c.

1. Root biennial. Stems about the same height with the common fort. Leaves hoary, bluntly toothed. Whorls of flowers small and loose. Segments of the calyx end in very stiff prickles, spreading open. Flowers dark purple, larger than those of the common fort.

[Linneus remarks, that there are three small purple flowers on each side: and that the calyxes are acute with the teeth spreading.

Native of Spain and Italy. Cultivated by Gerarde before 1597. It flowers in July and August^a.

Vahl says, that *M. plicatum* of Forskahl scarcely differs from this; for it agrees in its rigid stalk, plaited leaves attenuated into the petiole at the base, unequally and bluntly toothed, in the want of an involucre, and its rigid pungent calyxes; it differs however in having ten-flowered whorls, which yet is often the case in *M. Alysson*, and the whole plant is woolly white, with the leaves less wedge-shaped and rounder.]

2. Stems near three feet high, branching much more than the common fort. Leaves rounder, whiter, and standing farther asunder. Whorls of flowers not so large; but the corolla has a longer tube.

[Like the next species, there are several stems from the same root, procumbent at the lower part, but rising upright above, somewhat longer and more slender than in that: leaves narrower, not so thick, villose or wrinkled; but softer, with a more delicate down, and more hoary: the flowers, especially the helmet, are divided into sharper segments: the calyxes are more deeply streaked, and are cut into longer segments, more standing out^b.

Native of the Levant, Austria, Sicily, &c.].

β. This rises with slender hoary stems near three feet high: the leaves are very hoary, much longer and narrower than those of the preceding: the whorls of flowers are smaller; and the bristly indentures of the calyx longer and erect: the whole plant has an agreeable flavour.

[Native of Libanus. *Lin.* Miller says Spain and Portugal. These were cultivated in the Eltham garden before 1732.

Dillenius remarks, that *M. album latifolium* and *angustifolium* of Caspar Bauhin are upright plants, taller and stouter, and more branched; that the latter has a strong smell, and has sharper leaves; but that the former is inodorous, like his plant, with a bitter taste, which his has not: the leaves of the broad-leaved variety are more narrowed at both ends, more bluntly and not so frequently crenate: finally that the leaves of his plant are softer and whiter.]

^a Hort. kew.

^b Dillenius.

3. This has stalks about the same length as those of the common fort. [They are from a foot to a foot and half in height, procumbent at the lower part, but rising upright at top, obtusely quadrangular and villose. Leaves thick, much wrinkled and villose, pale green and hoary, the upper ones smaller. Flowers at the end of the stem and branches in close whorls, white, the upper lip erect and bent back, blunter than in the other forts; the lower lip three-parted, the middle segment entire, blunter and somewhat wider than the lateral ones. Calyxes villose, divided into five sharp segments, almost equal, the three upper ones somewhat shorter; they are sessile, and are surrounded by an involucre of many capillaceous leaves^c.

There is some confusion here, and according to Retzius, the plant with ovate-lanceolate shining silky leaves, ferrate from the middle to the tip, but entire in the other half, and the teeth of the calyx awl-shaped is *M. hispanicum supinum fol. fericeis argenteis*, figured by Dillenius in *t.* 174. *f.* 215. See the preceding species.

Native of the Levant. (Miller says Spain). Cultivated in 1732, by James Sherard; *M. D.* It flowers from July to September^d.

4. Stems several, perennial, half a foot high, branched and procumbent, from which annually spring many other stems, which are herbaceous, erect, a foot long, scarcely branched, woolly-villose and hoary. Leaves petioled, hoary, wrinkled very much, tomentose on both sides, soft, ovate, blunt, ferrate, bitter, having scarcely any smell; the younger ones that come out with stems extremely woolly. Whorls very close composed of very many sessile flowers, with an involucre of awl-shaped acute woolly leaflets. Perianth tubular, hoary, very woolly at the edges, rigid; the five toothlets lanceolate-acuminate and erect. Corolla twice as long as the calyx: tube cylindrical, white: border purple: upper lip linear, cloven as far as the middle, erect, villose at the back: lower lip trifid, the length of the upper; the lateral segments shorter, oblong and blunt; the middle one very large, broad and roundish, emarginate, flat, stretching forward. Filaments very short concealed within the upper part of the tube. Anthers roundish, dusky. Style the length of the flaments^e.

Native of Astrachan. It flowers in May.]

5. Stems seldom above eight or nine inches long, covered with a soft hoary down. Leaves small, roundish, very soft to the touch, hoary, indented on the edges. Whorls of flowers small, very downy, and white.

[Scopoli places that synonym of Dillenius which has been given under *M. peregrinum*, and which Retzius suspects to belong to *M. candidissimum*, under his *supinum*. He says that *M. album angustiore folio* of John Bauhin differs only in having the leaves ferrate and sharp, and the flowers small; and that his plant not being supine, is intermediate between the second species and this.

Native of Spain and the South of Europe. Cultivated in 1714, in the botanic garden at Chelsea. It flowers from August to October^f.

6. Root perennial. The whole plant white with down. Stems upright, a foot or eighteen inches in height, branching towards the top. Lower leaves roundish, upper somewhat ovate; all wrinkled, with thick veins beneath, bluntly ferrated about the edge, an inch wide, and as long or longer, running down into the petiole, which is half an inch long and channelled above. Whorls very close, consisting of above forty, some above fifty sessile flowers. Calyx woolly, fringed on the inside at the bottom of the teeth with woolly hairs; having as many streaks on the outside as there are teeth, which are usually ten, but sometimes twelve, the teeth are whitish, recurved, alternately larger and smaller. Corolla small, white, compressed, shrivelling in the calyx; tube curved a little; upper lip lanceolate or linear, blunt, deeply cloven; the lower has the middle segment bent back and slightly scalloped, the lateral segments lanceolate, entire, short.

^c Ibid.

^d Hort. kew.

^e Jacquin.

^f Hort. kew.

The two shorter filaments, according to Scopoli, are villose at top, but the two longer ones smooth. Anthers yellow, with a black substance in the middle. The involucre under the whorls is bristle-shaped^z.

Common White Horehound has a strong penetrating smell, not altogether unpleasant. It was a favourite medicine with the ancients in obstructions of the viscera. In large doses it loosens the belly. It is a principal ingredient in the negro Cæsar's remedy for vegetable poisons. A young man, who had occasion to take mercurial medicines, was thrown into a salivation which continued more than a year. Every method that was tried to remove it, rather increased the complaint. At length Linnæus prescribed an infusion of this plant, and the patient got well in a short time. No quadrupeds seem to eat it^h. Bees much frequent the flowers.

Native of most parts of Europe, by road sides and in waste places, flowering from June to September.

7. Root perennial. Stem two feet high, upright, subtomentose, deeply grooved on the opposite sides. Branches opposite. Leaves wrinkled, subtomentose. Whorls remote. Involucres many-leaved, linear, ciliate, nearly the length of the calyxes. Calyx tubular, curved, hispid, nine or ten-streaked, nine or ten-toothed; toothlets short, awl-shaped, the uppermost longer, spinulose. Corolla white, smaller than the calyx: upper lip villose on both sides, slightly bifid; lower three-parted; the lateral segments semiovate, entire, diverging: the middle reflex, truncated, slightly two-nicked: tube long, linear. Filaments the length of the tube: anthers yellow, with shining dots, visible only in the microscopeⁱ.

Retzius remarks that this plant has the involucre of *Phlomis*, the corolla of this genus, and the anthers of *Leonurus*; inasmuch that he is doubtful to what genus it ought to be remarked: but he had an opportunity of observing only one plant, and that in an imperfect state.

Linneus distinguishes this from the next species, which it resembles, by the helmet or upper lip of the corolla being emarginate and hairy.

Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers from July to September^k.

8. Stem suffruticose, upright, rough-haired. Leaves petioled, very much wrinkled, crenate, subtomentose, hairy underneath. Calyx funnel-form, ten-toothed. Corolla purple, not hairy: upper lip roundish, blunt, entire; lower trifid, with the middle segment bifid, the sides ones stretched out. Anthers not beyond the throat or opening. It is a different plant from that which is figured by Hermann t. 200; that having the upper lip lanceolate and bearded, and the stamens the length of the lip.

Native of Italy, Sicily, and Spain^l.]

Miller has two species, crispum and suffruticosum (n. 8 and 9.) The first of these, he says sends out many stiff roundish stalks, more than two feet high, covered with a white cottony down. The tube of the corolla is scarcely so long as the calyx, so that the two lips are but just visible.

The second has shrubby stalks near three feet high, dividing into small branches; the leaves are heart-shaped; the tube of the corolla is longer, and the flowers are larger; they are of a pale purple colour, and the upper lip is erect.

The leaves of both are rough on their upper side, and woolly on their under; the whorls of flowers are large, and the borders of the calyx flat and hairy.

9. The stalks of this grow more erect than those of the common sort; the leaves are rounder and more ferrate; the calyx spreads open, and the segments are acute; the flowers are like those of the common sort; the whole plant is very hoary.

[According to Linneus, the leaves are roundish, flat and crenate; the upper lip of the corolla trifid or quadrifid; the teeth of the calyx alternately larger and smaller.

^z Withering, Woodw. Mss. Pollich, Scop. Krock, Ray.

^h Withering, Liban. succ.

ⁱ Retzius.

^k Hort. kew.

^l Linn.

Native of Spain. Cultivated in 1759 by Mr. Miller. It flowers in July and August^m. Mr. Miller affirms that he had the seeds from Istria.]

10. This rises with a shrubby stalk two feet high, and dividing into many branches. Leaves small, sitting pretty close to the stalks. The whorls of flowers not so large as those of the eighth sort. The rim of the calyx flat. The flowers white. The whole plant very hoary with a dense compact cotton.

[Native of the island of Candia; Miller says Sicily and the islands of the Archipelago.—Cultivated by Gérard in 1596. It flowers from June to Augustⁿ.]

11. Stems hairy, about two feet high. Leaves heart-shaped, rough on their upper side, and hoary on their under, deeply ferrate. Whorls large. Border of the calyx flat; segments many, membranaceous, angular, and rounded at the top. Corolla small, pale purple, scarcely appearing out of the calyx: upper lip erect.

[The teeth of the calyx are acuminate. After flowering time the border of the calyx grows out till it becomes twice as long as the tube, and is naked and membranaceous, not villose as in the preceding species: the margin of the border has twenty angles; the smaller ones acute, the broader ones very blunt and rounded^o.

Native of the island of Candia. Cultivated in 1731 by Mr. Miller. It flowers from June to August^p.]

PROPAGATION AND CULTURE.

All these plants are preserved in botanic gardens for the sake of variety, but there are not above two of the sorts which are cultivated in other gardens; these are the tenth and eleventh sorts, whose stalks are shrubby: the plants are very hoary, and make a variety when intermixed with other plants; these very rarely produce seeds in England, so are propagated by cuttings, which, if planted in a shady border the middle of April, will take root pretty freely.

They are somewhat tender, and in very severe winters are killed, unless they are screened from the hard frosts, especially those plants which grow in good ground, where becoming luxuriant in summer, their branches are more replete with juice, and very liable to suffer by cold; but when they are in a poor dry rubbish, the roots being short, firm, and dry, are seldom injured by cold, and will continue much longer than those in better ground.

The other sorts are easily propagated by seeds, which should be sown on a bed of poor earth in the spring, and when the plants come up they must be kept clean from weeds; and where they are too close they should be thinned, leaving them a foot and half asunder, that their branches may have room to spread; after this they require no other culture; they may also be propagated by cuttings, in the same manner as the other two sorts. If these plants are upon a dry poor soil, they will live several years, but in rich land they seldom last above three or four.

[MARRUBIUM. See *Leonurus* and *Stachys*.

————— aquaticum & palustre. See *Lycopus*.]

————— nigrum. See *Ballota*.

[MARSANA. See *Murraia*.

MARSHALLIA. (So named by Schreber, from Mr. Humphry Marshall, author of *Arbustum Americanum*. Philad. 1785. 8vo.)

Lin. gen. Schreb. n. 1762.

Class. 19. 1. Syngenesia Polygamia Æqualis.

GENERIC CHARACTER.

CAL. Common many-leaved, spreading: leaflets linear-lanceolate, blunt, concave, almost equal, permanent.

COR. Compound, uniform, longer than the calyx. Corollets hermaphrodite, equal, numerous. Proper one-petalled, funnel-form, villose: tube the length of the calyx; border five-cleft, subventricose; segments linear, almost erect; two more deeply separated.

STAM. Filaments five, capillary. Anther cylindric, tubular, the length of the border.

PIST. Germ ovate. Style filiform, a little longer than the stamens. Stigmas two recurved.

PER. none. Calyx unchanged.

^m Hort. kew.

ⁿ Ibid.

^o Linn.

^p Hort. kew.

SEEDS solitary, ovate, five-cornered, pubescent, crowned with the small five-leaved *calycle*: *leaflets* ovate, acuminate, scarious, erect.

RECEPT. chaffy, flat: *chaffs* linear, a little dilated and blunt at the tip, green, the length of the calyx.

MARSH CINQUEFOIL. See *Comarum*.

— ELDER. See *Viburnum*.

— MALLOW. See *Althæa*.

— MARYGOLD. See *Caltha*.

— TREFOIL. See *Menyanthes*.

MARSILEA. (So named by Linneus, in honour of Count Aloysio Ferdinando Marfigli of Bologna, founder of the Institute there, author of the history of the Danube, and several other works, between 1681 and 1726.)

Lin. gen. n. 1618. Lemma. Juss. gen. 16. aët. gall. 1740. 263. t. 15. Salvinia. Mich. gen. t. 58.

Class. 24. 1. Cryptogamia Miscellaneæ.

GENERIC CHARACTER.

CAL. Common oval, subcompressed, coriaceous, hairy, gaping at the base, internally divided into several (fourteen or fifteen) cells, in two longitudinal rows, separated by a membranaceous partition.

COR. none.

STAM. Filaments none. Anthers several, inserted round each pistil, very small, obovate, sharp below, one-celled, gaping transversely, exploding a spherical pollen.

PIST. in each cell several, coordinate in a transverse row, oval. Style none. Stigma short, blunt.

PER. none.

SEEDS as many as there are pistils.

REC. Membrane somewhat fleshy, clothing the cells internally.

OBS. Calyxes one, two, or three, pedicelled issue from the petiole of the leaf a little above the rest.

SPECIES.

1. Marfilea natans.

Lin. spec. 1562. syst. 942. Reich. 4. 437. mant. 506. Guett. in aët. gall. 1762. 543. t. 29. f. 1.

M. salvinoides. Neck. in aët. palat. 3. 297. t. 21.

Salvinia vulgaris aquis innatans, fol. subrotundis punctatis læte virentibus. Mich. gen. 107. t. 58. Loeff. it. 281.

Lenticula palustris latifolia punctata. Baub. pin. 362.

Lens palustris patavina. Baub. hist. 3. 785.

Leaves opposite simple.

2. Marfilea quadrifolia.

Lin. spec. 1563. syst. 942. Reich. 4. 438.

Zuluzianikia marfiloides. Neck. aët. palat. 3. 303.

Lemma. Juss. in aët. par. 1740. 263. Guett. stamp. 1. 62.

Lenticula palustris quadrifolia. Baub. pin. 362. Mapp. alsat. t. 166.

Lens palustris quadrifolia. Baub. hist. 3. 789. Mor. hist. 3. 619. f. 15. t. 4. f. 5.

L. pal. altera. Cam. epit. 853.

Leaves in fours quite entire.

3. Marfilea minuta.

Lin. syst. 942. Reich. 4. 438. mant. 308.

β. M. cormandelina. Burm. ind. 237. t. 62. f. 3.

Leaves in fours toothletted.

DESCRIPTIONS, &c.

Micheli first gave this respectable name to plants which prove only to be species of Jungermannia. To the first of the above plants, Micheli had given the name of Salvinia, from Ant. Maria Salvini, a noble Florentine, professor of Greek, but not of Botany. The elder Jussieu and Necker both separate the second species from Linneus's genus of Marfilea.

1. Branches floating. Leaves in two rows, ovate, folded together, having little balls scattered over them, composed of four white filaments, cirrhose at the tip; among the roots globes from three to seven, furnished with a style, many-seeded^a.

Native of Italy, in stagnant and slow-flowing marsh ditches, as near Pisa; also in North America.

2. Capsules toothless^b. Stem creeping, rooting. Leaves on long petioles, flowering at the base of the petiole. Involucre pedicelled, ovate, transversely many-

celled; cells having pistils and anthers placed on the same receptacle promiscuously^c.

Native of France, Alsace, Siberia, India, in ditches.

3. This is very like the preceding, but differs in having a smaller and more rigid stem; the whole plant is less; the leaves are toothlet-crenulated, and seven times smaller; the capsules are two-toothed at the base, even, compressed.

Native of the East Indies.

β. Seems to be only a very minute variety, though most of the leaves are in a manner quite entire; some of them however are crenulate^d.

MARSILEA. See *Isætes* and *Jungermannia*.]

MARTAGON. See *Lilium*.

MARTYNIA. (So named by Houstoun, in honour of John Martyn, F.R.S. Professor of Botany at Cambridge, author of *Historia Plantarum rariorum*, and many other works; editor of Virgil's Georgicks and Eclogues. Born sept. 1699; died jan. 1768.)

Lin. gen. n. 753. Reich. n. 811. Schreb. n. 1010.

Mart. t. 42. Houst. reliqu. t. 10. Juss. 140.

Gartn. t. 110. Glox. obs. t. 1, 2.

Proboscidea. Juss. Schmidel. ic. t. 12. Craniolaria. Ed. prior.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*. *Bignoniæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-cleft, unequal, shrivelling.

COR. one-petalled, bell-shaped: tube spreading, ventricose, gibbous below at the base, melliferous: border five-cleft, obtuse, spreading: segments almost equal; the lower straight, the lowest more erect, concave, crenate.

STAM. Filaments four, filiform, curved inwards; the rudiment of a fifth filament within the upper pair of stamens, short like a cusp. Anthers connected-converging.

PIST. Germ oblong. Style short, simple, the length of the stamens.. Stigma two-lobed.

PER. Capsule woody, oblong, gibbous, quadrangular, two-furrowed on each side, acuminate, with the tip bent back, opening two ways, four or five-celled, inclosing the seeds as in a four-celled nucleus.

SEEDS several, oblong, berried.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. ringent. Caps. woody, corticate, with a hooked beak, four-celled, two-valved.

SPECIES.

1. Martynia perennis. Perennial Martynia.

Lin. spec. 862. syst. 558. Reich. 3. 142. hort. cliff. 322. t. 18. Glox. obs. 13. Ekret. pict. t. 9. f. 2. Medic. bot. beob. 1783. p. 238.

Stem simple, leaves serrate.

[2. Martynia longiflora. Long-flowered Martynia.

Lin. syst. 559. Reich. 3. 143. Ait. hort. kew. 2. 339. Meerb. ic. 7.

M. capensis. Glox. obs. 13.

Stem simple, leaves roundish repand, tube of the corolla gibbous at the base and flattened]

3. Martynia diandra. Two-stamened Martynia.

Glox. obs. 3. & 14. t. 1.

M. annua. Lin. spec. ed. 1. syst. ed. 10. Reliqu. Houst. 5. t. 10. Mill. dict. n. 1.

M. annua villosa & viscosa, folio subrotundo flore magno rubro. Mart. cent. t. 40. Ekret. pict. t. 1. f. 5. Philos. trans. vol. 38. n. 427. p. 3.

Branches dichotomous, leaves cordate-orbicular, toothed, flowers two-stamened.

4. Martynia Craniolaria. White-flowered Martynia.

Glox. obs. 11. & 14.

Craniolaria annua. Dict. nostr. Mill. dict. n. 1.

Branches dichotomous, leaves half-five-lobed, calyx with a one-leaved spathe.

5. Martynia Proboscidea. Hairy Martynia.

Glox. obs. 7. & 14. Ait. hort. kew. 2. 339. Mill. fig. 191. t. 286.

M. annua. Lin. syst. 559. Reich. 3. 142. Swartz obs. 230. Sabb. hort. 2. t. 91. Gartn. fruct. 2. 131.

M. Louisiana. Mill. dict. n. 3.

M. annua villosa. Kretzschmar monogr. cum. fig.

^a Forster in Linn. mant.

^b Linn. syst.

^c Jussieu.

^d Linn. mant.

- M. caule petiolisque fistulosis, floribus bibracteatis.
Gouan hort. 303.
 Proboscidea. *Jussieu. Schimid. ic.* 49. t. 12, 13.
Medic. bot. Beob. 1783. p. 20.
 Stem branched, leaves quite entire cordate, sinuses dilated.
 6. *Martynia fruticosa. Shrubby Martynia.*
Glox. obs. 11 & 15.
Gesneria Craniolaria. Swartz prodr. 89. & *Diët. nostr.* n. 4.
Craniolaria fruticosa. Lin. spec. 861. *Swartz obs.* 229. *Mill. diët.* n. 2.
Shrubby, leaves lanceolate-ferrate toothed, upper lip of the corolla with numerous curled segments.

DESCRIPTIONS, &c.

[These are annual plants, except the first and last. Stem herbaceous, except the last. Leaves simple, mostly opposite, but sometimes alternate. Flowers in axillary and terminating short spikes or bunches. Calyx five-leaved in the first and third, five-cleft in the rest. Corolla specious, blue, red or white variegated with elegant dots and lines. Distinct from the *Personatæ*, and approaching to *Pentandria* in having a fifth imperfect stamen: in the third species two of the principal stamens are imperfect. Germ inferior in the first and last. Fruit more than two-celled, commonly four-celled, some with a long, others with a short beak.]

1. Root perennial, thick, fleshy, divided into scaly knots, somewhat like those of Toothwort. Stems annual, about a foot high, thick, succulent, purplish. Leaves oblong, thick, sessile, rough and of a dark green on their upper side, but purplish underneath. The stem is terminated by a short spike of blue bell-shaped flowers, not spreading open so much at the rim as in the third sort.

[Linneus observes, that the fruit appears to be inferior; hence Jussieu would refer it with the last species to *Gesneria*.]

It was discovered by Mr. Robert Millar, growing naturally about Carthage in New Spain, whence he sent the seeds to Europe.

[2. Stem upright, somewhat rugged, two feet high. Leaves opposite, petioled, three-nerved. Flowers axillary, solitary, on short peduncles. Instead of stipules at the base of each peduncle, a gland or little cup with a ball in it, having as it were a short style and stigma. Perianth very small, five-toothed. Tube of the corolla very long, more contracted in the middle, gibbous on the dorsal base. Germ superior. Style the length of the tube. Stigmas linear, two, revolute. Pericarp scarcely beaked, having a thick toothlet on each side at the base. Seeds small^a.

Native of the Cape of Good Hope. Introduced in 1781, by the Countess of Strathmore^b.

3. This is a handsome large plant, two feet high, straight, with large leaves, viscid from small slender simple white villous hairs, each of which has a pellucid clammy globule at the top.

Stem single, round, reddish green. Branches several, brachiate, dichotomous. Root-leaves none. Stem-leaves opposite, angular, with teeth remote by a long sinus, flaccid, green, white from the closeness of the villous hairs, veined, the largest six inches long; petioles on the stem horizontal, on the branches spreading, the same length with the leaf. * Flowers several, on short peduncles, hanging down, so that the throat is turned towards the ground, disposed in a thyrse in the forks of the branches, two inches and a half long. Bracte double, one anterior two lines below the calyx, two-leaved, sessile; leaflets ovate, bluntish, dry, villous only at the edge, easily deciduous, reddish green: the other one-leaved, very large, opposite to the end of the peduncle, on a sort of winged petiole, ovate-orbicular, angular, nerved, dry, with the upper edge bent in, falling off before the flower expands. Perianth five-leaved; three of the leaflets lanceolate, slender, one-nerved; two ovate, thicker, three-nerved, yellowish green, the whole deciduous. Corolla inferior, five times the length of the calyx: tube white tinged with purple, and spotted red and yellow: border

pale red; with a shining purple spot on each segment, two-lipped; upper lip reflex, bifid; lower straight, trifid, the middle segment longer, wider, with a yellow spot at the base resembling a bifid stigma supported on a style. Filaments straight, inserted into the anterior part of the corolla, and applied to it, thickish, the length of the tube: two larger at the sides, fertile; two smaller in the middle without anthers; and between these the rudiment of a fifth. Anthers oblong, two-celled. Germ superior, contracted in the middle. Style thickish, flat, shorter than the stamens. Stigma two-plated; plates flat, placed one against the other, gradually becoming more and more remote; after fecundation it shrivels and gapes. Under a green shell, shining with clamminess, coriaceous, juiceless, acuminate at both ends, is concealed the capsule, an inch long, black, woody, very hard, ovate, compressed, four-grooved. Seeds four, one in each cell, oblong, compressed, black, with a white pith or pulp^c.]

Miller says, that the corolla is shaped like that of the Fox-glove, but of a paler purple colour: that the capsule is thick, tough and clammy, when ripe dividing into two parts, and leaving a large hard nut hanging on the plant, about the size, and much of the same form as the stag-beetle, with two strong crooked horns at the end: it has two deep longitudinal furrows on the sides, and several smaller crossing each other in the middle; it is so hard, that it is with difficulty cut open without injuring the seeds; within it are four oblong cells, two of which have generally a single oblong seed in each, but the other two are abortive. The flowers at the divisions of the branches may be brought forward in July; those at the extremities come afterwards, so that there is a succession of flowers on the same plant to October, when the plants decay.

It was discovered by Dr. William Houstoun, near La Vera Cruz, in New Spain; whence he sent the seeds to England, which succeeded very well in the botanic garden at Chelsea; and in the year 1731, several of these plants were raised, which produced their beautiful flowers, and perfected their seed, whence several plants were raised the succeeding year.

[This has been much confounded with the fifth sort.

4. See the description, &c. under *Craniolaria*. It is now generally agreed that these genera ought to be united: both having a monopetalous ringent corolla, with the rudiment of a fifth stamen; and a capsule similar in structure.

5. This is a large plant, two feet high, flexuose, herbaceous, villose, viscid. Stem single, round, pale green. Branches several, scattered, resembling the stem. Root-leaves none. Stem-leaves opposite and alternate, stiffish, waved, veined, yellowish green, five inches long. Petioles horizontal, slightly channelled above, the length of the leaf. Flowers several, peduncled, in a loose thyrse in the forks of the branches, two inches long. Bractes two at the base of the calyx, lanceolate-ovate, from yellow greenish-red, shrivelling, deciduous. Perianth inflated, the three upper segments lanceolate, acute, the lower lobed; deciduous. Corolla inferior, four times as long as the calyx: tube yellowish white, variegated with green, yellow and violet spots; border wide, waved, pale violet, with saffron-coloured and violet dots and lines, divided into two less distinct lips; segments roundish, the middle one larger, painted at the base with sulphur-coloured lines resembling the stamens and the style with the stigma. Filaments thickish, white with violet dots, inserted into the bottom of the tube, the smaller winding round the larger, the same length with the tube. Anthers two-celled; cells ovate; converging. There is a rudiment of a fifth stamen. Germ oblong-acuminate. Style roundish, white, the length of the stamens. Stigma two-plated; plates roundish, crenate; it gapes, but closes with a touch. Under a coriaceous, green, viscid, juiceless shell, acuminate both ways and two-valved, is concealed the capsule, a hand-long, swelling, woody, blackish, obsoletely quadrangular, with many excavations, crested along the back, and having a very

^a Royen in Linn. syst.^b Hort. kew.^c Gloxin.

long hooked beak; it opens by two valves, and is incompletely five-celled. Seeds subcordate, compressed, rugged^d. Gærtner adds, that there are four cells, but that a fifth arises, when the transverse partitions becoming ripe recede from each other, and leave an empty space in the axis of the fruit: partitions coriaceous, rising thick from the lateral grooves, but extenuated into transverse laminae, and opposite to each other. Seeds about twelve in the whole capsule, ovate-acuminate, berried, when ripe rugged with tubercles, black with a coppery brightness; they are in a single longitudinal row in each cell, and fastened to the partitions. The fruit is so well figured by this author, as that of the third species is by Houttoun, that they cannot be mistaken. The whole plant of the third is also figured by Martyn and Ehret; as that of the fifth is by Miller, Gloxin, Sabbati, Kretschmar and Schmidel, so well that there can be no difficulty in distinguishing them.—The Proboscidea may also be known by its scattered branches; leaves opposite and alternate, cordate-ovate, quite entire, waved and somewhat rigid; its one-leafed calyx; the tube of the corolla very wide, with the border more irregular; all the four filaments fertile, and bent in one among another; and finally by the very long beaks to the capsule^e.

Native of America. Cultivated in 1759 by Mr. Miller. It flowers from June to August^f.

6. See the description under *Gesneria*, to which genus it certainly belongs from its habit, inflorescence, flower and fruit. Linneus's generic character by no means accords with it, and Plumier was long since aware of its affinity to *Gesneria*^g.

It may be added, that the stem is upright; the leaves solitary and villose; the flowers solitary from the angles of the branches; calyx permanent, segments long and sharp^h.

Cultivated by Mr. Miller in 1759.]

PROPAGATION AND CULTURE.

1. The first sort dies to the root every winter, and rises again the succeeding spring; this must be constantly preserved in the stove, and plunged into the bark-bed, otherwise it will not thrive in this country. During the winter season, when the plants are decayed, they should have but little water given to them, for at that time it will rot the roots. In the middle of March, just before the plants begin to shoot, is the proper season to transplant and part the roots, when they should be planted into pots of a middle size, filled with light rich earth, and then plunged into the bark-bed, which should at this time be renewed with some fresh turf. When the plants come up, they must be frequently refreshed with water, but it must not be given to them in large quantities, lest it rot their tender roots; and as the warmth of the season increases, it will be proper to admit a large share of fresh air, which will greatly strengthen the plants; they must also be placed in the tan-bed, where they are not over-hung, or shaded by other plants; nor should they be shifted or transplanted when they are in leaf, for that will prevent their flowering. As the roots of this plant increase very fast, there is no necessity for using other methods to propagate it: otherwise the shoots of the young stalks will take root, if planted in pots filled with light earth, and plunged into a hot-bed during any of the summer months.

2. to 5. The annual sorts must be propagated by seeds sown in pots filled with light rich earth, and plunged into a hot-bed of tanner's bark, where if the earth be duly watered, the plants will appear in three weeks or a month: transplant them in a little time after they come up, each into a separate pot, and plunge them into the hot-bed again, watering them well, and shading them until they have taken new root; after which they should have a large share of fresh air admitted to them in warm weather, by raising the glasses of the hot-bed every day: with this management the plants will make great progress, so as to fill the pots with their roots in about a month or six weeks time,

^d Gloxin.

^e Ibid.

^f Hort. kew.

^g Swartz obs.

^h Gloxin.

when they should be shifted into pots about a foot diameter at the top, filled with light rich earth, and then plunged into the hot-bed in the bark-stove, where they should be allowed room, because they put out many side branches, and will grow three feet high or more, according to the warmth of the bed, and the care which is taken to supply them constantly with water; and should be constantly kept in the tan-bed, giving them plenty of free air at all times when the weather is warm, but they will not bear to be exposed abroad in this country; when these plants thrive well they will send out many side branches, which will all of them produce small spikes of flowers; but it is only from the first spike of flowers that good seeds can be expected in this country, so that particular care should be taken, that none of these are pulled off or destroyed, because it is very difficult to obtain good seeds here; and I believe few of those that are produced on the side branches in the natural country of their growth, are duly ripened; for I have received a great quantity of these seeds from abroad, which have appeared to be very good, and yet few of them have grown.

The seeds of these plants have a strong green covering on them, as thick as the outer covering of an Almond, and when the seeds are ripe, the covering opens, and lets the seeds fall, in the same manner as the covering of Almonds, Walnuts, &c. In each covering there is one hard nut, in shape somewhat like a beetle, having two sharp crooked horns at one end. This nut contains four embryos, but there are seldom more than two seeds which are perfect in any of them. However, when they are sown, the whole nut must be planted, for it is so hard, that it is almost impossible to take out the seeds without spoiling them; and where there are two plants produced from the same nut, they are easily separated, especially if they are transplanted while young. These seeds will continue good for some years, for I saved a pretty large quantity of them in the year 1734, part of which I sowed the following year, but had not one plant produced from them; the remainder of the seeds I divided, and sowed some of them every succeeding year, without any success, until the year 1738, when I sowed all the seeds I had left, from which I had one plant produced; so that if the seeds are good, it is evident they will grow when they are four years old; therefore, whenever we receive good seeds from abroad, or save any in this country which are perfectly ripened, it will be proper to preserve some of them for a year or two, lest a bad season should happen, when the plants may not perfect their seeds; so that if this precaution be not taken, the species may be lost in Europe.

5. This is more hardy than the third sort, so that the plants may have more air; and too much water in summer will rot the succulent stems before the seeds are perfected.

MARVEL OF PERU. See *Mirabilis*.

[MARU. See *Origanum*.]

MARUM. See [*Origanum*, *Salvia*, *Teucrium*, *Thymus*.]

MARYGOLD. See *Calendula*.

———— African and French. See *Tagetes*.

———— [Fig. See *Mesembryanthemum*.]

MASSONIA. (So named by Thunberg, from Mr. Francis Masson, author of *Stapeliae novae*; who found these plants, with many others, at the Cape of Good Hope.)

Lin. gen. Schreb. n. 552. suppl. 27. Thunb. nov.

gen. 39. Juss. 53. Hort. kew. t. 3. 4.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariae*. *Asphodeli*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals six, lanceolate, spreading, upright, placed externally on the nectary: which is inferior, cylindrical, membranaceous, six-streaked, six-toothed.

STAM. six, filiform, incurved, a little longer than the petals, inserted into the teeth of the nectary. Anthers ovate, upright, yellow.

PIST. Germ superior (in respect of the nectary). Style awl-shaped, declining, the length of the stamens. Stigma simple, acute.

PER. Capsule three-sided, thickening above, obtuse, smooth,

smooth, three-celled, three-valved, opening longitudinally at the corners.

SEEDS very many, angular-globular, smooth.

ESSENTIAL CHARACTER.

Cor. inferior, with a six-parted border. Filam. on the neck of the tube. Caps. three-winged, three-celled, many-seeded.

SPECIES.

1. *Massonia latifolia*. Broad-leaved *Massonia*.
Lin. syst. 318. suppl. 193. Thunb. diff. 40. prodr. cap. 60. Ait. hort. kew. 1. 405. t. 3.
M. depressa. Houtt. nat. hist. 12. 424. t. 85. f. 1.
Leaves roundish smooth spreading, segments of the corolla spreading.
2. *Massonia angustifolia*. Narrow-leaved *Massonia*.
Lin. syst. 318. suppl. 193. Ait. hort. kew. 1. 405.
M. lanceolata. Thunb. diff. 40. prodr. cap. 60.
Leaves lanceolate smooth upright, segments of the corolla reflex.
3. *Massonia undulata*. Wave-leaved *Massonia*.
Lin. syst. 318. Thunb. diff. 41. prodr. cap. 60.
Leaves lanceolate waved smooth.
4. *Massonia echinata*. Rough-leaved *Massonia*.
Lin. syst. 318. suppl. 193. Thunb. prodr. cap. 60.
Leaves ovate mucronate hairy.

DESCRIPTIONS, &c.

1. Leaves next the root, one pair, smooth and even. Flowers aggregate, sessile without any scape. Fruit not berried, but a membranaceous capsule; in which it differs from *Hæmanthus*^a.

2. This has the same structure; but the leaves are narrow, of an oblong-lanceolate form, and the segments of the corolla are bent back at the end, whereas in the first they spread straight out.

Both are natives of the Cape of Good Hope, where they were found by Thunberg and Masson. The latter introduced them here in 1775. They flower in march and april^b.

3. 4. Both found also at the Cape by Thunberg.

PROPAGATION AND CULTURE.

The same as *Hæmanthus*.]

MASTERWORT. See *Astrantia* and *Imperatoria*.

[——— Wild. See *Ægopodium*.

MASTICK TREE. See *Pistacia Lentiscus*.

MATAIBA. See *Ephielis*.

MAT-FELON. See *Centaurea*.

MAT-GRASS. See *Nardus*.

MATOUREA. See *Vandellia*.

MATRELLA. See *Agrostis*.]

MATRICARIA. (So named from having been supposed to be efficacious in disorders of the matrix.)

Lin. gen. n. 967. Reich. n. 1049. Schreb. n. 1308.

Tournef. t. 231. Vaill. art. gall. 1720. Juss. 183.

Gærtn. t. 168.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of *Compositæ Discoideæ*. *Corymbiferae*, Juss.

GENERIC CHARACTER.

CAL. Common hemispherical: scales linear, imbricate, almost equal, not scarious.

COR. Compound radiate. Corollæ hermaphrodite, tubular, numerous, in a hemispherical disk. Females in the ray several.

Proper of the hermaphrodite funnel-form, five-cleft, spreading. Female oblong, three-toothed.

STAM. to the hermaphrodites, filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. to the hermaphrodites. Germ oblong, naked. Style filiform, the length of the stamens. Stigma bifid spreading:—to the females. Germ naked. Style filiform, almost the length of the hermaphrodite. Stigmas two, revolute.

PER. none. Calyx unchanged.

SEEDS solitary, oblong, without any pappus or down, to both sorts of florets.

REC. naked, convex.

OBS. In *M. Parthenium* the calycine scales are scarious, and sometimes the ray is wanting.

ESSENTIAL CHARACTER.

Cal. hemispherical, imbricate; the marginal scales solid, sharpish. Down none. Recept. naked.

^a Linn. suppl.

^b Hort. kew.

SPECIES.

1. *Matricaria Parthenium*. Common Feverfew.

Lin. spec. 1255. syst. 774. Reich. 3. 852. hort. cliff. 416. upf. 263. mat. med. 188. Hudf. angl. 371. Wither. arr. ed. 3. 735. Lightf. scot. 490. Relb. cant. n. 626. Woodv. med. bot. t. 249. Hall. belv. n. 100. Fl. dan. t. 674. Krock. files. n. 1430. Villars dauph. 3. 198. Allion. pedem. n. 695. Kniph. cent. 5. n. 57.

Matricaria. Dod. pempt. 35. 2. Lob. obs. 433. 1. ic. 1. 751. 1. Lonic. 1. 151. 2. Trag. 156. Ger. 526. emac. 652. 1. Blackw. 192. Raii hist. 357. syn. 187.

M. vulgaris. Park. theat. 83. 1. Mor. hist. f. 6. t. 10. f. 1.—f. sativa. Baub. pin. 133. Petiv. brit. t. 19. f. 5.

M. vulgo, minus *Parthenium*. Baub. hist. 3. 129. Leaves compound flat, leaflets ovate gasped, peduncles branched.

2. *Matricaria maritima*. Sea Feverfew.

Lin. spec. 1256. syst. 774. Reich. 3. 852. Hudf. angl. 373. Wither. arr. ed. 3. 736. Lightf. scot. 491. Krock. files. n. 1431. Retz. obs. 2. 25.

Chamæmelum maritimum perenne humilior, fol. brevibus crassis obscure virentibus. Raii syn. 186. t. 7. f. 1.

Receptacles hemispherical, leaves bipinnate somewhat fleshy, convex above, keeled underneath.

[3. *Matricaria suaveolens*. Sweet Feverfew.

Lin. spec. 1256. syst. 774. Reich. 3. 853. fl. suec. n. 766. Lightf. scot. 493. Gmel. fib. 2. 200. tub. 262. Leers herb. n. 645. Krock. files. n. 1433. Gærtn. fruct. 2. 420.

M. Chamomilla β. Hudf. angl. 372.—var. 2. Wither. arr. ed. 3. 737.

M. leucanthemos annua suaveolens, *chamæmeli folio*, ovarii albicantibus. Vaill. art. par. 1720. 556.

Chamæmelum tenue incisum, foliis floris deorsum protensis, umbone extuberante, suavis olens. Cup. cathol. suppl. 17.

Receptacles conical, rays bent down, calycine scales equal at the edge.

4. *Matricaria Chamomilla*. Corn Feverfew.

Lin. spec. 1256. syst. 774. Reich. 3. 853. fl. suec. n. 764. mat. med. 189. hort. cliff. 415. Hudf. angl. 372. Wither. arr. ed. 3. 736. Lightf. scot. 491. Curt. lond. 5. 63. 331. Relb. cant. n. 627. Fl. rust. t. 74. Gmel. fib. 2. 200. Hall. belv. n. 101. Scop. carn. n. 1042. Pollich pal. n. 815. Krock. files. n. 1432. Villars dauph. 3. 198. Allion. pedem. n. 696. Kniph. cent. 9. n. 64.

Chamæmelum. Ger. emac. 754. 1. Raii syn. 184. Petiv. brit. t. 19. f. 9. Blackw. 67. 1.—vulgare. Dod. pempt. 257. 2. Park. theat. 851.—*Leucanthemum*. Fuchs. hist. 25.—vulgare, *Leucanth. Diosc.* Baub. pin. 135. Mor. hist. f. 6. t. 12. f. 7.—vulg. amarum. Baub. hist. 3. 116.

Anthemis vulgaris. Lob. obs. 445. 1. ic. 1. 770. 1. Linn. lapp. n. 309.

Receptacles conical, rays spreading, calycine scales equal at the edge.]

5. *Matricaria argentea*. Silvery-leaved Feverfew.

Lin. spec. 1256. syst. 774. Reich. 3. 853. hort. cliff. 415.

M. monoleucanthemos, fol. argenteis plerumque conjugatis. Vaill. art. par. 1720. p. 369.

Chamæmelum orientale incanum millefolii folio. Tournef. cor. 37.

Leaves bipinnate, peduncles solitary.

6. *Matricaria Asteroides*. Starwort-flowered Feverfew.

Lin. syst. 774. mant. 116. Reich. 3. 854.

M. americana. Mill. dict. n. 5.

M. fol. simplicibus lineari-lanceolatis sessilibus, pedunculis unifloris. Mill. in philos. transf. 1765. p. 94.

Aster americanus flore albo folio Lactucæ purpureæ, Raii suppl. 160.

Boltonia Asteroides. Diet. nost. Ait. hort. kew. 3. 197. Leaves lanceolate entire smooth oblique.

[7. *Matricaria prostrata*.

Swartz prodr. 114.

Leaves simple ovate toothed, peduncles lateral, one-flowered, branches decumbent.

8. *Matricaria*

8. *Matricaria cantoniensis*.

Lour. cochinch. 498. *ed. Willd.* 609.

Lower leaves serrate, uppermost quite entire, peduncles one-flowered, florets of the ray entire, receptacle convex.

DESCRIPTIONS, &c.

These are herbaceous plants, with leaves mostly pinnate, but in some few cases simple (n. 6. 7.). Flowers terminating, either in corymbs, or almost solitary. Florets in the ray commonly white, seldom abortive; in *M. Asteroides* numerous and linear. This has the seed five-toothed at top^a; and is not properly a *Matricaria*.

The plants of this genus, *Cotula* and *Anthemis*, are hardly to be distinguished by the habit. But this is a difficulty frequent in Natural Orders.

1. Common Feverfew has a perennial or biennial root, composed of a great number of fibres, and spreading wide on every side. Stem from two to three feet high, erect, firm, round, striated, slightly hairy, branched on every side. Leaves petioled, alternate, pale green, soft and tender, pinnatifid with two or three pairs of ovate jagged pinnae, and a larger one terminating, three-lobed, wedge-shaped, the middle lobe trifid, the side-lobes notched, roughish, slightly hairy: when magnified they appear as if sprinkled with minute spangles. Flowering heads solitary, sometimes on simple, but oftener on branched peduncles, forming together a loose umbel or rather corymb, hairy; the peduncles are thickest just beneath the flower, and about two inches long. Scales of the calyx numerous, ovate, with dry membranaceous margins, which is one character of *Chrysanthemum*. Florets of the ray wedge-shaped, terminated by three teeth, and white: those of the disk crooked, sprinkled with minute shining particles, yellow only at the top. Sometimes the florets of the ray are wanting: and the flowers frequently become double. Seeds whitish, with deep longitudinal furrows, ovate, truncated at the base. Receptacle dotted^b.

Native of many parts of Europe, in waste places, under hedges and walls, in church-yards, sometimes in corn-fields, in gardens, where it is also cultivated in a double state.]

Miller enumerates seven varieties—

1. With very double flowers.
2. With double flowers, having the florets of the ray plane; of the disk fistular.
3. With very small rays.
4. With very short fistular florets.
5. With naked heads, having no rays.
6. With naked sulphur-coloured heads.
7. With elegant curled leaves.

They flower in June, and the seeds ripen in autumn.

[The whole plant has a strong smell, to most persons unpleasing, and a bitter taste. It yields an essential oil by distillation. It has always been esteemed a good emmenagogue, whence its name *Parthenium* (*Παρθένιον* of Theophrastus Dioscorides, &c.) and *Matricaria*. It is also serviceable in hysteric complaints. The best way of taking it is in a slight infusion. It is an agreeable carminative and bitter, strengthening the stomach and dispersing flatulencies. The expressed juice is said to kill worms in the bowels. It has likewise been recommended as a febrifuge, whence its English name Feverfew.

In German it is *Mutterkraut*, *Mutterkamille*, *Jungfernkraut*, *Matromenkraut*, *Muter*, *Meter*, *Mutrich*, *Metram*, *Mablerkraut*, *Magdeblum*, *Fieberkraut*. In Dutch, *Maartel*, *Mater*, *Moederkruid*. In Danish, *Moderurt*. In Swedish, *Matram*. In French, *Matricaire*, *Espargoutte*. In Italian, *Matricaria*, *Matricale*, *Marella*. In Spanish and Portuguese, *Matricaria*. In Russian, *Matoschnaja trava*.]

2. The stalks of this plant branch out pretty much, and spread near the ground. Leaves dark green, like those of the true Chamomile (*Anthemis nobilis*), but much thicker in substance; their edges are turned back. Flowers white, like those of the true Chamomile, and disposed almost in form of an umbel.

^a Jussieu.

^b Wood. Mss. Withering.

[Root woody, running deep, apparently perennial. Stems reclining, about nine inches long, darkish purple, smooth, firmer and stronger than those of *Anthemis nobilis*; the whole plant is stouter, grows more by tufts, and does not spread so wide or creep so much. Leaves thicker and shorter, shining, dark green. Flowers several on a stem. Florets in the ray white, entire, in the disk yellow. In smell it approaches to the true Chamomile, but it is much weaker^c.

Krocker takes it to be a biennial plant. According to him, the stems are eighteen inches long; the peduncles are grooved and one-flowered; the flowers large; the receptacle hemispherical or conical; the florets of the ray three-toothed; the calycine scales surrounded with a brown membranaceous margin; the seeds of the ray three-toothed and triangular.

Retzius remarks, that in the garden it becomes perennial and luxuriant, with an upright stem more than two feet high, and leaves four times larger than in the wild plant, inasmuch that it appears to be a different species.

Native of the coast of Britain. Dillenius first observed it in Suffex, about Cockbush, seven miles from Chichester. Afterwards Mr. Atkinson remarked it in Isle of Walney, Dr. Smith on the rocks at Down near Bamff in Scotland, and Mr. Lightfoot in the Isle of Bute, and on the western side of Cantire between Machrianish and Barr, &c. It flowers in July. Krocker assigns it also to Silesia, on the banks of the Oder, the borders of fields, and dunghills; but I doubt whether his plant be the same with ours.

3. Hudson and Withering will have this to be no more than a variety of the next species; and Lightfoot could perceive no difference between them, except that the rays of this are larger and deflexed.

According to Krocker the stem is smaller, less divided, few-flowered, smooth, weaker, higher. Leaves longer, softer, with linear, bifid pinnules. Flowers a little larger; the florets of the ray narrower, bent down. The receptacle conical, whitish. The scent sweet and pleasant, but less penetrating than that of *M. Chamomilla* or *Anthemis nobilis*.

Gärtner describes the receptacle as ovate-conical, acuminate, high, raised-dotted, naked. Seeds small, inversely pyramidal, grooved, smooth, whitish, bald.

He remarks that the receptacle in the other species is much shorter and merely convex: and that if the seeds of *Matricaria* had a crown, the genus would be changed into that of *Pyrethrum*.

Native of Siberia, Germany, Sweden, and Britain: flowering from May to August.

Its properties resemble those of *Anthemis nobilis*. The Finlanders use an infusion of it in consumptive cases. Cows, goats and sheep eat it. Horses are not fond of it. Swine refuse it^d.

4. Root annual. Stem green, striated, smooth, branched. Leaves deep green, alternate, sessile; the lower ones doubly pinnate, pinnae distant, pinnules bifid or trifid; the upper ones often simply pinnate, pinnae linear, and of an equal breadth with the midrib. Flowering heads solitary, on long, upright, striated, naked peduncles, a little thickened above, terminating the stem and branches. Scales of the calyx bluntly lanceolate, with a green dorsal line, hairy, with membranaceous edges. Florets of the ray about thirteen, white, almost linear, a line and half broad, two-grooved, three-teethed, teeth bluntish; they are at first spreading, afterwards reflex. Mr. Curtis remarks, that they begin to hang down in the evening, and continue to do so till morning, both in this and *Anthemis Cotula*. Florets of the disk yellowish green. Seeds numerous, minute, pale brown, furrowed; the furrows deeper and more numerous on the inner side, the ridges white^e.

Corn Feverfew is common on cultivated grounds, on dunghills, and by way sides; flowering from May to August, and even to October. Several plants are confounded with this, under the common names of

^c Dillen. in Ray syn.

^d Withering.

^e Woodw. Mss. Curtis, Stokes in With.

Mayweed, *Matthes*, *Dog-Finkle*, or *Dog-Fennel*. It differs from *Anthemis Cotula* or Stinking Mayweed, which it most resembles, by its scent, in having a higher and larger stem, the leaves of a darker green, and cut into finer segments. The heads of flowers bruised, smell somewhat like the true Chamomile, only not so pleasant: but those of Stinking Mayweed are very disagreeable, and the plant will blister the skin on being much handled. The florets of the ray in *Matricaria* are in general longer and much narrower; the disk is more prominent and of a darker yellow than in *Anthemis*; which the botanist readily distinguishes, on dissecting it by the pointed chaffs fixed to the receptacle, between the florets, and which are totally wanting in *Matricaria*. The seeds of *Anthemis* are broad and truncated at top, wrinkled, and of a deep brown colour; those of *Matricaria* are much smaller, paler, and different in shape. These distinctions are the more necessary to be attended to, because these plants are extremely similar in their general appearance, are often found growing together, both are annuals flowering at the same time, and both grow nearly to the same height^f.

Mr. Curtis joins Hudson and Lightfoot in affirming that *M. suaveolens* is not different from this; and is surprised that Professor Murray should adopt a species founded on such vague characters. See however what is said above from Krockner and Gärtner.

According to the Swedish observations, kine, goats and sheep eat this plant, horses are not fond of it, and swine refuse it. It seems to be rejected by quadrupeds in general with us. It is supposed to possess the same qualities with the officinal Chamomile (*Anthemis nobilis*), but in an inferior degree.]

5. This rises a foot high. Leaves of a silver colour, for the most part placed opposite. The peduncles arise single from the side of the branches, each supporting one white flower.

Native of the Levant. It flowers in July, and in warm seasons seeds are sometimes perfected in autumn.

6. For the description see *Boltonia Asteroides*.]

Miller describes his *Matricaria americana* to be a perennial plant, with the stalks and leaves decaying in autumn. The former rise a foot and half high, and divide at top into several forked branches: at each of the divisions is placed one linear-lanceolate leaf, about two inches long, and a quarter of an inch broad, of a deep green. The branches are terminated by single peduncles, each supporting one blue flower, very like those of some Asters; but the calyx is scaly, and the seeds have not any down. It flowers in July and August, and the seeds ripen in autumn.

[7. Native of Curaçao^g.

8. Stems herbaceous, a foot and half high, cespitose, suberect, branched. Leaves lanceolate. Flowers terminating, solitary, on upright peduncles. Calycine leaflets acute. Florets of the disk yellow, five-cleft, short, almost closed: of the ray blue, quite entire. It has some affinity with *M. Asteroides*.

Native of China near Canton.]

PROPAGATION AND CULTURE.

1. Common Feverfew is frequently cultivated in the physic-gardens near London to supply the market. The varieties are preserved in botanic and some flower gardens. Some of them are pretty constant, if care be taken in saving the seeds: but where these are suffered to scatter, it is almost impossible to preserve the varieties without mixture.

The seeds should be sown in March upon a bed of light earth, and, when they are come up, they should be transplanted out into nursery-beds, at about eight inches asunder, where they may remain till the middle of May, when they may be taken up, with a ball of earth to their roots, and planted in the middle of large borders, where they will flower in July and August; and, if the autumn be favourable, will produce ripe seeds the same year. But it is not advisable to permit them to seed, which often weakens and decays the roots; therefore, when their flowers are past, you should cut down their stems, which will cause

^f Curtis, Ray, Fl. rust.

^g Swartz.

them to push out fresh heads, whereby the roots may be maintained.

When the different varieties of these plants are intermixed with other plants of the same growth, they make a handsome appearance during the season of flowering, which commonly continues a full month, or more. But as their roots seldom abide more than two, or at most three years, fresh plants would be raised from seeds to supply their places; for although they may be propagated by parting their roots either in spring or autumn, yet these seldom make so good plants as those obtained from seeds; but the second variety seldom produces any good seeds, therefore that must be propagated in this manner, or by planting cuttings in the spring or summer months, which will take root, and make good plants.

2. This is seldom cultivated except in botanic gardens. Sow the seeds in autumn, soon after they are ripe, or in the spring, upon a bed of common earth, in almost any situation: when the plants come up thin them where they are too close, and keep them clean from weeds.

[3. May be propagated in the same manner.

4. Is a weed too common among slovenly cultivators of arable land.]

5. Sow the seeds in April, on a bed of light earth, in a good exposure, and when the plants are of a proper size, remove them into the borders of the flower garden.

6. Sow the seeds in autumn, soon after they are ripe, in the full ground, and when the plants are fit to remove, if they are planted in the borders of the flower-garden they will continue some years without protection, and annually produce flowers and seeds.

[*MATRICARIA*. See *Achillea*, *Anthemis*, *Chrysanthemum*, *Cotula*.

MATTHIOLA. (So named by Plumier, from Pietro Andrea Matthioli, the famous Botanist, and Commentator on Dioscorides.)

Lin. gen. n. 1231. Reich. n. 258. Schreb. n. 328.

Plum. 6. Pont. 4. 39. Juss. 206.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth cylindric, quite entire, erect, short, permanent.

COR. Petal one, very long, from a slender tube ending gradually in an entire border, with a repand mouth.

STAM. Filaments five, awl-shaped, shorter than the corolla. Anthers simple.

PIST. Germ globular, inferior. Style filiform, the length of the corolla. Stigma thickish, blunt.

PER. Drupe globular, crowned with the calyx, one-celled.

SEEDS. Nut globular. Nucleus globular.

OBS. This genus is obscure, and it is probably nothing more than a species of *Guettarda*, perhaps *G. speciosa*.

ESSENTIAL CHARACTER.

Cal. entire. Cor. tubular, superior, undivided. Drupe with a globular nucleus.

SPECIES.

1. *Matthiola scabra*.

Lin. spec. 1661. Syst. 218. Reich. 1. 490. Plum. gen. 16. ic. 173. f. 2.

Rategal arbor indiana. Zanon. hist. 67. t. 75?

DESCRIPTION, &c.

Leaves scattered, ovate, bractes pinnate. This tree rests on the authority of Plumier, and requires farther enquiry before any thing can be determined concerning it. Modern authors think that it is a species of *Guettarda*, and Richard affirms that it is the same with *Guettarda speciosa*.—Native of America^h.

MATTUSCHKÆA. (From Count Matuschka, author of *Flora Silesiaca*, 1776, 77, in German. He died in 1779.)

Lin. gen. Schreb. n. 1717. Perama. Aubl. 18. Juss. gen. 109.

Class. 4. 1. Tetrandria Monogynia.

^h Lin. Schreb. gen. Swartz obs.

GENERIC CHARACTER.

CAL. *Perianth* four-parted: *segments* ovate, acute, vil-
liferous.

COR. one-petalled. *Tube* long. *Border* four-cleft.

STAM. *Filaments* four, almost equal, the length of the
segments of the corolla. *Antbers* roundish.

PIST. *Germ* superior, four-cleft. *Style* filiform. *Stigma*
simple.

PER. none,

SEEDS two or four, very small, naked.

ESSENTIAL CHARACTER.

Cal. four-parted, with linear leaflets. *Cor.* one-petalled,
with a long tube and four-cleft border. *Germ* supe-
rior, four-cleft. *Seeds* four, naked.

SPECIES.

1. *Mattuschkæa hirsuta*.

Vahl symb. 3. 11.

Perama hirsuta. *Aubl. guian.* 54. t. 18.

DESCRIPTION, &c.

Stem filiform, erect, frequently quite simple, hirsute,
as is the whole plant, especially the calyx. Leaves
almost like those of *Thymus Serpyllum*, sessile, oppo-
site, acute, veinless, obscurely three-nerved; the lowest
smaller, approximating, ovate: the upper oblong, re-
mote, three lines long. Flowers in a terminating ses-
sile head, the size of a pea. This plant is a finger's
length or a hand in height, or more, but never so
gigantic as Aublet has drawn it, according to an ob-
servation of von Rohr, an eye-witness, who gathered
it in Guiana, and communicated it to Lund¹.

MAUDLIN. See *Achillea*.

MAUHLIA. See *Agapanthus*.

MAURA. See *Antholyza*.

MAURITIA. (From the name *Mauritii-Boom*, by which
it is known among the Dutch at Surinam.)

Lin. gen. Schreb. n. 1702. *suppl.* 70. *Juss.* 40.

App. *Palmæ*.

Nat. order of *Palms*.

GENERIC CHARACTER.

* *Male* flowers in an oblong sessile ament, covered
all round with flowers closely approximating;
with blunt scales between the flowers.

CAL. *Perianth* one-leafed, cup-shaped, truncated, entire,
three-sided, short.

COR. one-petalled. *Tube* short, the length of the calyx.
Border three-parted: *segments* equal, spreading a little,
lanceolate, rigid (in a manner woody) blunt.

STAM. *Filaments* six, inserted into the throat of the tube,
thick, very short. *Antbers* linear, angular, the length
of the segments of the corolla; three alternate ones
extended between the segments of the corolla, and ho-
rizontal; the three others erect, pressed close to the
channel of the segments.

* *Female*.

Unknown.

ESSENTIAL CHARACTER.

MALE in an oblong sessile ament. *Cal.* one-leafed, cup-
shaped, entire. *Cor.* one-petalled with a short tube,
and a three-parted border. *Filam.* six.

SPECIES.

1. *Mauritia flexuosa*.

Lin. syst. 986. *suppl.* 454.

DESCRIPTION, &c.

This is a singular tree, almost without leaves.
Branches angular, flexuose, smooth; with short joints,
thickening upwards, somewhat recurved, terminated by
embracing sheaths; with a cup-shaped and sharper
knee-joint. From the axils of these come out over
the whole stem strobile-shaped aments, in two rows,
spreading very much, sessile, with two larger upright
scales, sickle-shaped upwards, at the base. Aments
ovate-oblong, cylindric, covered with closely approxi-
mating, ferruginous flowers, spreading very much; fall-
ing off, and leaving the ament with its scales. The
younger Linneus laments that he was not acquainted
with the female flowers or fruit.

Native of the woods of Surinam, where it was found
by Dalberg².

MAUROCENIA. See *Cassine*.

MAYACA. See *Syena*.

¹ Vahl.

² Suppl.

MAY-APPLE. See *Podophyllum*.

MAY-BUSH. See *Cratægus*.

MAYEPEA. See *Ceranthus*.

MAYETA. See *Melastoma*.

MAY-LILY. See *Convallaria*.]

MAYS. See *Zea*.

[MAY-WEED. See *Anthemis*, *Matricaria*.

MAY-WORT. See *Artemisia*.

MEADIA. See *Dodecatheon*. Crantz made a second at-
tempt to restore the name of this eminent physician,
elegant scholar, and patron of literature, to Botany,
but without success. His words are, "restituo Meadio
"plantam, magis forte merenti, quam plurimi alii,
"quibus Sexuales concessere." Than which surely
nothing is more true.]

MEADOW.

Under the general title of Meadow, is commonly
comprehended all pasture land, or at least all grass
land, which is mown for hay; but I chuse rather to
distinguish such land only by this appellation, which is
so low, as to be too moist for cattle to graze upon in
winter, being generally too wet to admit heavy cattle,
without poaching and spoiling the sward; and those
grass lands which are drier, I shall distinguish by the
title of Pasture.

There are two sorts of Meadows in England, one of
which is stiled Water Meadows, and the other are
simply called Meadows.

Water Meadows are those which lie contiguous to
rivers or brooks, from whence the water can be car-
ried to overflow the grass at pleasure. Of these there
are large tracts in several parts of England, which, if
skilfully managed, would become much more profitable
to their owners than they are at present; for nothing
can be more absurd than the common practice of flow-
ing these low grounds all the winter, whereby the roots
of all the sweetest kinds of grass are destroyed, and
only such grasses left as are natives of marshes, which
are coarse and sour: and if people were curious to
examine the herbage of these water meadows, they
would find the bulk of them composed of bad weeds,
such as grow by the sides of rivers, brooks, and ditches,
of which the several sorts of docks make no small
share; and although many of these meadows produce
a great burden of what the country people call hay, yet
this is only fit for cows, cart-horses, and other animals,
which by hard labour and hunger, are driven to eat
it; for horses which have been accustomed to feed on
good hay, will starve before they will touch it: and
after the grass is mown off these meadows, and cattle
turned in to graze upon them, how common is it to see
the land almost covered with these rank weeds, which
the cattle never will eat! Which must always be the
condition of such meadows, where the water is let over
them in autumn and winter; for the sides of rivers and
brooks every where abound with these rank weeds,
whose seeds ripen in autumn, and falling into the wa-
ter, they are carried by the stream, and deposited on
the flowed land, where they grow and fill the ground
in every part; but so incurious are the generality of
farmers in this respect, that if the ground is but well
covered, they care not what it is, few of them ever
taking any pains to weed or clean their pastures.

The method which I propose for the management
of these meadows is, never to flow them till the middle
or latter end of march, excepting once or twice in
winter, when there may happen floods, which may
bring down a great share of soil from the upper lands,
at which times it will be of great service to let water
upon the meadows, that the soil may settle there; but
the sooner the wet is drained off when this is lodged,
the greater advantage the meadows will receive by it;
but from the end of march to the middle of may, in
dry seasons, by frequently letting on the water, the
growth of the grass will be greatly encouraged, and at
this season there will be no danger of destroying the
roots of the grass; and after the hay is carried off the
ground, if the season should prove dry, it will be of
great service to the grass, if the meadows are flowed
again; but when this is practised, no cattle should be
turned into the meadows, till the surface of the ground
is become firm enough to bear their weight without
poaching

poaching the land, for otherwise the grafs will suffer more from the treading of the cattle, than it will receive benefit by the flowing; but these are things which the country people seldom regard, so that the meadows are generally very unsightly, and rendered less profitable.

I would also recommend the weeding these meadows twice a year; the first time in april, and again in october; at which times if the roots of docks and all bad weeds are cut up with a spaddle, the meadows will soon be cleared of this trumpery, and the herbage greatly improved.

Another great improvement of these lands might be procured, by rolling them with a heavy roller in spring and autumn. This will press the surface of the ground even, whereby it may be mown much closer, and it will also sweeten the grafs; and this piece of husbandry is of more service to pastures than most people are aware of.

Watering of Meadows.

[The theory and practice of Irrigation Watering or Flowing Grafs Lands, being much better understood since the time of Miller, it will be proper to add here the best information that can be obtained on this important subject.

There being no part of the kingdom where the system of watering meadows is so well understood, and carried to so great perfection as in Wiltshire, the account of that practice as delivered by Mr. Thomas Davis, in his general view of the Agriculture of that county, drawn up for the Board of Agriculture, is here given.

Many of the most valuable and best formed Meadows were made at the beginning of this century. An imperfect scheme of watering had been practised before that period: but the regular mode in which this system as connected with that of sheep-folding is now conducted, is not more ancient. At present there is scarcely a river or brook in the district, that is not applied to this purpose.

It has been always observed that winter-floods produce fertility, provided the water does not remain too long on the land. But it is the taking off the water, and bringing it on again at will, that is the great business of irrigation, and thus making a water-meadow a hot-bed for grafs. The knowledge of the proper time and manner of doing this is the effect of observation.

Provided this great object can be accomplished, namely the bringing on and carrying off the water at pleasure, it is not material what the shape of a water-meadow is, or that the disposition of the trenches should be uniform. But as very little land can be entirely commanded by water, unless its inequalities are reduced by manual labour,—it has been found convenient to adopt two different kinds of water meadows, one for land lying on declivities, and which must in general be watered from springs or small brooks, and the other for low land near rivers, to be watered from those rivers.

The first kind is called in Wiltshire, “*catch work meadows*,” and the latter “*flowing meadows*.” The latter are by far the most general in this district.

To elucidate the distinction between the two kinds of meadow, and to give some idea, what are the situations in which they may be introduced, it may be necessary to remark, that the “*catch-work meadow*” is made by turning a spring, or small stream, along the side of a hill, and thereby watering the land between the New Cut, (or as it is provincially called Main Carriage) and the original water-course which now becomes the “*main drain*.” This is sometimes done in particular instances, merely by making the new cut level, and stopping it at the end, so that when it is full, the water may run out at the side, and flood the land below it. But as the water would soon cease to run *equally* for any great length, and would wash the land out in gutters, it has been found necessary to cut small parallel trenches or carriages, at distances of twenty or thirty feet, to catch the water again, and each of these being likewise stopt at its end, lets the water over its side, and distributes it until it is caught by the next, and

so on over all the intermediate beds, to the *main drain* at the bottom of the meadow, which receives the water, and carries it on to water another meadow below; or, if it can be so contrived, another part of the same meadow on a lower level.

To draw the water out of these parallel trenches or carriages, and lay the intermediate beds dry, a narrow deep drain crosses them at right angles, at about every nine or ten poles length, and leads from the main carriage at top, to the main drain at the bottom of the meadow.

When this meadow is to be watered, the ends of the carriages adjoining the cross drains, are stopt with turf dug on the spot, and the water is thrown over as much of the meadow as it will *cover well* at a time, which the watermen call a “*Pitch of Work*,” and when it is necessary to lay this pitch dry, they take out the turves and let the water into the drains, and proceed to water another pitch.

This kind of water meadow is seldom expensive: the stream of water being usually small and manageable, few *batches* are necessary, and the land lying on a declivity, much less manual labour is required to throw the water over it regularly, and particularly *to get it off again*, than in the flowing meadows. The expense of making such a meadow is usually from three to five pounds per acre; the improvement frequently from fifteen shillings an acre to at least forty. The annual expense of keeping up the works and watering the meadow, which is usually done by the acre, seldom so high as 7s. 6d. per acre.

The other kind of water meadows, viz. those usually called “*Flowing Meadows*,” require much more labour and system in their formation. The land applicable to this purpose being frequently a flat morass, the first object to be considered is, how the water is to be *got off* when brought on; and in such situations this can seldom be done, without throwing up the land in high ridges, with deep drains between them. A main carriage being then taken out of the river at a higher level, so as to command the tops of these ridges, the water is carried by small trenches or carriages along the top of each ridge, and, by means of moveable stops of earth, is thrown over on *each* side, and received in the drains below, from whence it is collected into a main drain, and carried on to water other meadows, or other parts of the same meadow below. One tier of these ridges being usually watered at once, is usually called “*a Pitch of Work*,” and it is usual to make the ridges thirty or forty feet wide, or, if water is abundant, perhaps sixty feet, and nine or ten poles in length, or longer, according to the strength and plenty of the water.

It is obvious from this description, that as the water in this kind of meadow is not used again and again, in *one pitch*, as in the catch meadows that this method is only applicable to large streams, or to valleys subject to floods; and as these ridges must be formed by *manual labour*, the expense of this kind of meadow must necessarily exceed the more simple method first described: and the hatches that are necessary to manage and temper the water on rivers, must be much more expensive than those on small brooks.

The expense, therefore, of the first making such a meadow as this is, will be from twelve pounds to twenty pounds per acre, according to the difficulty of the ground, and the quantity of hatch-work required: but the improvement in the value of the land by this operation is astonishing. The *abstract value* of a good meadow of this kind, may fairly be called three pounds per acre; but its value, when taken as *part of a farm*, and particularly of a *sheep-breeding farm*, is almost beyond computation; and when such a meadow is once made, it may be said to be made for ever, the whole expense of keeping up the works, and watering it frequently, not exceeding five shillings per acre yearly, and the expense of the hatches, if well done at first, being a mere trifle for a number of years afterwards.

It has been alledged by those who know very little of water meadows, that they render the country unwholesome by making the water stagnant—Daily observation proves the fact to be otherwise in Wiltshire; and

and the reason is obvious. It has been already said, that a water meadow is a "hot-bed for grass;" the action of the water on the land excites a *fermentation*; that fermentation would certainly in time end in a *putrefaction*: but the moment putrefaction begins, vegetation ends. Every farmer knows the commencement of this putrefaction, by the scum the water leaves on the land; and if the water is not then instantly taken off, the grass will rot, and his meadow be spoiled for the season. The very principle of water meadows, will not permit water to be stagnant in a water-mead country; it must be always kept in action to be of any service: besides, many of the best water meadows were, in their original state, a stagnant, unwholesome morass.

The draining such land, and making it so firm, that the water may be taken off at will, must contribute to the healthiness of the country, instead of injuring it.

It is frequently asked how it comes to pass, that although water meadows are so useful as to be almost indispensable in South Wiltshire, yet in other counties where they are not known, the want of them is not felt; nay, that there are even in this district many parishes who have none, and even breed lambs without them? To this I answer, that the fair question is not, "How do other counties do without them?" but "how could the farmers of this district, who are happy enough to have water meadows, pursue their present system of sheep-breeding, if those meadows were taken away?" A system which I do not hesitate to say, is more profitable to themselves, their landlords, and the community at large, than any other that could be substituted in its room; and perhaps this question cannot be answered better, than by exhibiting the contrast between those who have water meadows, and those who have none, in the same district.

Every farmer who keeps a flock of sheep, and particularly a breeding flock, in so cold and late-springing a district as South Wilts, knows and feels the consequences of the month of April. "That month *between hay and grass*, in which he who has not water meadow for his ewes and lambs, frequently has *nothing*!" The ewes will bring a very good lamb with hay only; perhaps a few turneps are preserved for the lambs, which, in a very favourable season, may last them through March; but if they are then obliged to go to hay again, the ewes shrink their milk, the lambs "pitch and get stunted," and the best summer food will not recover them. To prevent this, recourse is had to feeding the grass of those dry meadows that are intended for hay, the young clovers, and frequently the young wheat; in fact, every thing that is green—And who will pretend to estimate, what is the loss that a farmer suffers by this expedient?

The ray-grass, on the exposed parts of this district, is seldom "a bite" for the sheep, till near May-day. If the season should permit any turneps to be kept till that time (which can seldom be depended upon), they are not only of little nourishment to the stock, but they exhaust the land so as to prejudice the succeeding crop. And it ought to be remarked by the way, that in many parts of this district, the soil is not at all favourable to the production of turneps. It therefore necessarily follows, that a farmer, under these circumstances, has no *certain resource* to support his stock during this month, but hay—and even in that he is sometimes disappointed, by having been obliged, in the preceding spring, to feed all the land which he had laid up for a hay crop: he is then obliged to buy hay, and that frequently at the distance of many miles. And to add to his distress at this critical time, his young ewes are then brought home from wintering, to be kept nearly a month on hay alone.

In this month, which so often ruins the crops, and exhausts the pockets of those sheep-breeding farmers, who have no water meadows, the water-mead farmers may be truly said to be "in clover." They hain up their dry meadows early, so as almost to insure a crop of hay; they get their turneps fed off *in time* to sow barley, and have the vast advantage of a *rich fold* to manure it. They save a *month's hay*, and have no occasion to touch their field grass till there is a good

bite for their sheep; and their lambs are as forward at *May-day*, as those of their less lucky neighbours are at *midsummer*. And after all, they are almost certain of a crop of hay on their water meadows, let the season be what it will.

Management of Water Meadows.

As soon as the after-grass is eaten off as bare as can be, the manager of the mead (provincially "the drowner") begins cleaning out the main drain, then the main carriage, and then proceeds to "right up the works," that is, to make good all the water carriages that the cattle have trodden down, and open all the drains they may have trodden in, so as to have one tier or pitch of work ready for "drowning," and which is then put under water (if water is plenty enough), during the time the drowners are righting up the next pitch. In the flowing meadows this work is, or ought to be, done early enough in the autumn, to have the whole mead ready to catch, if possible, "*the first floods after Michaelmas*," the water being then "thick and good," being the *first* washing of the arable land on the sides of the chalk hills; as well as of the dirt from the roads, &c. &c.

The length of this autumn watering cannot always be determined, as it depends on situations and circumstances; but if water can be commanded in plenty, the rule is to give it a "thorough good soaking" at first, perhaps a fortnight or three weeks, with a dry interval of a day or two, and sometimes two fortnights, with a dry interval of a week, and then the works are made as dry as possible, to encourage the growth of the grass. This first soaking is to make the land sink and pitch close together; a circumstance of great consequence, not only to the *quantity* but to the *quality* of the grass, and particularly to encourage the shooting of the new roots which the grass is continually forming, to support the forced growth above.

While the grass grows freely, a fresh watering is not wanted, but as soon as it flags, the watering may be repeated for a few days at a time, whenever there is an opportunity of getting water, always keeping this fundamental rule in view, "*to make the meadows as dry as possible between every watering*;" and to "*stop the water, the moment the appearance of any scum on the land, shews that it has already had water enough*."

Some meadows that will bear the water *three weeks* in October, November, or December, will, perhaps, not bear it *a week* in February or March, and sometimes scarcely *two days* in April or May.

In the catch meadows watered by springs, the great object is to keep "the works of them" as dry as possible between the intervals of watering; and as such situations are seldom affected by floods, and generally have too little water, care is necessary to make the most of the water by catching and rousing it as often as possible; and as the *top works* of every tier or pitch will be liable to get more of the water than those lower down, care should be taken to give to the latter a *longer time*, so as to make them as equal as possible.

It has already been said, that the great object in this district of an early crop of water meadow grass, is to enable the farmer to breed early lambs.

As soon as the lambs are able to travel with the ewes, (perhaps about the middle of March) they begin to feed the water meadows. Care is, or ought to be, taken, to make the meadows as dry as possible for some days before the sheep are let in.

The grass is hurdled out *daily* in portions, according to what the number of sheep can eat in a day, to prevent their trampling the rest; at the same time, leaving a few open spaces in the hurdles for the lambs to get through, and feed forward in the fresh grass. One acre of *good grass* will be sufficient for five hundred couples for a day.

On account of the quickness of this grass, it is not usual to allow the ewes and lambs to go into it with empty bellies, not before the dew is off in the morning.

The hours of feeding are usually from ten or eleven o'clock in the morning to about four or five in the evening, when the sheep are driven to fold; the fold being

being generally at that time of the year on the barley fallow. And the great object is to have water-mead grafs, fufficient for the ewes and lambs, till the barley fowing is ended.

As foon as this firft crop of grafs is eaten off by the ewes and lambs, the water is immediately thrown over the meadows, (at this time of the year two or three days over "each pitch," is generally fufficient) and it is then made perfectly dry, and laid up for a hay crop. Six weeks are ufually fufficient for the growth of the crop. It feldom requires eight; and there have been instances of great crops being produced in five.

The hay of water meadows, being frequently large and coarfe in its nature, it is neceffary to cut it young; and if made well, it then becomes of a peculiarly nourifhing milky quality, either for ewes or dairy cows.

The water meadows are laid up for a fecond crop, in *some instances*; but this is only ufual when hay is fcarce: not that it is fupposed to hurt the land, but the hay is of that herbaceous foft nature, and takes fo long time in drying, that it is feldom well made. It is ufually of much greater value to be fed with dairy cows. And for that purpofe a flufh of after-grafs, fo early and fo rank, will be precifely of the fame comparative fervice to the dairy, as the fpring feed has been defcribed to be for ewes and lambs.

The cows remain in the meadows till the "drowner" begins to prepare for the winter watering.

Water meadows are reckoned to be perfectly fafe for fheep in the fpring, even upon land that would rot fheep, if it was not watered, but in the autumn the beft water meadows are fupposed to be dangerous. But the circumftance is rather an advantage, than a difadvantage, to this diftrict, as it obliges the farmers to keep a *few dairy cows*, to feed the water meadows in autumn, and to provide artificial grafses, or other green crops for their fheep, during that period.

From what has been fo repeatedly urged, on the neceffity of making water meadows *dry*, as well as wet, every reader muft have inferred the advantage of having them, if poffible, on "*a warm abforbent bottom*."

The bottom or fub-foil of a water mead, is of much more confequence than the quality or the depth of the top foil.

Not but that land on peaty or clay bottoms, may be confiderably improved by watering; and there are many good water meadows on fuch foils, but they are not fo defirable on account of the difficulty of draining the water out of them, and making them firm enough to bear treading.

A loofe gravel, or what, perhaps, is ftill better, a bed of broken flints, with little or no intermixture of earth, wherever it can be obtained, is the moft defirable bottom.

On many of the beft water meadows in this diftrict, where the bottom is a warm, abforbent gravel, or rather a bed of broken flints; the foil is not fix inches deep, and that depth is quite fufficient, in thofe feafons when water is plenty, as the grafs will root in the warm gravel in preference to the beft top-foil whatever, and fuch meadows always produce the earlieft grafs in the fpring. Nor is it fo very material, of what *kinds of grafses* the herbage is compofed, when the meadow is made. *That kind* will always predominate, which *agrees beft with the foil and the water*, provided the fupply of water is regular and conftant *every winter*, otherwife *that kind* will predominate which will bear *wet and dry*, and fome of the worft grafses, in their native ftate, will become the beft when made fucculent by plenty of *water*.

Nature has given a ftriking leffon on this fubject in this very diftrict, viz. In the two fmall meadows at Orchefton (fix miles north-weft of Amesbury), ufually called the "Wiltfhire Long Grafs Meads."

Thefe meadows adjoin together, and contain, in the whole, only two acres and an half, and yet the crop they produce in a favourable year is fo immense, and of fo good a quality, that the tythe hay of them was once (according to the information of the tenant) fold for five guineas.

Much has been faid, and little underftood, about thofe meadows, and the grafs they produce.

Many propofals and attempts have been made to propagate the grafs; and many fkilful botanifts have returned from the fpot, without finding out *which was the long grafs*, its appearance being fo very different in different feafons.

It has not been till lately, that it was difcovered by Mr. Sole, of Bath, and communicated to the Bath Society, that the greateft part of the herbage of thefe meadows, was nothing more than the "black couch, or couchy bent." ("Agrostis" "Stolonifera") one of the worft grafses, in its native ftate, the kingdom produces, and the peculiar plague of farmers in this particular diftrict. It ufually abounds in fuch arable land as is too poor to bear the white couch ("Triticum repens"), and is the general and almoft only herbage of the old burn-beaked worn-out downs; and in that fituation is of that coarfe, hard, wiry nature, that no cattle will eat it. It forms a thick tough rug over the land, that preferves itfelf, and kills every thing elfe. But in thefe meadows, when abundantly fed with water, it is of a juicy, fucculent, nourifhing quality, *as grafs*, and makes the moft defirable *hay* in the diftrict, particularly for fheep.

Thefe meadows lie in the upper part of the bourn that runs from Tilshead to Stapleford, and in fome winters the rivulet that paffes through them is very inconfiderable. They are not laid out in regular form for watering, the fupply of water being too irregular, but depends on the floods entirely; and being fituated at a fharp turn of the valley, which is narrow at that fpot, the water makes an eddy, and deposits its fedi-ment upon them. The bottom is almoft an entire bed of loofe flints, fo that the roots fhoot freely in it, and produce ftrong fucculent fhoots, which fall down, and taking root at the joints, fhoot out, and drop, and root again, fo that the ftalk is frequently eight or ten feet in length from the original root, and though the crop is exceedingly thick on the ground; it is, perhaps, not eighteen inches high.

Although this grafs is moft abundant in thefe two meadows, it is alfo very predominant in the greateft part of the meadows below it, on the fame fream, and whenever the winters are productive of floods, the grafs in all of them is abundant in quantity, fucculent and juicy in quality, and the hay exceedingly nutritive. But in a fcarce year of water, their produce is very fmall indeed, and that of a very bad quality.

On examination of other meadows, in different bourns of this diftrict, the fame grafs appears uniformly to abound in thofe that are *fituated near the fpring-heads*, and which, in fome years, have plenty of water, and in fome none at all: the fame remark is as uniformly made on its variation in quantity and quality, *according to the wetnefs or drynefs of the winter*; and the moft probable way of accounting for it, is, "*That it is almoft the only grafs, common to water meads, that will ftand wet and dry*." For though it will live, and indeed flourifhes moft, when under water, yet no dry weather will kill it.

The Flooding of Meadow land is alfo of great importance in Dorfetfhire, where the proportion of water meadows is very great, and no where better managed, upon the fame principle as in Wiltfhire. The early vegetation indeed produced by flooding is of fuch confequence to the Dorfetfhire farmer, that without it, their fyftem of managing fheep would be almoft annihilated.

Their water-meadows are formed in wide beds, with channels for the water to run between; and the defcent is fo well taken care of, that the water is always in motion, and is never fuffered to ferment or ftagnate: at the fame time great care is taken, to have a fufficient quantity of underground drains to carry off the fprings, and make the boggy parts found, by which means, no fooner has the water paffed off, than the land becomes fufficiently dry to be paffured by fheep, from the middle of march to the firft or fecond week in may; when being again watered for feveral weeks, it is fit to mow

now about the beginning of July, and produces two tons of hay on an acre upon an average. The hay being off, it is again watered till the beginning of September, by which time it is full of grass, and supports the dairy cows till Christmas. Sheep are never turned on in the autumn, rotting being considered as inevitable at that season.

No manure is ever put on these meadows. The first making costs from four to six pounds an acre: afterwards they are attended with small expense and trouble, in proportion to the profit. The hay however is not much esteemed for its quality in feeding beasts, and is therefore generally given to cows and sheep in the winter.

The rivers in Dorsetshire are particularly adapted to favour the process of flooding land, being frequently divided into many small streams, which are in general shallow, but quick and rapid; by which means they are easily diverted, and a greater proportion of land can be flooded than where a river runs through a country buried below its banks, in one dead stream only. The greatest part of the watered meadow, which is now rented near towns from 50s. to 3l. an acre, and with farms at 35s., without this improvement, would not be worth more than 10s. or 12s.

The process of watering meadows, with drawings, has been described by Mr. George Boswell of Piddletown, in Dorsetshire, in a pamphlet published on this subject.

Even where there is no river or brook, land floods, the wash of roads, the soak of the farm-yard, &c. may frequently be used for this important purpose with success^a.

Irrigation is also well understood in Hampshire, where the rents of watered meadows rise from 40s. to 3l. and even 5l. an acre. Those which are on gravelly and chalky soils being much superior to those on peat. They are managed and fed as above described in Wiltshire and Dorsetshire. Without watering they would not be worth more than 20s. an acre; and with it their produce of hay, with spring and autumn food, is estimated at 14l. Land with a peaty boggy bottom, yielding nothing but sedge, has been advanced from 3s. or 4s. to 40s. rent an acre. These soils however rot universally in summer and autumn, and probably would do so in spring, if any thing else were turned in except ewes with lambs by their side, for ewes that give milk never rot: but on dry sound soils they affirm here that sheep do not rot at any time^b.

The farmers in Hampshire are so aware of the great advantages arising from water-meadows, that in many instances they have been at a considerable expense in purchasing a supply of water, besides the first expense of from 5l. to 6l. an acre, exclusive of the continual repair of the sluices, &c.^c

The benefit to be derived from the flooding of land is also well understood, and the operation judiciously performed, in Brecknockshire. Where, in most parts, the brooks are formed by springs, issuing from the hills, at different degrees of elevation, from one to twelve hundred feet above the beds of the two main rivers: excepting therefore the detached hills, interspersed through the middle of the county, most of it might be watered, if the intermixture of property did not hinder.

Sand being the prevailing soil here, this land is wonderfully well adapted to receive benefit from being flooded with any water that is not charged with metallic particles.

They reckon it of great importance to catch the first water of a flood after a long drought; more especially if the water be collected from common hills or other pasture grounds that are hanging, or side lands where sheep and cattle have pastured; their dung, and the fine particles of earth being all swept off by the first autumnal floods.

This country abounding in swells, is in a peculiar degree adapted to derive every advantage from flood-

ing; because the water moves quickly off, as soon as it has done its business.

If the land be steep, a smaller quantity of water is suffered to go over it at a time, lest the water should carry along with it some particles of the loose earth.

They prefer clear water from the spring for their sandy land, but brook or river water for clay.

The farmers are very sensible of the benefit of having water from the farm yard turned over their meadows, and they are very careful to have the field under the house always a meadow. The good effects of the droppings from the farm-yard and fold upon this sandy land are astonishing.

When water from lime-stone can be had, it is preferable to any other: and water from different springs is beneficial in very different proportions^d.

The late famous Mr. Bakewell of Dishley stands foremost in the Midland Counties as an improver of Grass-lands by watering.

Formerly a suite of meadows, lying by the banks of the Soar, received considerable benefit from the water of the river judiciously spread over them in time of floods. But now not only these meadows, but near a hundred acres of higher land, lying entirely out of the way of natural floods, are watered on Mr. Boswell's principle.

Mr. Bakewell diverted to his purpose a small brook, the natural channel of which skirted the farthest boundary of his farm; falling with a considerable descent down a narrow valley. It is therefore turned, at the highest place that could be commanded, and carried round the point of a swell, which lies between its natural bed and the homestead. Thus not only commanding the skirts of the hill by watering, but supplying the house and farm offices with water; filling a drinking pool for his cattle; a wash-pool for sheep; floating down his turneps from the field to the cattle sheds; &c.^e]

As to those meadows which cannot be flowed, there should be the same care taken to weed and roll them, as has been directed for the Water Meadows; as also never to let heavy cattle graze upon them in winter when they are wet; for the cattle will then poach them, and greatly injure the grass; therefore these should be fed down as close as possible in the autumn, before the heavy rains fall to render the ground soft; and those pastures which are drier, may be kept to supply the want of these in winter; and where there are not cattle enough to eat down the grass in time, it will be much better to cut off what is left, than to suffer it to rot upon the ground, for that will prevent the grass from shooting early in the spring; but where people have not cattle enough of their own to eat down the grass in time, they had much better take in some of their neighbours, than suffer their fog (as it is called) to remain all the winter. When these meadows are fed in the autumn, the greater variety of animals are turned in, the closer they will eat the grass; and I am fully convinced, the closer it is eaten, the better the grass will come up the following spring; and, if during the time the cattle are feeding, the meadows are well rolled, the animals will eat the grass much closer than they otherwise would.

Those persons who are best skilled in this part of husbandry, always dress their meadows every other, or at least every third year, without which it is in vain to expect any good crop of hay; but the generality of the farmers are so much distressed for dressing to supply their corn land, as not to have any to spare for their meadows, they are therefore content with what the land will naturally produce, rather than take any part of their manure from their arable ground. But this is a very imprudent piece of husbandry; for if land is to be annually mowed for hay, it cannot be supposed that it will produce a good crop long, unless proper dressings are allowed it. And when ground is once beggared for want of manure, it will be some years before it can be recovered again. See PASTURE.

^a Agricultural survey of Dorset by Claridge, p. 34.

^b Young's Annals, vol. 23. p. 264.

^c Driver's survey of Hants, p. 19.

^d Clark's survey of Brecknock. and Young's Ann. 23. 192.

^e Marshall's Midl. 1. 284.

[The scourings of ditches, mud of ponds, and almost any earth, form good dressings for meadow lands, if suffered to lie, and well turned over. These, together with alternate mowing and feeding, will in general keep meadows in heart, without robbing the arable land.]

Draining.

The Draining of land is another great improvement, for though meadows which can be overflowed produce a much greater quantity of herbage, yet where the wet lies too long upon the ground the grass will be sour and coarse, and so overrun with rushes and flags as to be of small value. Cold stiff clays are most liable to this, where the water cannot penetrate, but is contained as in a dish; so that the wet which it receives in winter continues till the heat of the sun exhales it.

The method of draining such lands is to cut several drains across them where the water is subject to lodge; and from these cross drains to make others, to carry off the water to ponds, brooks or rivers, in the lower parts of them. These drains need not be made very large, unless the ground be very low, and so situated as not to be near any outlet; in which case large ditches should be dug at proper distances, in the lowest part of the ground, to contain the water; and the earth which comes out of these ditches should be spread on the land, to raise the surface. But where the water can be conveniently carried off, under-ground drains should be made at proper distances, which may empty themselves into the large ditches.

The usual method of making under-ground drains, is to dig trenches, and fill the bottoms with stones, bricks, rushes or bushes; covering them over with the earth dug out of the trenches. But when there is a flood, these drains are often stopped by the soil which the water brings down with it.

The best method of making these drains is, to dig the principal ones three feet wide at top, sloping them down for two feet in depth, where there should be a small bank left on each side, upon which cross-stakes or bearers should be laid, and below this set-off an open drain should be left, at least one foot deep, and ten or eleven inches wide. Smaller drains of six or seven inches wide, and the hollow under the bushes eight or nine inches deep, should be cut across the ground, to discharge the water into the large drains. The number and situation of these must be in proportion to the wetness of the land, and the depth of earth above the bushes must be proportioned to the intended use of it; for if the land is to be ploughed, the drain must not be shallower than fourteen inches, but for meadow land, one foot will be enough: for when the bushes lie too deep in strong land, they will have little effect, the ground above binding so hard, as to detain the wet on the surface. The drains being dug, the larger sticks of the brush-wood should be cut out to pieces of sixteen or eighteen inches in length, to lay across upon the side banks of the drain, at about four inches distance; and the smaller brush-wood, furze, broom, heath, &c. should be laid lengthwise pretty close over these, with rushes, flags, &c. on the top of them, and then the earth, to cover the whole.

Such drains will continue good many years, and the water will find an easy passage through them. Where there is plenty of brush-wood they are made at an easy expense; but where wood is scarce they are very chargeable. In this case cuttings of willow or black poplar might be planted in moist places, which would furnish brush-wood for this purpose in four or five years.

In countries where there is plenty of Stone, that is the best material for making under-ground Drains: for when these are properly made, they will never want repairing.

The best time for making these drains is about Michaelmas, before the heavy rains of autumn fall, because the land being then dry, the drains may be dug to a proper depth.

When the drains are finished, and the water carried off the land, pare off the rushes, flags, &c. lay them

in heaps to rot, and they will afford manure. Plough the ground to destroy the roots of noxious weeds; and if it be laid fallow for one season, and ploughed two or three times, it will greatly mend the land. Spread the rotten rushes and flags over it, and sow grass seeds.

Some persons burn the rubbish that is pared off the land, and spread the ashes.

[This practice of under-draining land both for meadows and the plough, has been long practised in Essex.

Their method of opening the principal drains is to plough four furrows, throwing two each way; the two inside furrows being ploughed deeper than the others. After the plough, the earth is sunk a spit deep with a common spade, and afterwards another spit with a land-ditching spade, called a griping spade. Last of all, a scoop is made use of to take out the loose earth. This drain, when completed, is about two feet deep, or from twenty to twenty-six inches: the breadth at top just wide enough to admit a man to work in, and at bottom as narrow as possible, not more than two inches. In the subordinate drains, the spit with the common spade is omitted; they are therefore not more than eighteen inches deep. The drain is filled up as high as the top of the spade-work, with brush-wood at the bottom, and a piece of wood as big as a man's leg, on the top; a little straw is shaken over that, and the remainder of the drain is filled up with earth. The greater the proportion of wood, and the harder the earth is pressed in, the longer will be the duration of the work. The wood must be such as runs pretty free in its branches: Elm, Alder and Sallows are as good as any; but Black-thorn is the most durable. In very stiff land, straw, stubble or haulm only will be sufficient for the purpose.

The duration varies from twelve to twenty-five years; and some drains filled with straw have been known to last much longer.

The expense, with bushes, amounts, on an average, every thing included, to two guineas, or 45s. an acre; the men being paid three shillings a score rods for the work. The distance between the drains is usually from five and a half to eight yards.

The principles to be attended to in this mode of draining are—first, to get a good outfall or discharge; and secondly, to draw all the drains obliquely across the descent of the ground, not right down, nor right across the fall. A great error in this mode of draining has frequently been committed in marking out and making numerous drains across the sides of springy hills, which might in many cases be drained completely by a single drain, judiciously disposed, on Mr. Elkington's principle^f.

In Devonshire, drains are made from four to twelve feet in depth, and are never judged to be well done, unless they are dug to the bed of gravel. On this a gutter is built, with a wall of stones on each side the trench, leaving between the two walls an opening of three, four or six inches, in proportion to the size of the spring, and carefully covered on the top with flat stones. On these covers the small stones gathered off the adjoining lands are thrown, from three to six inches or more in thickness; lining the top with fern, straw, furze, &c. and filling up with the mould thrown out. These springs are frequently conducted to a pond, and made some other use of for watering the land, &c.^g

In peat countries, pieces of peat of the usual shape and dimensions, are pierced with a kind of punch, when wet, by which a hole is left about three inches square, a little arched at the top; they are then left to harden in the air, and when fit are placed side by side for a drain^h.

When bricks are used for drains, if the ground be soft and spongy, the bottom of the drain is laid with the bricks placed across; tiles or slates will answer the purpose. Over these, on each side, two bricks are laid

^f Kent's hints, 17. Young's agr. surv. of Suffolk, 22.

^g Agric. surv. of Devon, by Frazer, 44.

^h Lancashire, 58.

flat, one upon the other: this is covered with bricks laid flat. The bricks should be ten inches long, four broad and three thick.

This work is too expensive, unless a drawback might be allowed on the heavy tax upon the material.

When the bottom of the trench is firm and solid, as in clay or marl, no bricks need be laid in the bottom: the sides are then formed by placing one brick edge-wise, instead of two laid flat. This is much cheaper, and in such land equally durable¹.

Double bricks, with a hollow through the middle, form a good drain, which is laid very expeditiously.

Where stone is plentiful and near at hand, no material is superior to it for this purpose. These drains are in general made larger than those with brick; the bottom being at least eight inches wide.

In Wiltshire their stone-drains are in general ten or twelve inches in width, with perpendicular sides. Sometimes the stones are so placed as to leave a water-course at bottom, by setting two flat stones triangularly, to meet at the points: but it is a better way to cover the bottom with a flat stone, and then to put three other flat stones upright, leaving the water to find its way between them; in both cases filling up the residue of the drain to the top, or near it, with loose stones.

Where only small round stones can be got, the drain may be made taper, from nine inches at top to nothing at bottom, and about three feet deep; filling it up with the small stones first, and finishing with a thin turf at top. Where gravel is more plentiful, it is found to answer the purpose very well, if screened or washed.

In all cases, the general opinion is, that those drains last longest, which have the least or narrowest water-way left at bottom; the force of the water being then sufficient to clear away any little obstacles².

Where none of the above materials are to be had, there is still another sort of covered drain which may be adopted in a stiff tenacious soil. This is made with turfs or fods, and besides being the cheapest, is as lasting as any, where the land is sufficiently cohesive. The inverted turf is either put upon a shoulder, leaving a hollow part under it, and the remainder of the drain is filled up with the earth that came out of it: or the drain is cut out in a wedge, or the form of the letter V, and when the earth is taken out, six or eight inches of the bottom part of the wedge are cut off, and the remainder is filled up. If a few rushes were put round the bottom of this wedge, so as to keep the lower part from dropping, and the ends of the rushes were drawn upwards, between the sides of the drain and the wedge, it would be an improvement. Care must be taken, to keep off all cattle till these drains have had time to settle³. The entrances should have a fence of brick or stone to secure them. Their aperture at top should be eighteen inches, their depth thirty inches. The strength with which the fods are supported, and their depth in the ground, being at least twelve inches, will effectually prevent their removal by any weight on the surface; and secure them from all effects of the weather.

In loose crumbly soils, where the wetness does not arise from the retention of water by an understratum of clay, but from springs, these drains are improper: but when the wet is prevented from passing off by clay or marl, these sod drains are excellent⁴.

Thus clay soils, through which water can neither pass from the surface to the bottom, nor from the bottom to the surface, must be relieved from too much wet by surface drains: and where the surface is porous above, but tenacious below, some of the modes of hollow-draining described above may be successfully practised. But these will not effectually cure lands rendered wet by waters confined beneath the surface, and attempting to rise in the manner of springs, which is the great object of Mr. Elkington's system of draining: and this he obtains not by using palliatives, but

by getting the command of the subterraneous waters themselves, and thus completely and radically cutting off the cause of the mischief.

The principal use of Mr. Elkington's system is that of draining bogs, and though it may be applied to any springy lands, yet it is in this point of view the most important; both because immense tracts of valuable land, which are of a morassy nature are lost to the community, from an idea that it is impossible to drain them; and land of that nature and value, in proportion to its extent, may be drained at the smallest expense, and when drained becomes perhaps the most valuable of any.

When a bog or morass is to be drained, the direction in which the trench is to be dug is first to be ascertained. This is the most difficult part of the whole business, and cannot be fully understood but from much practice. The following rules however may be of service.

1. The whole depending upon the nature of the bog to be drained, and the state of the adjacent country; the neighbouring strata must be ascertained as far as possible, whether they be of stone, gravel, sand or marl; for the water must be lodged in one of these, and it is necessary to ascertain in which.

2. The trench must be directed so as to fall in with the bottom of the bed which occasions the mischief, and the particular spot where the main spring lies. One spring may probably occasion the whole bog, which having no proper vent, forces the water through many small veins, even to a great distance, making the whole a swamp. By draining the main spring, the others follow of course.

3. If there are various beds through which water issues, stone is to be preferred for draining the whole; the water being much more easily drawn through that, than through gravel, sand or marl; consequently by draining the spring there, the whole water which communicates therewith flows to it; water always preferring a straight or clear to a crooked channel. But in stone beds the trench ought to be made from six to eight yards from the tail of the bed, or the place where the rock ends, because in limestone and other rocks, the tail is harder than any other part of the rock, and there are few if any fissures in it; but by going a few yards above, you get into a softer part of the bed, and the water is more accessible. The tail of these beds may often be found at a point or promontory jutting out from the adjacent heights.

4. The trench in general should be directed in a line with the bottom of the hill, because it makes the best separation between the upland and the meadow inclosures, and the spring can best be intercepted. The trench however must be carried in the line of the spring, or near it; for if it diverges from it any distance, all prospect of reaching the spring, by tapping or otherwise is lost.

5. It is better to make a new trench, than to tap the spring in any old brook or run of water, where that may be practicable; for though the spring, when once it bursts out, has force enough to throw up any stones, sand, &c. that may accidentally fall into it, yet brooks in a flood may bring down such immense quantities as completely to choak up the spring; and so much caution is necessary to prevent any risk of such a circumstance, that when the trench crosses any runlet of water proceeding from a small brook, or from a collection of surface water, the trench is puddled so as to receive it, lest it should blow up and destroy the works.

Lastly, the general line of direction being fixed on, and the trench marked out, begin at the bottom or lowest level, carrying the trench gradually up under guidance of the spirit level: a few inches fall in a hundred yards will be sufficient.

In digging the trench, no tools but those of the common sort are made use of, and common labourers can carry it on under an experienced foreman or overseer. The auger, which must often be used for tapping the spring, may be from an inch and half to two inches diameter, and is applied in the ordinary manner; if in boring, a stone be met with, the auger must

¹ Hunter's Essays, 6. 437.

² Agric. surv. of Wilts, 140.

³ Hunter's Essays, 6. 443. Kent's Hints, 26.

⁴ Hunter, 443.

must be taken off, and a chissel or punch screwed on, to penetrate so hard a substance.

Sometimes the spring is cut off by the trench alone; but in many cases it lies greatly below the level of the trench, and then it is necessary to use the auger for tapping the spring. Mr. Elkington bored an auger hole near Tamworth, thirty feet in depth, which threw up three hogheads of water in a minute, and completely drained all the neighbourhood. If it be certain that all the water in the spring flows through the hole made by the auger, the trench may be stopped; but if not, it must be carried farther, and the auger again made use of.

The trench being made, and the spring cut off, either by tapping or otherwise, it is then necessary to determine whether the drain should be open or covered. If it can at the same time be made a fence, it had better be open; if not, it should be covered. No apprehension need be entertained of the holes made by the auger being filled up, in either case, unless other waters be admitted; because such is the force of the spring, that it will throw up any stones, earth or other substances that might accidentally get into it, and can be injured by nothing but great quantities coming upon it at once.

This system of draining is sometimes attended with extraordinary consequences. By it, not only the land below the natural spring, or even above the artificial spring, is drained, but the waters from the neighbouring heights, finding a new and easier channel, abandon the places to which they formerly went, and thus a tract of country may be drained, without any apparent communication with the spring intended to be drained, or the trench made to it. Nay a drain made on one side of a hill has been known to make springs and wells on the other side quite dry, by opening an easier channel, to which the water naturally draws.

This practice may not only serve the purpose of draining land, but the complete command of a treasure of water being thus obtained, it is probable that it may in many cases be used for flooding land, for mills and navigations, for supplying private houses, and even villages and towns with wholesome water. A country loses that dampness which is so pernicious to the health of the inhabitants, and its attendant, a foggy atmosphere. The produce of the soil is considerably increased in quantity, and improved in quality. The rot, that destructive malady, to which so many millions of sheep fall a sacrifice, is prevented. In short, the advantages of draining are so many, that it is astonishing that the principles of the art have not been better understood, and that greater and more extensive exertions have not been made in so salutary and beneficial a practice.

The method of draining springy and boggy lands by tapping, seems to have been hit upon about the same time by Dr. Anderson and Mr. Elkington, independent of each other; the former being led to it by reasoning, the latter by accident. It appears to have been imperfectly practised, antecedent to either; but Mr. Elkington has the merit of having first applied the auger to this business, and of having rendered this important practice so general as it is now become.

MEADOW GRASS. See *Poa*.

——— RUE. See *Thalictrum*.

——— SAFFRON. See *Colchicum*.

[——— SAXIFRAGE. See *Peucedanum* and *Seseli*.

——— SWEET. See *Spiraea*.

MEALY TREE. See *Viburnum*.

MEBOREA. See *Rhopium*.

MEDEOLA. (*Dimin. from Medea, the famous sorceress of antiquity.*)

Lin. gen. n. 455. Reich. n. 490. Schreb. n. 619. Juss. 42.

Class. 6. 3. Hexandria Trigynia.

Nat. order of *Sarmentaceae*. *Asparagi*, Juss.

GENERIC CHARACTER.

CAL. none, unless the corolla be called so.

COR. Petals six, ovate-oblong, equal, spreading, revolute.

STAM. Filaments six, awl-shaped, the length of the corolla. Anthers incumbent.

ⁿ Young's Ann. 28. 77.

PIST. Germs three, horned, ending in Styles. Stigmas recurved, thickish.

PER. Berry roundish, three-cleft, three-celled.

SEEDS solitary, heart-shaped.

Obs. *M. virginiana* has only four petals.

ESSENTIAL CHARACTER.

Cal. none. Cor. six-parted, revolute. Berry three-seeded.

SPECIES.

1. *Medeola virginiana*. *Virginian Medeola*.

Lin. spec. 483. syst. 349. Reich. 2. 127. Gron. virg. 39. Pluk. phyt. t. 328. f. 4. (Lilium).

Leaves in whorls, branches unarmed.

2. *Medeola asparagoides*. *Broad-leaved shrubby Medeola*.

Lin. spec. 484. syst. 349. Reich. 2. 128. mant. 370. hort. cliff. 122. Till. pis. 16. t. 12. f. 1. (Asparagus). Herm. lugdb. t. 631. (Laurus).

Dracæna Medeoloides. Lin. syst. 334. suppl. 203. Diet. nostr. n. 7.

Leaves alternate ovate subcordate at the base oblique.

3. *Medeola angustifolia*. *Narrow-leaved shrubby Medeola*.

Mill. diet. n. 2. Ait. hort. kew. 1. 490. Till. pis. 17. t. 12. f. 2. (Asparagus).

Leaves alternate ovate-lanceolate.

DESCRIPTIONS, &c.

[Stem herbaceous, erect or scandent, simple or branched; branchlets and leaves spathed at the base; flowers solitary, axillary. *M. virginiana* has whorled leaves, and the habit of *Trillium* or *Paris*. Jussieu doubts whether it appertains to this genus.]

1. This has a small scaly root, from which arises a single stalk about eight inches high. There is one whorl of leaves at a small distance from the ground, and at the top are two leaves standing opposite: between these come out three slender peduncles which turn downwards, each sustaining one pale herbaceous flower with a purple pointal. Miller follows Linæus in placing it in this genus, though the characters do not exactly agree, the corolla being either polypetalous or cut into many segments, and having but five stamens. He speaks however with diffidence, it being some years since he saw the flowers.

[He probably therefore cultivated it several years before 1759; though the era of its cultivation is set down for 1768 in the Kew catalogue.—It is a native of Virginia, and flowers in June.]

2. This has a root composed of several oblong knobs, which unite at the top, like that of *Ranunculus*; from which arise two or three stiff winding stalks, dividing into branches, and rising four or five feet high, if they meet with support. Leaves sessile, ending in acute points, of a light green beneath, but dark above. The flowers come out from the side of the stalks, singly or two on a slender short peduncle. Petals dull white. It flowers at the beginning of winter, and the seeds are ripe in the spring.

Native of the Cape of Good Hope. [Cultivated in 1702, by the Dutcheis of Beaufort^p. See *Dracæna*, and *Retz. obs. 5. p. 3. n. 49.*]

3. This has a root like the preceding, but the stalks are not so strong; they climb higher, but do not branch so much; the leaves are much longer and narrower, and are of a grayish colour. The flowers come out from the side of the branches, two or three upon each peduncle; they are of an herbaceous white colour, shaped like those of the preceding, and appear about the same time, but have not produced fruit here.

Native also of the Cape. [Cultivated by Mr. Miller in 1752. It flowers from December to March^a.]

PROPAGATION AND CULTURE.

1. This is hardy enough to live in the open air; but producing no seeds here, can be increased only by offsets.

2. 3. Both these sorts propagate freely by offsets from the roots, so that when they are once obtained, there will be no necessity of sowing their seeds, which commonly lie a year in the ground, and the plants will not be strong enough to flower in less than two years more, whereas the offsets will flower the following season. The time for transplanting and parting the

^o Jussieu, gen.

^p Hort. kew.

^a Ibid.

ROOTS

roots is in July, when their stalks are entirely decayed, for they begin to shoot towards the end of August, and keep growing all the winter, and decay in the spring. These roots should be planted in pots filled with good kitchen-garden earth, and may remain in the open air till there is danger of frost, when they must be removed into shelter, for they are too tender to live through the winter in the open air; but if they are placed in a warm green-house, they will thrive and flower very well, but they do not produce fruit unless they have some heat in winter; therefore where that is desired, the plants should be placed in a stove kept to a moderate degree of warmth. During the winter, when the plants are in vigour, they should be frequently but gently watered; but when the stalks begin to decay, they must have very little wet, for much moisture will rot them while they are in an inactive state; during which time, if the pots are placed where they have only the morning sun, they will require little or no water: but when they begin to shoot out their stalks, they should be removed to a warmer situation, and should then be frequently but gently watered.

The flowers of these plants making no great appearance, the plants are not preserved for their beauty; but as their stalks are climbing, and their leaves are in full vigour in winter, during that season they add to the variety in the green-house.

[MEDEOLA ACULEATA. See *Jacquinia*.

MEDICA. See *Medicago*.]

MEDICAGO. (So named from its native country Media, whence it came into Greece with Darius Hystaspes. Pliny.)

Lin. gen. n. 899. Reich. n. 971. Schreb. n. 1214.

Tournef. t. 231. Juss. 356. Gært. t. 155.

Medica. Tournef. t. 231.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, straight, campanulate-cylindrical, half-five-cleft, acuminate, equal.

COR. papilionaceous. Banner ovate, entire, the margins bent in, the whole bent back. Wings ovate-oblong, affixed by an appendage to the keel, with the fides converging under the keel. Keel oblong, bifid, spreading, blunt, bent down from the pistil, and gaping from the banner.

STAM. Filaments diadelphous, united almost to the tops. Anthers small.

PIST. Germ pedicelled, oblong, curved in, compressed, involved in the filaments, starting from the keel, bending back the banner, ending in a short, awl-shaped, almost straight style. Stigma terminating, very small.

PER. Legume compressed, long, bent in.

SEEDS several, kidney-shaped or angular.

Obs. Cochleatæ Riv. have the legume spiral like the shell of a snail.

Falcata Riv. have the legume bowed or arched like a sickle.

ESSENTIAL CHARACTER.

Legume compressed, bent in. Keel bent down from the banner.

SPECIES.

1. *Medicago arborea*. Tree Medick or Moon Trefoil.

Lin. spec. 1096. syst. 692. Reich. 3. 573. hort. cliff. 376. upf. 230. Kniph. cent. 5. n. 55. Fl. rust. t. 100. Mill. fig. t. 175.

Medica arborea. Mill. dict. n. 7.

Cytisus. Cesalp. & Dod.—Maranthæ. Lob. ic. 2. 46.

Matth. & Dalech. Park. parad. 439.—cornutus.

Tabern. Ger. 1124. 7. emac. 1305. 7. Park. theat.

1471. 1. Besl. syst.—incanus, filiquis falcatis. Baub.

pin. 389. Raii hist. 973.—fil. incurva, folio candicante. Baub. hist. 7.

Lignum Rhodium, f. Cytisus verus. Honor. Belli

epist. 4. ad Clus.

Legumes crescent-shaped, quite entire about the edge, stem arboreous.

[2. *Medicago virginica*. Virginian Medick.

Lin. spec. 1096. syst. 693. Reich. 3. 573. Gron.

virg. 86. Pluk. mant. 120. (Loto affinis).

Stem upright very much branched, flowers in terminating bundles.]

3. *Medicago radiata*. Ray-podded Medick.

Lin. spec. 1096. syst. 693. Reich. 3. 573. hort. cliff.

377. upf. 230. Gron. orient. 231. Kniph. cent.

10. n. 58. Gært. fruct. 2. 348.

M. radiata. Mill. dict. n. 3.

M. annua, trifolii facie. Tournef. inst. 412. Boerb.

lugdb. 2. 35.—siliqua falcata striata. Mor. hist. 2.

158. f. 2. t. 16. f. 3.

Trifolium fil. falcata. Baub. pin. 330.—fil. lunata.

Ger. emac. 1207.

Medica lunata. Baub. hist. Park. theat. 1116. Raii

hist. 966.

Lunaria radiata italorum. Lob. ic. 2. 38.

Legumes kidney-form toothed at the edge, leaves ternate.

4. *Medicago circinata*. Kidney-podded Medick.

Lin. spec. 1096. syst. 693. Reich. 3. 574. hort. cliff.

377. upf. 230. Murr. prodr. 175. Gært.

fruct. 2. 348. Retz. obs. 1. 24.

M. hispanica. Mill. dict. n. 4.

M. vulnerariæ facie, hispanica. Tournef. inst. 412.

Boerb. lugdb. 2. 35.

Loto affinis filiquis hirsutis circinatis. Baub. pin. 333.

Falcata foliis anthyllidis. Rivin. tetr. t. 87.

Auricula muris. Camer. Baub. hist. Raii hist. 922.

Park. theat. 1094. 2.

β. M. cretica. Mill. dict. n. 6.

M. vulnerariæ facie, cretica. Tournef. inst. 412.

Legumes kidney-form toothed at the edge, leaves pinnate.

5. *Medicago obscura*. Doubtful Medick.

Retz. obs. 1. 24. n. 87. t. 1.

M. italica. Mill. dict. n. 5?

M. polymorpha cochleata lenticularis. Wilche hort.

gryph. 72?

M. lunata quædam minor. Baub. hist.?

Trifolium filiqua falcata, alterum. Baub. pin. 330?

Raii hist. 966?

Peduncles racemed, legumes kidney-form quite entire, stem

diffused rough-haired.

6. *Medicago sativa*. Cultivated Medick or Lucern.

Lin. spec. 1096. syst. 693. Reich. 3. 574. hort.

cliff. 377. Hudf. angl. 330. Wither. arr. ed. 3.

658. Fl. rust. t. 48. Hall. belv. n. 382. Crantz.

austr. 434. Neck. gallob. 317. Pollich pal. n. 712.

Krock. files. n. 1221. Villars dauph. 3. 401.

Pall. it. 1. 370. Kniph. cent. 8. n. 67.

Medica sativa. Mill. dict. n. 1. Mor. hist. 2. 150.

f. 2. t. 16. f. 2.

M. legitima. Clus. hist. 2. 242. 2.

M. major erectior floribus purpurascens. Baub.

hist. 2. 378. 1. Raii hist. 960.

Focum burgundicum. Lob. obs. 498. 1. ic. 2. 36. 2.

—f. Medica legitima. Park. theat. 1114. 1.

Trifolium filiqua cornuta f. Medica. Baub. pin. 330.

T. burgundicum. Ger. 1020. 2. (not the figure).

emac. 1189. 2.

Peduncles racemed, legumes contorted, stem upright smooth.

7. *Medicago falcata*. Yellow Medick.

Lin. spec. 1096. syst. 693. Reich. 3. 574. fl. suec.

n. 677. Hudf. angl. 330. Wither. arr. ed. 3. 658.

Relb. cant. n. 549. Fl. rust. t. 86. Gært. fruct.

2. 348. Hall. belv. n. 381. Scop. carn. n. 941.

Crantz. austr. 434. Neck. gallob. 317. Pollich

pal. n. 713. Krock. files. n. 1222. Villars dauph.

3. 400. Fl. dan. t. 233. Kniph. cent. 11. n. 67.

Medica falcata. Mill. dict. n. 2. Mor. 2. 16. 1.

M. flavo flore. Clus. hist. 2. 243. 1. Park. theat.

1114. 3. Raii hist. 960. 2.

M. sylvestris. Baub. hist. 2. 378. 1. Raii syn. 333.

Falcata. Riv. tetr. t. 84.

Trifolium fyl. luteum filiqua cornuta, vel Medica fru-

tescens. Baub. pin. 330.

T. lut. fil. cornuta. Ger. emac. 1191. 8.

Lens major repens. Tabern. 502.

β. M. varia. Fl. rust. t. 87.

M. hybrida. Laurens in Young's Annals, 15. 279.

Peduncles racemed, legumes crescent-shaped, stem prostrate.

[8. *Medicago lupulina*. Hop or Black Medick.

Lin. spec. 1097. syst. 693. Reich. 3. 575. fl. suec.

n. 678. hort. cliff. 375. Hudf. angl. 330. Wither.

arr. ed. 3. 659. Curt. lond. 2. 57. 120. Lightf.

scot. 412. Relb. cant. n. 550. Hall. belv. n.

380. Scop. carn. n. 940. Crantz. austr. 433.

Neck.

- Neck. gallob. 317. Gmel. tub. 231. Pollich pal. n. 714. Krock. files. n. 1223. Villars dauph. 3. 402. Gron. virg. 110. Kniph. cent. 11. n. 68. Fl. dan. t. 992.
- Medica polycarpus* fructu minore compresso scabro. *Raii syn.* 333.
- M. cochleata* minor polycarpus annua, capsula nigra minus hispida. *Mor. hist.* 2. 154. f. 2. t. 15. f. 14.
- Trifolium pratense* luteum. *Fuchs. hist.* 819.—capitulo brevior. *Baub. pin.* 328.
- T. cochleatum* polycarpon f. *Medica racemosa*. *Park. theat.* 1114.
- Melilotus minima*. *Rivin. tetr.* t. 8.
- M. minor*. *Trag.* 593. *Raii hist.* 952. 8.
- Melilotum minus*. *Brunf.* 4.
- Trifolium luteum lupulinum*. *Ger. emac.* 1186. 5. *Raii hist.* 949. *syn.* 331.
- T. montanum* lupul. *Park. theat.* 1105. 6.
- T. pratense* luteum mas, flore minore, femine multo. *Baub. hist.* 2. 380. 4.
- Spikes oval, legumes kidney-form one-seeded, stems procumbent.]
9. *Medicago marina*. *Sea Medick.*
Lin. spec. 1097. *syn.* 693. *Reich.* 3. 575. *hort. cliff.* 378. *Gertn. fruct.* 2. 350. *Sauv. monsp.* 186. *Gron. orient.* n. 230. *Pall. it.* 3. 590. *Kniph. cent.* 4. n. 46.
- Medica marina*. *Clus. hist.* 2. 243. *Lob. ic.* 38. *Tournef. inst.* 410. *Boerb. lugdb.* 2. 35. *Park. theat.* 1114. 4. *Raii hist.* 965.
- Cochleata* fructu echinato incano. *Rivin. tetr.* t. 88. f. 15.
- Trifolium cochleatum* maritimum tomentosum. *Baub. pin.* 575.
- T. cochl. marinum*. *Ger.* 1029. 2. *emac.* 1114. 4.—f. *Medica marina*. *Baub. hist.*
- Peduncles racemed, legumes spiral spiny, stem procumbent tementose.*
- [10. *Medicago polymorpha*. *Variable Medick.*
Lin. spec. 1097. *syn.* 693. *Reich.* 3. 575. *mant.* 453. *hort. cliff.* 378. *ups.* 230. *Huds. angl.* 331. *Scop. carn.* n. 942. *Krock. files.* n. 1224.
- Trifolium cochleatum*, fructu nigro hispido. *Baub. pin.* 329.
- α. *M. orbicularis*. *Flat-podded Medick.*
Sauv. monsp. 186. *Scop. n.* 942. 1. *Ger. prov.* 516. 5. *Villars dauph.* 3. 402. *Retz. obs.* 1. 25.
- Medicago orbiculata*. *Gertn. fruct.* 2. 349.
- Medica orbiculata*. *Baub. hist.* 2. 384. *Raii hist.* 961. *Tourn. inst.* 410. *Garid. aix.* 309.
- M. major* dicarpus, capsula compressa orbiculata nigra plana oris crispis. *Mor. hist.* 2. 152. f. 2. t. 15. f. 1.
- Cochlearia* fructu orbiculato. *Riv. tetr.* t. 88. f. 1.
- Trifolium cochleatum* vel scutellatum fructu latiore, folio minuto obtuso. *Baub. pin.* 329. *prodr.* 140. 9.]
- β. *M. scutellata*. *Snail Medick.*
Ger. prov. 516. 6. *Gertn. fruct.* 2. 349. *Villars dauph.* 3. 403. *Mill. dict.* n. 2.
- Medica scutellata*. *Baub. hist.* 2. 384. *Raii hist.* 961. *Tourn. inst.* 410. *Garid. aix.* 309.
- M. cochleata* major dicarpus, capsula rotunda globosa scutellata. *Mor. t.* 15. f. 4.
- Trifolium cochleatum*. *Ger.* 1029. *emac.* 1199. 1.—fructu latiore. *Baub. pin.* 329.
- γ. *M. tornata*. *Smooth-podded Medick.*
Ger. prov. 517. 7. *Mill. dict.* n. 3. *Retz. obs.* 1. 26.
- Medica tornata* major & minor lenis. *Park. theat.* 1116. *Mor. t.* 15. f. 11.
- [δ. *M. turbinata*. *Turban Medick.*
Sauv. monsp. 187. *Gouan. monsp.* 517. *Ger. prov.* 517. 7. var.
- Medica magna* turbinata. *Baub. hist.* 2. 385. *Tourn. inst.* 410. *Garid. aix.* 309.
- M. dicarpus*, fructus capsula turbinata rugosa. *Mor.* 2. 153. *Knorr. del.* 1. t. S. 20.
- Trifolium cochleatum* turbinatum, fructu compresso. *Baub. pin.* 329.]

- ε. *M. intertexta*. *Hedge-bog Medick.*
Ger. prov. 518. 11. *Gertn. fruct.* 2. 350. *Mill. dict.* n. 4. *Retz. obs.* 1. 26.
- Medica cochleata* spinosa major dicarpus capsula f. spinis longioribus sursum & deorsum tendentibus. *Mor.* 153. t. 15. f. 8, 9, 7.
- M. coch.* spin. echinis magnis utrinque turbinatis cum spinulis reflexis. *Raii hist.* 962.—& magna echinata. *Ej.* 963.
- M. majoris* Bæticæ species prima, spinulis intortis. *Ger. emac.* 1200. n. 2.
- Cochleata* fructu echinato maximo. *Riv. tetr.* t. 88. f. 9.
- [ζ. *M. muricata*. *Prickly Medick.*
Ger. prov. 517. 8. *Villars dauph.* 3. 403. *Witber. arr. ed.* 3. 661.
- Medica cochleata* dicarpus capsula spinosa rotunda minore. *Mor.* 153. t. 15. f. 11.
- M. spinosa* dicarpus, fructu ovali, spinulis brevioribus & rigidioribus. *Raii hist.* 963. 17.
- Trifolium cochleatum* mediolis spinosis. *Raii syn.* 333.
- η. *M. arabica*. *Heart Medick.*
Huds. angl. 331. *Witber. arr. ed.* 3. 660. *Curt. lond.* 3. 47. 176. *Relh. cant.* n. 551. *Fl. rust.* t. 76. *Retz. obs.* 1. 25.
- M. maculata*. *Sibth. oxon.* n. 649.
- Medica arabica*. *Camer. hort.* 97. t. 27. *Park. theat.* 1115. 6.
- M. cochl. minor* polycarpus annua, caps. majore alba, fol. cordato macula fusca. *Mor.* 154. t. 15. f. 17.
- M. echinata* glabra cum maculis nigricantibus. *Baub. hist.* *Raii hist.* 963.
- Trifolium cochl.* fol. cordato maculato. *Baub. pin.* 329. *Raii syn.* 333. 1.
- T. cordatum*. *Ger.* 1021. 4. *emac.* 1190. 4.
- M. hybrida*. *Huds. angl.* ε.
- θ. *coronata*. *Crowned Medick.*
Ger. prov. 517. 9. *Gouan.* 204. *Scop. carn.* var. 5. *Sauv. monsp.* 187. *Gertn. fruct.* 2. 349. *Retz. obs.* 1. 26.
- Medica cochl.* polycarpus annua, caps. minima coronata. *Mor.* 155. t. 15. f. 21.
- M. coronata* Cherleri parva. *Baub. hist.* 2. 386.
- M. polyc.* fol. obtuso crenato. *Tourn. inst.* 411. *Garid. aix.* 309.
- Cochleata* fructu echinato minore. *Riv. tetr.* t. 88. f. 14 & t. 89. f. 2.
- Trifolium* fol. obtuso, folliculis cordatis. *Baub. pin.* 329. *prodr.* 141. 13. *Raii hist.* 965.
- ι. *M. ciliaris*. *Fringed Medick.*
Ger. prov. 519. 14. *Gouan. monsp.* 204. *Sauv. monsp.* 186. *Krock. files.* n. 1225.
- Medica ciliaris* Guilandini. *Raii hist.* 965.
- M. annua*, fructu ciliari. *Tourn. inst.* 410.
- M. cochleata* polycarpus, caps. spinosa minore, perennis, ciliaris, &c. *Mor.* 154 n. 16.
- Trifolium* fructu cochleato ciliari. *Magn. monsp.* 269.
- κ. *M. hirsuta*. *Hairy Medick.*
Ger. prov. 518. 13. *Neck. gallob.* 318. *Scop. var.* 6. *Hall. belv.* n. 383. β. *Sauv. monsp.* 186. *Villars dauph.* 3. 403. *Retz. obs.* 2. 23.
- Medica echinata* hirsuta. *Baub. hist.* 2. 386. *Raii hist.* 965. *Tourn. inst.* 310. *Garid. aix.* 309.
- Trifolium echinatum* arvense. *Baub. pin.* 329.
- Tribulus terrestris* minor repens. *Dalech.* 514.
- λ. *M. rigidula*. *Thorny-podded Medick.*
Ger. prov. 518. 12. *Dalib. par.* 231. *Retz. obs.* 2. 23.
- Medica hirsuta*, echinis rigidioribus. *Baub. hist.* 2. 385. *Raii hist.* 964. *Tourn. inst.* 410. *Garid. aix.* 309. *Vaill. par.* t. 33. f. 7.
- Trifolium* fructu compresso spinis horrido. *Baub. pin.* 329.
- μ. *M. minima*. *Least Medick.*
Gouan. 204. *Fl. dan.* t. 211. *Schreb. spicil.* 27. *Crantz. austr.* 434. n. 4. *Pollich. pal.* n. 715. *Guett. stamp.* 249. *Dalib. par.* 230. *Hall. belv.* n. 383. *Villars dauph.* 3. 403. *Witber. arr. ed.* 3. 660.
- Medica echinata* minima. *Baub. hist.* 2. 386. *Raii syn.*

syn. 333. *hist.* 965.—parva recta. *Park. theat.*
1115. 7. *Mor.* 154. *t.* 15. *f.* 15.

Trifolium echinatum arvense fructu minore. *Bauh.*
pin. 330.

Cochleata echinata minima. *Riv. tetr. t.* 88. *ord.*
4. *f.* 4.

Tribulus terrestris minor rectus. *Dalech.* 515:

v. *M. nigra.* *Black-podded Medick.*

Ger. prov. 518. 10. *Krock. filif. n.* 1226. *Retz.*
obs. 1. 25.

M. cochleata polycarpus annua, caps: nigra hispido-
diore. *Mor.* 154. *t.* 15. *f.* 19.]

ξ. *M. laciniata.* *Cut-leaved Medick.*

Gron. orient. 95. *Mill. dict. n.* 5: *Sauv. monsp.*
187. *Gouan. monsp.* 400.

M. syriaca. *Riv. tetr.* 205.

M. dicarpus laciniata foliis & fructu spinosis. *Pluk.*
alm. 245.

Trifolium echinato capite. *Dodart. mem.* 1: 123.

Legumes spiral, stipules toothed, stem diffused.

[11. *Medicago prostrata.* *Prostrate Medick.*

Lin. syst. 694. *suppl.* 340. *Jacqu. hort.* 1. 39. *t.* 89.

Till. pis. 110. (*Medica.*)

Legumes spiral unarmed, leaves ternate wedge-shaped
toothed at the top, stipules bristle-shaped quite entire,
stem diffused.

DESCRIPTIONS, &c.

These are herbs, except the first and second, which are shrubby or frutescent. Leaves commonly ternate. Stipules small, fastened to the bottom of the petiole. Peduncles axillary and terminating, one-flowered, or many-flowered in spikes or glomerate^a.

Miller has followed Tournefort in dividing this natural genus into two, from the fruit, which in his *Medica* is sickle-shaped; in his *Medicago* spiral, screw-shaped, or like the shell of a snail. The shape of the fruit being so variable in this genus, it is an improper basis of a generic distinction.]

1. Tree Medick, named Moon Trefoil from the shape of the pods, and its trifoliate leaves, or Horned Tree Trefoil, as it is called by Parkinson, is a shrub growing to the height of four or five to eight or ten feet, and being covered with a gray bark, the whole has a hoary appearance. The stem divides into many branches, with ternate leaves at each joint, on foot-stalks about an inch in length; there being several of these leaves together, the whole shrub is closely covered with them; and it is never destitute of leaves: the component leaflets are small, lanceolate (or wedge-shaped, emarginate,) and hoary on their under side. The flowers are produced on peduncles from the side of the branches, four or five together, and are of a bright yellow. The pods contain three or four small seeds.

It flowers great part of the year, and when sheltered is seldom destitute of flowers. In the open air it begins to flower in april, and continues till december. Those flowers which appear early in summer will have the seeds ripe in august, or the beginning of september, and the others will ripen in succession.

It grows in great plenty in Abruzzo, and many parts of the kingdom of Naples, where the goats feed upon it; and with their milk abundance of cheese is made there. It also abounds in several of the islands in the Archipelago, where the Turks use the wood to make handles for their sabres; and the Caloyers or Greek monks form their beads of it. In old shrubs the heart is of a dark colour, and hard like ebony.

This shrub bids the fairest of any to be the *Cytisus* of Virgil, Columella and the other ancient writers on husbandry; and being celebrated by them as an excellent fodder, has been recommended for cultivation here. But however useful it may be in Candia, Rhodes, Sicily, Abruzzo, and other dry warm countries, yet it will never thrive in England, (where we have also many plants of this leguminous tribe far more succulent than this) so as to be of any real advantage; for in severe frost it is very subject to be destroyed, or at least so much damaged, as not to recover its former verdure before the middle or end of

may: (and even after a mild winter it will generally appear injured by our cold spring winds even at that season; so that it cannot be of any use here for early spring fodder.) Besides, the shoots will not bear cutting above once in a summer, and then will not be of any considerable length: and the stems growing very woody; the cutting of it will be very troublesome: Upon the whole therefore it is not worth the trial, especially as we have so many plants preferable to it: though in hot, dry, rocky countries, where few other plants will thrive, it may be cultivated to great advantage. But however unfit Tree Medick may be for use as fodder in England, yet for the beauty of its hoary leaves, abiding all the year, together with its long continuance in flower, it deserves a place in every good garden and plantation, with shrubs of the same growth.

[Maranta, who has described this shrub, found it near Naples; Honorius Bellus, in Rhodes and the islands adjacent; Ray about Baiæ abundantly.—Gerarde, who calls it Horned Cytisus, or Horned Shrub Trefoil, cultivated it in 1596.

2. The corolla of this is red and white variegated; the legumes have only one seed:

Native of Virginia^b.]

3. This is an annual plant, having several slender branching stalks a foot and half long, and spreading on the ground. Leaflets ovate-lanceolate, entire. The flowers are produced singly upon slender peduncles from the side of the branches; they are small and yellow. [Legumes membranaceous, subdiaphanous, pale, netted with capillary radiant vessels, flattened and of a leafy substance; obscurely swelling at the seeds, setaceous-toothletted at each future, many-celled, not opening. Seeds four to six, ovate, flattened a little, tuberculate-wrinkled, rufescent^c.]

It grows naturally in Italy, (and the Levant. Ray found it about Messina in Sicily.) It flowers in june and july, and the seeds ripen in autumn.

[Cultivated by Miller in 1759.

4. This whole plant is pubescent. Leaves wedge-form, entire, below simple, above pinnate; leaflets inconstant in number, often deficient on one of the sides, and on the other smaller, and they alternate with an odd leaflet, sometimes sessile, sometimes petioled: the surface of the leaves projects at the base or the hairs, so as to appear tubercled. Stipules none. Flowers at the ends of the branches, commonly by threes, very seldom only two together. Legume thicker, more round than in the preceding, and scarcely toothed at the edge^d: in the middle slightly convex, but towards the circumference attenuated and membranaceous, smooth, not netted, two-celled, valveless. Seeds two, kidney-form, rufescent^e. Both Gærtner and Retzius remark, that the legumes are sometimes not at all toothed at the edge.

Native of Spain and Italy. (Ray found it in Sicily.) Introduced in 1777, by Abbé Nolin^f.

If this be *Medica hispanica* of Miller, as it probably is, then he cultivated it many years earlier. He thus describes it.]

Root annual. Stalks a foot and half long, trailing. Leave pinnate, composed of two pairs of small leaflets, terminated by one large ovate-lanceolate leaflet; they are a little hoary, and placed alternately at the joints. Flowers on long slender peduncles, each sustaining four or five gold-coloured flowers at the top; succeeded by compressed pods, not half so large as those of the preceding, but having hairy indentures like them.

β. *Medica Cretica* grows naturally in the Archipelago. This is an annual plant, from the roots of which come out several oblong leaves about two inches and a half long, narrow at their base, but broad towards the top, where they are rounded; these spread on the ground, and from among them come out the stalks, which are slender, about a foot long, branching out into smaller, having pinnate hoary leaves: those on the lower part of the stalk have two pairs of equal leaflets, terminated by an odd one: the upper leaves

^b Linn.

^c Gærtner.

^d Murray.

^e Gærtner.

^f Hort. kew.

^a Jussieu.

are ternate. Flowers terminating, small, yellow; succeeded by compressed pods, acutely toothed on the edge, and containing three or four seeds.

[Retzius is of opinion that this also is of the same species with the *hispanica* of Miller and *circinata* of Linneus, or a variety of it.

5. Root annual. Stems decumbent, long, four-cornered. Leaves ternate: leaflets obovate, finely serrate, seldom hairy: petioles long, channelled above. Stipules ciliate-toothed. Peduncles axillary, the length of the leaf, many-flowered, elongated after flowering. Flowers like those of *M. polymorpha*, yellow with the banner paler. Legumes in a short raceme, compressed, keeled, veined, two-seeded. Seeds oblong-kidney-form, smooth. The plant in flower resembles *M. polymorpha*, but the legumes are very different. These agree very nearly in form with those of *M. circinata*, but are only half the size, stiffer, more bent in, so that the end meets the pod again, which is therefore in a manner orbicular. The legume not being spiral, this is not a variety of *M. polymorpha*. It is probably a native of Germany^z.

Retzius suspects that this may be the *Medica italica* of Miller, which he says] grows naturally on the sea coast in several parts of Italy. It is an annual plant, with prostrate herbaceous stalks about a foot long. Leaves ternate: leaflets wedge-shaped, towards the top serrate. The flowers are produced on slender peduncles arising from the joints of the stalk; they are about an inch long, and sustain five or six pale yellow flowers; which are succeeded by small thick pods, with entire borders, containing three or four small seeds.

6. [Cultivated Medick, or Lucern has a perennial root, with annual stalks, smooth and striated, from a foot and half to two feet, and even almost three feet in height, in good ground: branched alternately. Stipules lanceolate, awned. Leaves ternate: leaflets elliptic, entire at the base, but finely serrate towards the end; the midrib is lengthened into a point; they are slightly downy on their upper surface, smooth and streaked with veins on the under; all on pedicels, the middle one longest.] The leaves are placed alternately: the leaflets are deep green, an inch and half long, and half an inch broad. [Peduncles axillary, longer than the leaves. Flowers in thick spikes,] from two to three inches in length, on naked peduncles, two inches long. [Each flower is on a short pedicel, with an awl-shaped bracte at the base. Calyx nearly smooth, with five awl-shaped teeth, almost equal. Corolla purple. Legumes with two or three distant turns^a.]

The common colour of the flower is a fine violet purple, but Mr. Miller mentions the following varieties to have accidentally arisen from seeds; viz. with pale blue, and with variegated flowers. These, however, he says, are never so strong as those with purple flowers, and therefore are to be avoided by cultivators. [In the *Flora Rustica* the corolla, by some mistake, was coloured of a red purple. Villars affirms, that the flowers are white, seldom greenish: and Krockner, that the keel is sometimes yellow.]

It flowers in June, and the seeds ripen in September.

[It is set down as a native of many parts of Europe, even of England, where it is probably not indigenous. Linneus assigns it to Spain and France. Haller does not regard it as a native of Switzerland. Pollich thinks it is indigenous of the Palatinate, because it is found there, in places where it is never cultivated. Krockner supposes it to have become a denizen of Silesia, where it is now undoubtedly found in places that have not been sown with it. Villars speaks of it as certainly wild in Dauphiné. Ray observed it growing spontaneously about Montpellier, and cultivated about Avignon and Geneva.

It may possibly have been originally a native of Europe, continuing to be disregarded, till it was imported into Greece from the East, after Darius had discovered it in Media, whence its name. It is said to be the principal green fodder for horses in Persia to

this day. It has been cultivated time immemorial in the southern countries of Europe; but it has not even yet gained a firm establishment in Great Britain;] so as to be cultivated in considerable quantities, though it is evident that it will succeed here as well as in France or Switzerland, and that it resists the severest cold of our climate. As a proof of this, Miller mentions, that seeds scattered accidentally in autumn have come up, and the plants having endured the cold of a severe winter, have been very strong the following season. This however does not now want proof.

About the year 1650, continues Mr. Miller, (alluding I suppose to Hartlib's queries) the seeds of Lucern were brought over from France, and sown here; but whether for want of skill in the culture, or from reluctance to depart from the old beaten track, it was entirely neglected for many years, so as to be almost forgotten.

[In Gerarde's time, we had it only in our gardens, where it lasteth long, as he says, with great increase. Parkinson, in 1640, informs us, that it was sown in Spain, France, and the Low Countries, but does not hint at our having it then in England. Hartlib, in 1649 to 1651, took some pains to make enquiries about it in France. It is barely mentioned by Blith, in 1653, as being in great credit among the French. Woolridge, in 1668, says that it is commended for an excellent fodder, but does not pretend that it was then cultivated here. It seems to have been very little known in the time of Mr. Lisle, who is said to have continued his enquiries and experiments to the time of his death in 1722. Mortimer speaks of it rather by hearsay, than from any actual knowledge of it. Tull recommends its culture in his horse-hoeing husbandry. But Mr. Miller appears to have been the first who brought it into that degree of cultivation in which we find it at present. The attention of the public was called to it by the Rev. Walter Harte, about 1757; and by Mr. Rocque about the year 1765. The latter says, that a farmer in Kent had then fourteen acres of it; but that one and twenty years before there were not two hundred pounds weight of the seed in London. It was also about that time encouraged by premiums from the Society of Arts, Manufactures and Commerceⁱ. My father cultivated it with success at Streatham in Surry, during many years from 1752. It has never been my fortune to be situated in a soil congenial to it, but I have constantly kept it in my eye, and am firmly convinced that it is a most valuable green fodder, particularly for horses, on account of its quality, quantity and earliness. I have seen it cut seventeen inches high on the ninth of April.

Lucern has been greatly celebrated for increasing the milk of kine: but Haller, who certainly knew it well, asserts that cattle are apt to grow tired of it, and that they are subject to be blown by it. I have never heard that we have found either of these inconveniences in England.

With respect to the culture of *Medica* or Lucern in the southern parts of Europe, the Greeks speak of it from Theophrastus to Dioscorides, the Latins from Virgil to Palladius. Even in Italy however it seems to have been lost from the time of the irruption of the barbarians, and to the moderns for some time; since Matthioli owns, in the year 1558, that he had never seen it growing. At the same time he says it is related, that it is abundantly cultivated in Spain, for kine and sheep; and that it is known there by the Arabic name *Alfalfa*. In that country it is probable that it was never quite lost. Castore Durante, in 1585, informs us, that it then began to be recovered to Italy, and to be sown for the food both of horses and cattle. In Henry the Fourth's time it was common in the South of France. Our Barnaby Googe also, in 1578, says (from Heresbach) that no better food can be devised for cattle; and that among all sorts of fodder, that is accounted for the chiefest and best, which the people of old time, and the Italians at present, call *Medica*.

Mr. Harte however informs us that the *Medica* at first introduced about Rome, was not the true Lucern,

^z Retzius.

^a Woodward, *Ms. Fl. rust.*

ⁱ *Fl. rust. & Harte, Essay 2.*

but the *Medicago polymorpha*, or Snail-Medick; as he was assured by curious botanists well skilled in agriculture; and farther says he doubts not but that this species also affords very agreeable food; for a horse of his breaking into his garden, devoured twenty plants of it that stood in different beds, in a few minutes^k. That however is an annual plant.

The name Lucern, Lucerne or Luzerne, by which this Medick is now generally known among us, is modern. Old English writers call it *Medick-fodder*, *Burgundy Trefoil*, *Snail Trefoil of Burgundy*, or *Snail Clover*. Hartlib and Blith first adopted the French name *La Lucerne*. The Germans and the other northern nations have also adopted the name from the French, who also call it *Trefle* or *foin de Bourgogne*, and *Grand Trefle*. The Italians name it *Medica*, *Lucerna*, and *Erba Spagna*. The Spaniards *Alfalfa*, *Mielga*, *Medica*. The Portuguese, *Luzerna* and *Medicagem dos pastos*. In Persian it is *Gunscha*.

7. Root perennial. Stems round, smooth, slightly striated, procumbent but ascending or bending upwards towards the end, branching, two, three and sometimes four feet in length. Leaves alternate, on short petioles: leaflets lanceolate, oblong-ovate, or wedge-shaped, smooth, truncate or retuse, toothed towards the top, entire at the base, the midrib lengthened into a projecting point; the two lateral ones almost sessile, the middle one on a longer petiolet. Stipules lanceolate, acuminate, entire, or sometimes with one or two teeth on the outer edge. Peduncles axillary, somewhat angular, standing much above the leaf. Flowers in short loose racemes, each on a pedicel, with an awl-shaped bracte. Calyx slightly pubescent, with equal awl-shaped teeth. Corolla commonly yellow. Legumes sickle-shaped, not making several turns, as in cultivated Lucern, linear, six or seven lines long, and scarcely two broad, smooth or slightly pubescent, one-celled, two-valved, black when ripe. Seeds five or six, compressed, smooth, yellow, fixed to the interior suture^l. According to Gærtner there are only two or three, of an oblong kidney shape; and the pod itself is crescent-sickle-shaped or subspiral.]

Miller remarks, that the stalks of this are smaller, and never rise so high, as those of the true Lucern, and that they are generally prostrate; that the leaves are not half so broad; that the flowers are produced in short roundish spikes, and are of a saffron colour.

Yellow Medick is common in the South of Europe, by way sides and in dry pastures. With us it is also common, in the sandy grounds near Bury in Suffolk. Mr. Doody remarked it between Watford and Busby; Mr. Rose and Mr. Woodward about Norwich plentifully; Quey, Bourn-bridge, Wilbraham and Linton in Cambridgeshire.

Linneus has recommended it for cultivation; but Haller objected to the hardness of the stalks, and its prostrate manner of growth. In cultivation however the stalks may prove more succulent, and in this state they will support each other. A single plant of purple Lucern will hardly support itself, and the stalks become very sticky at bottom when it is far advanced. Upon the whole, this is probably not superior to the purple Medick or Lucern. The roots strike very deep, and are with difficulty eradicated.

β. Yellow Medick varies much in the colour of its flowers, which are sometimes whitish, quite white, or greenish, as well as of different shades of yellow. But it is remarkable for a variety, or perhaps mule, with flowers of colours so different as blue and yellow on the same stalk. Caspar Bauhin says, that it is found in the South of France with whitish yellow, green, blue, purple, black, and variegated flowers, but he does not affirm that these different colours occur on the same individual. Mr. Ray observed it between Norwich and Lynn, it has also been found about Bury, and is said to be common near Norwich and Yarmouth. Ray doubted whether it might not be the true Lucern in a wild state. The stipules in plants of the varie-

gated variety which have come under my observation were much narrower than in the Yellow Medick.

If this difference should prove to be permanent, it might induce us to suspect that they are distinct species^m.

8. Root annual or biennial, with few fibres; and penetrating deep into the earth. Stems trailing unless supported, numerous, about a foot long, somewhat angular, slightly hairy, branched. Leaves on very short petioles: leaflets obcordate; obovate, or wedge-shaped, bluntly toothed towards the top, the midrib lengthened out into a short broad point, soft, pubescent particularly on the under side. Stipules ovate-lanceolate, acuminate, notched with little teeth. Flowers small, yellow, from thirty to forty and upwards in a head, which is first roundish, afterwards oval. Calyx slightly downy, nearly as long as the corolla, with five awl-shaped teeth, nearly equal, but the two upper ones rather shorter, and more remote. Legume striated and wrinkled, somewhat hispid with rigid hairs, turning black when ripe. Seed ovate, smooth, yellowishⁿ.

This plant is often confounded with some of the Trefoils, from which however it is so distinct in the fruit, as to be rightly placed in a different genus. The leaves and stalks also of this are frequently more hairy than those Trefoils for which it may be mistaken, except *subterraneum*, which is usually smaller: in general, the more barren the soil, the more downy this plant appears; by culture it becomes much larger and smoother.

The flowers of *M. lupulina* are smaller and more closely compacted than those of *Trifolium agrarium* and *procumbens*, both of which it much resembles; nor are the spikes so exactly round as in them, but of an oval or oblong shape, especially when somewhat advanced: when the seeds are ripe, this is distinguished at first sight by its black seed-vessels^o. From this circumstance it has obtained the names of *Black-seed* and *Black Nonesuch* among some cultivators: but it has commonly the name of *Trefoil*, when cultivated either alone or with Ray-grass for sheep. The old writers call it *Melilot Trefoil*. Mr. Hudson names it *Black Medick*, and Mr. Curtis, *Hop Medick*.

It grows naturally on dry banks and hilly pastures, chiefly in a sandy or dry soil, is common in New England, and flowers in June and July.

9. The legume of this is cylindric-globular and spiral or like a snail's shell, with about four turns of the screw, which are contiguous, and cinereous tomentose; the outer suture is convex, defended on each side by very short pungent distant spinules. Seeds four or five, kidney-form, yellow^p.

Native of the shores of the Mediterranean sea, as about Marseilles and Tripoli. Ray observed it abundantly on the sandy coasts.]

According to Miller, it is a perennial plant, with trailing woolly branches about a foot long, divided into many small branches. Leaves small, downy, on short footstalks, at each joint. Flowers from the side and at the ends of the branches, in small clusters, of a bright yellow colour. They appear in June and July, and the seeds ripen in September.

10. [Root annual, oblong, branched. Stems more or less procumbent, somewhat angular, hoary, from a hand to a foot in length, ternate: leaflets roundish, retuse, subserrate, glaucous-green, petioled; the upper ones smaller, soft, tomentose. Stipules entire or toothed, sessile, in pairs at the base of the petioles. Peduncles axillary, much longer than the leaves, round, pubescent, forming a spike: flowers very small, commonly yellow. Calyx smaller than the corolla, hirsute, green-hoary. Legumes shell-nailed, small, one-celled, of different shades of brown or blackish when ripe, ciliate, aculeate or naked. Seeds ovate, smooth, convex on one side, flat on the other, lemon-coloured^q.

Linneus justly names this species *polymorpha*; and remarks, that like the Dog among the animals, this

^k Harte, 2. p. 8.

^l Woodw. Mf. Fl. rust. Gærtner.

^m Fl. rust.

ⁿ Curtis.

^o Curtis, Woodw. Mf. Linn. With.

^p Gærtner.

^q Krock.

plant produces numerous varieties, though not in the same country. Some of these varieties are erected into species by Miller, Gerard, Gærtner and others.

α. Stems diffused, smooth. Leaflets small, triangular or wedge-shaped, very blunt, somewhat villose, the upper ones sharply toothletted. Petioles longer than the leaves. Stipules crested, with long linear-fetaceous segments, sometimes toothed; the teeth ending in a bristle. Peduncles almost the same length with the petioles, awned or ending in a long thread, one or sometimes two-flowered^a. Legumes solitary, orbicular, flattened, smooth, half an inch in diameter; with four or five turns of the screw, which are leafy, horizontal, marked with radiant distant streaks, toothless, many-celled, not opening. Seeds five to nine, roundish, turgidly lens-shaped, rufescent^a.

Native of the South of Europe. Ray observed it in Sicily.

β. Stems trailing, striated, villose. Leaves on long petioles. Leaflets oval, very finely villose underneath, sharply and unequally toothed. Stipules lanceolate, with fewer toothlets. Peduncles longer than the petioles, villose, awned, many-flowered. Flowers terminating, sessile, pale yellow^a. Legumes solitary or two together, sometimes three, subglobular, making five, six or seven spiral turns, which are leafy-compressed, obliquely striated, concave upwards, toothless or smooth, many-celled, not opening, dark brown when ripe. Seeds five or six, largish, kidney-form, deeply emarginate next the navel, of an orange-rufescent colour^a.

Native of the South of France and Italy. Ray observed it near Leghorn.]

γ. This has trailing branches, and yellow flowers like the preceding, but the fruit is much longer and closer twisted, resembling a barrel or wine pipe, being less at each end than in the middle.

[According to Linneus this has several subcylindric fruits, (two to six) with the turns of the screw unarmed or smooth and flat; and toothed stipules.

Native of the South of France.

δ. According to Gerard, this is a variety of the preceding, with the legumes longer and less blunt. They are unarmed or smooth, as in the preceding, and subcylindrical, with the extremities flattened^a.

Native of the South of France.]

ε. The fruit of this is much larger than in the other varieties, and closely armed with long spines like a hedgehog, whence it had the English name; these spines point every way, so that it is very disagreeable to handle.

[Stipules toothed. Legumes two or four, ovate or ovate-globular, with five compressed spires, concealed by awl-shaped, pungent, recurved prickles. Seeds five or more, largish, kidney-form, very dark chestnut-coloured, somewhat shining^a.

Native of the South of Europe.

ζ. Stems smooth, or with very few hairs, red. Leaves on very long petioles, glaucous and tomentose with a short and scarcely conspicuous nap beneath. Flowers axillary two or three together, small, yellow. The leaves that first come out are heart-shaped; those on the stem broad and blunt, beautifully striated. Legumes oval, with short, stiff spines, hard and larger than peas, becoming blackish when ripe. Seeds kidney-form, yellow^a. According to Villars, the legumes make two turns and a half, each armed with a row of short spines on both edges; they are smooth, though the leaves are villose.

Native of the South of France. Ray found it near Messina in Sicily, and at Orford in Suffolk, on the sea bank, if that be the same, the spines on the legume being described as rather tender than stiff.

η. Stems numerous, a foot in length, more or less according to the soil, procumbent, four-cornered, with long whitish hairs below, but smooth above, striated, purplish, branched. Petioles cylindrical, channelled, hairy in like manner. Leaflets obcordate, somewhat ribbed, smooth, obscurely or partly ferrate,

marked above in the middle with a blackish brown or blood-coloured heart-shaped or sagittate spot, varying in brightness, and according to Linneus disappearing after the plant has flowered. Stipules semi-sagittate, acuminate, ferrate. Flowers from two to four or five together, on axillary, round, hairy peduncles shorter than the leaves; when many, two or three are abortive: at the base of each peduncle a very small bracte; and between the flowers a bristle. Corolla yellow: banner emarginate, much larger than the other petals. Legume roundish-cylindrical, cut off at each end; the spires flat, with widely diverging prickles, hooked at the end^a.

This Medick is called by our Gerard *Heart Trefoil*; others call it *Heart Clover* or *Clover*, corrupted by the vulgar into *Heart Liver*. Hudson and Curtis name it *Heart Medick*; and Sibthorp, perhaps more significantly, *Spotted Medick*.

It is common on banks and the borders of fields, in dry sandy pastures, and especially near the sea; flowering in May and June. It varies much in size.

In Hudson's *hybrida* the peduncles are two-flowered or thereabouts. The lower legumes spiral, with five turns and diverging spines; the seeds perfect: the upper ones linear, half an inch long, bowed or curved inwards, slightly torulose or protuberant; seeds imperfect.

Found near Charlton in Kent. Mr. Curtis affirms that there is no Heart Medick near London but the common one.

θ. Leaves elliptic. Stipules scarcely toothed. Flowers in racemes, very small^a. Legumes subconical, with four, separate, compressed turns, the outer suture marked with a raised line, and armed with short subalternate spinules turning obliquely upwards and downwards. Seeds four or five, kidney-form, yellowish^a. This variety, according to Gerard, is known by having several smaller legumes to each peduncle; with shorter almost erect spines, as Gouan remarks.

Native of the South of Europe.

ι. Stipules ciliate. Legumes several, oval, the spires or turns having straightish villose spines^a.

Native of the South of Europe.

κ. Leaves ovate-lanceolate. Stipules entire. Peduncles many-flowered, forming a raceme. Legumes roundish, with six turns, spines hooked^a.—South of Europe.

λ. Peduncles many-flowered. Legumes compressed, with very stiff prickles.

Native of France.

μ. Root striking deep, white, the size of small twine, tough, with a few rigid fibres. Whole plant, except the flowers, covered with a white silky down. Stems somewhat angular, numerous, procumbent, often tinged with purple. Leaves petioled: outer leaflets sessile, the middle one petioluled, oblong wedge-shaped, entire at the base, ferrated towards the top, marked with strong nerves, the terminations of which form the ferratures; the end emarginate with an intermediate projecting point. Stipules lanceolate, entire, nerved. Peduncles as long as the leaves, bearing from one to six flowers, in a loose head, on short unequal pedicels. Teeth of the calyx awl-shaped, equal. Corolla small, pale yellow. Legumes scarcely larger than the seeds of *Orobis*; the spires covered with rigid hooked prickles^a.

Native of several parts of Europe. In England on sandy soils, but rare. Found by Mr. Woodward at Narborough near Swaffham in Norfolk.

ν. Peduncles few-flowered. Legumes black, spiral, with hooked prickles the length of the legumes.

Native of the South of France^a.]

ξ. Stems trailing. Leaflets wedge-shaped, sharply toothed, with three acute points at the top. Flowers pale yellow. Fruit small, with many weak spines.

[The leaves, according to Linneus, are like those of *Trigonella laciniata*, and appear as if gnawn at the

^a Gerard. ^b Gærtner. ^c Gerard. ^d Gærtner.
^e Gouan. ^f Linn. Gærtner. ^g Ray.

^a Curtis, Fl. rust. Willich. Linn. ^b Scop.
^c Gærtner. ^d Linn. ^e Scop. Ger.
^f Woodw. Mf. &c. ^g Gerard.

edge by insects. Leaflets oblong, emarginate, and pinnatifid with two longer teeth on each side. Peduncles awned, sustaining about two flowers, and shorter than the leaves^b.

Native of Syria, about Aleppo.

There are other varieties mentioned by Gærtner, Retzius, and others, but the above will probably be deemed sufficient. Some of them have been long cultivated in our gardens, but are not so much regarded at present as they were heretofore.

11. This is a very small plant, with a small fruit. It is nearly allied to *M. polymorpha*, but is perennial.

Its native place is not known.]

PROPAGATION AND CULTURE.

1. Tree Medick may be propagated by sowing the seeds upon a moderate hot-bed, or a warm border of light earth, in the beginning of april; and when the plants come up, they should be carefully cleared from weeds; but they should remain undisturbed, if sown in the common ground, till september following; but if on a hot-bed, they should be transplanted about midsummer into pots, placing them in the shade until they have taken root; after which they may be removed into a situation where they may be screened from strong winds; in which they may abide till the end of october, when they must be put into a common garden frame, to shelter them from hard frosts; for those plants which have been brought up tenderly, will be liable to suffer by hard weather, especially while they are young. In april following these plants may be shaken out of the pots, and placed in the full ground where they are designed to remain, which should be in a light soil and a warm situation, in which they will endure the cold of our ordinary winters extremely well, and continue to produce flowers most part of the year, and retaining their leaves all the winter renders them the more valuable.

Those also which were sown in an open border may be transplanted in august following, in the same manner; but in doing this be careful to take them up with a ball of earth to their roots, if possible, as also to water and shade them until they have taken root; after which they will require little more care than to keep them clean from weeds, and to prune off the luxuriant branches to keep them within due compass; but never prune them early in the spring, nor late in autumn, for if frost should happen soon after they are pruned, it will destroy the tender branches, and many times the whole plant is lost thereby.

These plants have been formerly preserved in the green-house, supposing them too tender to live through the winter in the open air; but I have had large plants of this kind, which have remained in a warm situation many years without any cover, and have been much stronger, and flowered better than those which were housed; though, indeed, it will be proper to keep a plant or two in shelter, lest by a very severe winter (which sometimes happens in England) the plants abroad should be destroyed.

They may also be propagated by cuttings, which should be planted in april, upon a bed of light earth, and watered and shaded until they have taken root, after which they may be exposed to the open air; but they should remain in the same bed till july or august following, before they are transplanted, by which time they will have made strong roots, and may be removed with safety to the places where they are to remain, observing (as was before directed) to water and shade them until they have taken root; after which you may train them up with straight stems, by fastening them to sticks, otherwise they are apt to grow crooked and irregular; and when you have got their stems to the height you design them, they may then be reduced to regular heads, and with pruning their irregular shoots every year, they may be kept in very good order.

3. 4. 5. These annual sorts are preserved in the gardens of those who are curious in botany; the seeds should be sown upon an open bed of fresh ground, in the places where the plants are to remain, because

^a Linn.

they do not bear transplanting well, unless when they are very young. As the plants spread their branches on the ground, they should not be sown nearer than two feet and a half asunder; when the plants come up, they will require no other care but to keep them clean from weeds. In june they will begin to flower, and as the stalks and branches extend, there will be a succession of flowers produced till the autumn; but the early flowers are such as will have good seeds succeed them; for those which come late in summer, have not time to ripen before the cold weather comes on.

6. LUCERN. This valuable plant will bear the heat of such climates as the Spanish West Indies, where it is sown in all the plains round Lima, and furnishes green fodder for their cattle all the year round, and may be cut every week. It would probably be of great service therefore in our West Indian islands. It is commonly cultivated along the banks of the Rhone, and in many other parts of the South of Europe, where it may be cut five or six times in a year. But it also bears our climate very well, and may be cut four or five times in a season between the middle of april and november.

The directions given by former writers are imperfect and erroneous. Many order it to be sown with oats or barley, as is practised for Clover; but in this way it seldom comes up well, or draws up so weak as not to recover itself under a whole year. Others have directed it to be sown upon a low, rich moist soil, which is found to be the worst next to a clay, of any for this plant; in both which the roots will rot in winter, and in a year or two the whole crop will be destroyed.

But the soil in which this plant is found to succeed best in this country is, a light, dry, loose, loamy or sandy land, which should be well ploughed and dressed, and the roots of all noxious weeds, such as Couch Grass, &c. destroyed, otherwise they will overgrow the plants, while young, and prevent their progress.

The best time to sow the seed is about the middle of april, when the weather is settled and fair; for if you sow it when the ground is very wet, or in a rainy season, the seeds will burst and come to little (as is often the case with several sorts of the leguminous plants;) therefore you should always observe to sow it in a dry season, and if there happens rain in about a week or ten days after it is sown, the plants will soon appear above ground.

But the method I would direct for the sowing these seeds is as follows: after having well ploughed and harrowed the land very fine, you should make a drill quite across the ground, about half an inch deep, into which the seeds should be scattered very thin by a hopper fixed to a drill plough; then cover them over half an inch thick, with the earth that came out of the drill; then proceed to make another drill about two feet and a half from the former, sowing the seeds therein in the same manner as before, and so proceed through the whole spot of ground, allowing the same distance between row and row, and scatter the seeds very thin in the drills. In this manner, an acre of land will require about six pounds of seeds; for when it is sown thicker, if the seed grows well, the plants will be so close as to spoil each other in a year or two, the heads of them growing to a considerable size, as will also the roots, provided they have room. I have measured the crown of one root, which was in my possession, eighteen inches diameter; from which I cut near four hundred shoots at one time, which is an extraordinary increase, and this upon a poor, dry, gravelly soil, which had not been dunged for many years, but the root was at least fourteen years old; so that if this crop be well cultivated, it will continue many years, and be equally good as when it was first sown; for the roots generally run down very deep in the ground, provided the soil be dry; and although they should meet a hard gravel a foot below the surface, yet their roots would penetrate it, and make their way downward, as I have experienced, having taken up some of them which were above four feet in length, and had run above two feet into a rock of gravel,

which was so hard as not to be loosened without mattocks and crows of iron, and that with much difficulty.

The reason for directing this seed to be sown in rows is, that the plants may have room to grow; and for the better stirring the ground between them, to destroy the weeds, and encourage the growth of the plants, which may be very easily effected with a Dutch hoe, just after the cutting the crop each time, which will cause the plants to shoot again in a very little time, and be much stronger than in such places where the ground cannot be stirred; but when the plants first come up, the ground between them should be hoed by hand with a common hoe; and if in doing this you cut up the plants where they are too close in the rows, it will cause the remaining to be much stronger. This hoeing should be repeated two or three times while the plants are young, according as the weeds are produced, observing always to do it in dry weather, that the weeds may the better be destroyed; for if it be done in moist weather, they will take root and grow again.

With this management, the plants will grow to the height of two feet, or more, by the beginning of august, when the flowers will begin to appear, when it should be cut for the first time, observing to do it in a dry season, especially if it is to be made into hay, and keep it often turned, that it may soon dry, and be carried off the ground; for if it lie long upon the roots, it will prevent their shooting again. After the crop is taken off, you should stir the ground between the rows with a hoe, to kill the weeds, and loosen the surface, which will cause the plants to shoot again in a short time, so that by the middle of september there will be shoots four or five inches high, when you may turn in sheep upon it to feed it down, for it will not be fit to cut again the same season; nor should the shoots be suffered to remain upon the plants, which would decay when the frosty weather comes on, and fall down upon the roots, and prevent their shooting early the succeeding spring; but these sheep should not remain so long upon it as to endanger the crowns of the roots.

So that the best way is to feed it until november, when it will have done shooting for that season; but it should not be fed by large cattle the first year, because the roots being young, would be in danger of being destroyed, either by their trampling upon them, or their pulling them out of the ground; but sheep will be of service to the roots by dunging the ground, provided they do not eat too close.

The beginning of february, the ground between the roots should be again stirred with the hoe, to encourage them to shoot again; but in doing this be careful not to injure the crown of the roots, upon which the buds are at that time very turgid, and ready to push. With this management, if the soil be warm, by the middle of march the shoots will be five or six inches high, when, if you are in want of fodder, you may feed it down till a week in april; after which it should be suffered to grow for a crop, which will be fit to cut the beginning of june, when you should observe to get it off the ground as soon as possible, and stir the ground again with a Dutch hoe, which will forward the plants shooting again, so that by the middle of july, there will be another crop fit to cut, which must be managed as before: after which it should be fed down again in autumn; and as the roots by this time will have taken deep hold in the ground, there will be little danger of hurting them, if you should turn in large cattle; but you must always observe not to suffer them to remain after the roots have done shooting, lest they should eat down the crown of the roots below the buds, which would considerably damage, if not destroy them. In this manner you may continue constantly to have two crops to cut, and two feedings upon this plant, and in good summers there may be three crops cut, and two feedings; which will be a great improvement, especially as this plant will grow upon dry barren soils, where Grass will produce little, especially in dry seasons, when it will be of great use, the Grass being often burnt up. And as it is an early

plant in the spring, so it will be of great service when fodder falls short at that season, when it will be fit to feed at least a month before Grass or Clover; for I have had this plant eight inches high by the tenth of march, old style, at which time the Grass in the same place has scarcely been one inch high.

That the cold will not injure this plant, I am fully satisfied; for in the very cold winter, anno 1729-30, I had some roots of this plant which were dug up in october, and laid upon the ground in the open air till the beginning of march, when I planted them again, and they shot out very vigorously soon after; nay, even while they lay upon the ground, they struck out fibres from the under side of the roots, and begun to make shoots from the crown of the roots. But that wet will destroy the roots I am fully convinced, for I sowed above an acre upon a moist spot of ground for a trial, which came up very well, and flourished exceedingly during the summer season, but in winter, when the great rains fell, the roots began to rot at bottom, and before the spring most of them were destroyed. There has been lately some persons who have advised the sowing of Lucern in broad-cast, and to make use of a strong harrow, to tear up and destroy the weeds which naturally grow up among the plants; but this advice has been given too prematurely, therefore it is to be hoped will not be followed by any discreet persons, who are desired to take a survey of some of these lands which have been so cultivated three or four years, which I am fully persuaded will convince them of the bad husbandry, for no person who has any regard to neatness and utility, will ever practise this method.

The best places to procure the seed from, are Switzerland, and the northern parts of France, for the seeds sowed in those countries succeed better with us than that which comes from a more southern climate; but this seed may be saved full as well in England, and in as great plenty, were people curious enough to let the first crop stand for that purpose; in order to which, a small quantity of the plants should be suffered to grow uncut till the seeds are ripe, which is commonly about the beginning of september, when it must be cut, and laid to dry in an open barn, where the air may freely pass through, but be defended from the wet; for if it be exposed thereto, it will shoot while it remains in the pod, whereby it will be spoiled. When it is quite dry, it must be threshed out, and cleansed from the husk, and preserved in a dry place till the season for sowing it; and this seed saved in England is much preferable to any brought from abroad, as I have several times experienced, the plants produced from it having been much stronger than those produced from French, Helvetian, and Turkey seeds, which were sown at the same time, and on the same soil and situation.

I am inclinable to think, that the reason of this plant not succeeding, when it has been sown in England, has either been occasioned by the sowing it with Corn, with which it will by no means thrive, (for though the plant be very hardy when grown pretty large, yet at its first coming up, if it be incommoded by any other plants or weeds, it seldom does well; therefore it should always be sown by itself, and carefully cleared from weeds until it has strength, after which it is not easily destroyed;) or, perhaps, people have sown it at a wrong season, or in wet weather, whereby the seeds have rotted, and never come up, which has discouraged their attempting it again: but however the success has been, I dare aver, that if the method of sowing and managing this plant, which is here laid down, be duly followed, it will be found to thrive as well as any other sort of plant now cultivated in England, producing a much greater crop than any other sort of fodder, and will continue much longer; for if the ground be duly stirred after the cutting each crop, and the last crop fed as has been directed, the plants will continue in vigour forty years or more, without renewing, provided they are not permitted to seed, which will weaken the roots more than four times cutting it would do. The hay of this plant should be kept in close barns, it being too tender

to be kept in ricks open to the air as other hay; but it will remain good, if well dried before it be carried in, three years. The people abroad reckon an acre of this fodder sufficient to keep three horses all the year round.

And I have been assured by persons of undoubted credit, who have cultivated this plant in England, that three acres of it had fed ten cart-horses from the end of april to the beginning of october, without any other food, though they have been constantly worked. Indeed, the best use which can be made of this Grass is, to cut it, and give it green to the cattle; where this has been daily practised, I have observed that by the time the field has been cut over, that part which was the first cut has been ready to cut again; so that there has been a constant supply in the same field, from the middle of april to the end of october: when the season has continued long mild, and when the summers have proved showery, I have known six crops cut in one season, but in the driest seasons there will be always three or four. When the plant begins to flower, it should then be cut; for if it stands longer, the stalks will grow hard, and the under leaves will decay, so that the cattle will not so greedily devour it. Where there is a quantity of this cultivated, some of it should be cut before the flowers appear, otherwise there will be too much to cut within a proper time.

When this is made into hay, it will require a great deal of making; for as the stalks are very succulent, it must be often turned, and exposed a fortnight or longer, before it will be fit to house; for this requires a longer time to make than Saint Foin; therefore, when it is cut, it should be carried to make upon some Grass ground, because the earth in the intervals of the rows will wash up, and mix with the hay in every shower of rain, and by carrying it off as soon as it is cut, the plants will shoot up again soon; but it is not so profitable for hay, as to cut green for all sorts of cattle, but especially horses, which are extremely fond of it; and to them it will answer the purpose both of hay and Corn, and they may be worked at the same time just as much as when they are fed with Corn, or dry food.

[To these directions of Mr. Miller may be added the result of more modern experience.

John Pratt Esq; of Poorfleet in Essex sowed Lucern in a field of good hazle loam, neither too light nor too stiff, the soil about three feet deep, with a chalky bottom.

The field in 1773 had borne turneps, properly hoed and fed off with sheep; and on april 13th 1774, after the land had two ploughings and harrowings, the ground being fine, he began to sow in drills twenty inches distant on two acres, six pounds of seed on an acre, covering it with a garden rake.

In may and june the fly (flea) made great havock, so that at different times the sowing and hoeing were repeated until the 5th of july, when the rows were complete, and those parts that were not damaged by the fly were in a thriving state. On the 30th of july he began to cut, and by the 20th of september, it it had been cut all over once. At the end of october he laid ten loads of rotten dung on each acre, and with a small plough turned the earth each way out of the alleys over the plants, so that the land appeared like a fallow.

In this state it lay until the 20th of february, when it was bush-harrowed cross-wise, to lay the ridges down into the alleys again.

On the 27th of may he began to cut, the Lucern being about twenty inches high.

June the 20th he began to cut a second time, and followed this cutting with a horse-hoeing in the alleys, and hand-weeding in the rows. August the 7th he began to cut the third time. September the 26th the fourth time. And november the 6th dunged and ploughed as in the preceding year.

In 1776, the weather being wet, he could not bush-harrow until the 12th of march; and on the 27th the plants growing fast, he gave it a perfect hand-weeding in the rows. He began cutting in may, and during

this summer cut four crops, horse-hoeing the alleys each time. In september he hand-weeded again, and in november dunged and ploughed the alleys as before.

In may this year he sowed near two acres more, adjoining to the above piece, which land had the preceding winter borne cabbages; which were taken off before Christmas, and the land was then ploughed and prepared for sowing. The plants came up well, and no accident happened from the fly. He cut this sowing once, and cultivated it in the same manner as the other.

In 1777, february the 28th he levelled the ridges with a bush-harrow. May the 22nd he began to cut, and had four crops again this summer; horse-hoeing after each cutting. He hand-weeded the rows in october; and in november dunged and ploughed the alleys as before.

This year he added seven rows; to make the quantity four acres.

1778, in february, harrowed down as before. May the 4th began cutting, and had four crops as usual. The last cutting was finished the 30th of october, when the land was treated as in the former years.

This year the four acres kept eleven horses from the 4th of may to the 31st of october; and they improved much with only half their usual allowance of corn. Three additional horses were likewise fed from this Lucern seventy-four days.

1779, in february bush-harrowed as usual. May the 7th begun to cut, and fed ten horses: on the 21st added two horses; but before the whole was cut, the part where the cutting commenced had grown so luxuriantly as to be in flower; twenty-one horses therefore were added during seven days, before he began to cut the second time, which was on june the 24th. He began to cut the third time on august the 3rd; and the fourth time on september the 9th.

The plants continued growing in such a manner, that by the time the whole four acres had been cut over, which was on the 10th of october, the part first cut was grown twelve inches high. It being then too late in the season for another cutting, fifteen head of horned cattle were turned in for eight days. He then gave it a hand-weeding, and dunged and ploughed as before.

The produce this year maintained ten horses twenty-two weeks; two horses twenty weeks; twenty-one horses one week; and fifteen head of cattle eight days.

Mr. Pratt remarks, that the land which bore cabbages, was preferable to that which had turneps, being much cleaner.

That may is the proper month for sowing; that hand-hoeing and weeding are requisite the first year, the plants being then too tender for the horse-hoe; and that cutting once only the first year, gives the roots time to shoot down and gather strength.

That horse-hoeing the alleys after every cutting, and hand-weeding the rows in march or april are necessary; and before it is laid up for the winter, should not on any account be omitted. After the last cutting and weeding, he recommends ten or twelve loads of rotten dung to be laid on an acre, and gathered up with a small plough, to form the ridges over the crowns of the roots. In february, the first dry day, these ridges are to be bush-harrowed down into the alleys.

This is a principal feature in Mr. Pratt's culture of Lucern. Mr. Belcher affirms that Mr. Miller could not have had any experience in Lucern, because he does not recommend this practice; and yet Mr. Young asserts from his own knowledge, that so far from doing good, it injures the crop.

The third year, as Mr. Pratt proceeds to observe, the plants appear to arrive at their perfection, neither improving nor diminishing afterwards.

Neither dry nor wet weather materially affects its growth, which is about an inch a day; but something less, if the weather be cold.

Lucern has the effect of salt-marshes, it purges and is diuretic for three or four days, and then fattens horses at a great rate, with scarcely half the usual allowance of corn.

Sheep will scoop the crowns of the roots, and thus destroy the buds formed for the succeeding shoot, they should not therefore be permitted to bait on it: but this is not the case with horned cattle.

The drills of the first two acres were made by a line and hoe; but those of the last two acres were made by taking out the teeth of a horse-rake, and fixing in some angular teeth, like the angular chissel of the wheelers, at twenty inches distance, which performed the work well. The last were done at half the expense^b.

A Gentleman Farmer in Hertfordshire divided a field of two acres into four parts, and sowed it with Lucern, the first part in drills three feet asunder, the second two feet, the third one foot, and the fourth broad-cast. The soil was equal throughout the field. The seed was sown on the 24th of april, and the crop was cut on the 16th of august.

This year the plants in every part of the field were nearly equal in goodness, but the number being much greater on an equal space of ground in the part sown broad-cast, the crop was of course heaviest there; these plants being as good the first year as afterwards. But in the course of three years, the plants in the three-foot drills became much stronger, and spread so as nearly to fill up the intervals. The produce of one root was then more than that of any ten roots in the broad-cast part; which by standing too close were impoverished, and could not increase in bulk like the others.

In the fourth year the produce of the three-foot drills was more than double the broad-cast: this land also was kept free from weeds by the horse-hoe, and was earthed up at a small expense. At the end of this year, the broad-cast part was ploughed up, and planted afresh with roots from the one-foot drills, in three-foot rows. The first season they seemed stunted, but the following spring they shot forth vigorously, and were nearly equal to the other.

Weeds are the greatest enemies to Lucern: the easiest and cheapest way of keeping the crop clean, is to sow it in drills of sufficient width to admit the horse-hoe; which not only destroys the weeds at the least expense, but greatly promotes the growth of the plants, by earthing them up in the operation^c.

Mr. Baldwin of Clapham sowed a field of four acres and a half with Lucern. The soil a sandy dark-coloured loam, good turnep land, and yielding good barley. Two acres were transplanted in september 1764. An acre was drilled by hand the 2nd of may 1765; the rows in both two feet asunder. The transplanted was first hoed in november 1764, and cost 6s. an acre: it was hoed again in april following at 10s. an acre. Weeding by hand the drilled acre the middle of june following cost 12s. an acre. The summer of 1765 being very dry, the produce was very trifling.

In 1766 Mr. Baldwin began to cut it the 28th of april, when it served his horses and cows to the 7th of june, six weeks. On the 7th of july he cut the whole three acres for hay, about three loads; and about three loads more on the 15th of august: the fourth crop, which was pretty good, he fed off with cows and some sheep.

In 1767 he began to cut it on the 11th of may, and fed five horses, with four cows occasionally, till the 20th of june, six weeks; when he mowed the remainder, being about an acre, and it yielded a load and half of hay.

He weighed the crop at different periods, and found on the 30th of may, one rod of drilled Lucern to weigh 95lbs. On the 9th of june, one rod of transplanted weighed 80lb; and on the 20th of the same month a rod of the transplanted weighed 120lb. On the same day a rod of broad-cast Lucern belonging to a neighbouring gentleman, with some grass and weeds weighed 138lb.

Some gentlemen and jobbing coachmen in his neighbourhood being desirous of soiling their horses with Lucern, Mr. Baldwin agreed to do it for them at the same price they gave for tares, that is 7d. a bundle of

60lb, or 6s. a week for every horse. Hence he discovered that one rod with another the second crop yielded from 60 to 64lbs; that a large coach-horse would eat about 90lb in twenty-four hours, and that an acre would serve five horses twenty-one days.

Cleaning Lucern in rows by hand-hoeing being much too expensive, Mr. Baldwin invented a horse-hoe, with which he cleaned his field very well at the end of october in two days, with one man, a horse and a boy; by this means he reduced the heavy expense of hoeing to 1s. 6d. or 2s. an acre. He also invented a hoeing plough, with which on the 17th of november he ploughed his three acres five or six inches deep; afterwards harrowing the field across with common harrows, and carting off near eight loads of weeds. Thus it lay till he began to cut it on the 11th of may, horse-hoeing as he went on once a week, and also after every cutting. Drawing the drills, sowing the seed by hand, and covering it by two boys at 3d. a day, and two men at 20d. cost for an acre about 10s. Raising the plants, ploughing, and planting the transplanted Lucern cost about 50s. an acre.

Mr. Baldwin observing that Lucern the first year yielded but little, on an acre and half sowed three bushels of barley on the 30th of march; and on the 8th 9th and 10th of april drilled it with Lucern^k.

Soil.

As to the soil, Virgil is always quoted to show that such as is loose and crumbling, or rich and putrid, is most proper for Lucern. Even the learned Harte has fallen into this error. But Virgil's precept relates not to the soil, but to the management of it, which is of much greater consequence, because that is more in our power. He does not recommend a rich putrid soil preferably to all others, but that the land should be well pulverized by ploughing, &c. so as to be in a proper condition to receive the seed.

—Te quoque Medica putres
Accipiunt sulci.

It is remarkable that Harte changes *putres sulci* into *putris terra*, makes it synonymous with the *temperata* of Varro, and translates it a rich loamy earth.

This is certainly an excellent soil for Lucern, or indeed for any thing else, when it can be had; but not being the most common, we must frequently be contented with such soils as are worse. Rocque says that the strongest is to be preferred; and Mr. Belcher, that although it will succeed on most middling sorts of land, it should, if possible, have a soil both stiff and dry, or as he elsewhere says, such as is close, firm, and sound, in opposition to the foreign writers, with Tull and Miller, who recommend a light, loose, sandy soil. The right soils, according to others, are deep rich friable loams, whether sandy or gravelly, or flexible loams, dry deep and rich; in a word, all rich soils that are dry. In Kent it is sown in dry lands. Under the South Downs of Sussex, in the vicinity of East Bourn, where Lucern is a common article of cultivation, they rarely sow it upon any but the richest and deepest soils, thinking that it does not answer on any other. Their land is such a happy mixture of the calcareous and argillaceous, and is of so deep a staple, that any thing will grow upon it, and Lucern, Saintfoin and Clover may be found side by side. I have however seen very good crops of Lucern produced in gravelly, sandy and stony loams, by no means rich, and even on poor sandy gravel, apt to burn. One of the best crops I was ever witness to was on brick and lime rubbish, the remains of old buildings. I never saw it prosper on very stiff clays, nor on wet springy lands, nor on any soil very retentive of moisture. It has a better chance even on thin loams on rock and on poor sands, though no man would choose such soils for it, if he had better, because the roots of Lucern will travel far in search of nutriment.

Preparation.

The great business in the culture of Lucern being to keep it free from weeds, especially whilst it is young, much depends upon preparing the soil in such a manner

^b Trans. Soc. Arts. vol. 1.

^c Bath papers, vol. 2. 104.

^k Young's six weeks tour, 220.

that all sorts of useless plants shall be killed. It is much cheaper to prevent weeds than to destroy them, and every shilling laid out in cleaning the land, will save a crown in hoeing the crop. For this reason two successive crops of turneps or carrots prepare the land well for it: but as turneps upon good loams, if carted in a wet season, are apt to prevent that friability which is necessary for Lucern, the turneps should be fed off in autumn, and the land immediately ploughed. Carrots are not liable to any objection, for they should always be drawn and laid up before winter, and the incessant hoeing which they require, cleans the land admirably. If the land be prepared by a fallow, let a man with a basket and four-pronged fork follow the plough in every furrow, and the harrows whenever they work, to pick up all roots and weeds, and to clear away such knots and tufts as the plough does not go deep enough to eradicate. Carrots, turneps or cabbages may be made preparatory crops; at least there should be two hoeing crops in succession. In the second spring, previous to the sowing, there should be three ploughings, and harrowings enough to pulverize the soil well. Thus we shall attain the *putres fulci* or crumbling furrows of Virgil¹.

Rocque recommends peas and beans as a good preparation, or potatoes as the best: the next season a fallow for turneps, to be fed off with sheep. Or forward peas, and turneps as soon as they are off, to be fed by Christmas, then trench-ploughed, and the Lucern sown in april. In Kent the common tillage is a good summer fallow, ploughed as deep as possible, with a good covering of manure.

According to Mr. Wynn Baker turneps are the best preparation. A. St. Leger, Esq; prepared successfully by paring and burning. But whether the preparation be by hoeing crops, &c. or by a fallow, it is indispensable that the land should be well pulverized by plough and harrow, laid as flat as possible, and cleared of all weeds. If it be on a descent, and not dry, the furrows should be drawn down the land; but if the soil be very dry, they had better be across it. If the land be in heart, there is no occasion for any manure; or if manure be applied, it should be with the first of the two hoeing crops. Mr. Rocque recommends fresh stable dung to be laid on before the last ploughing, and to be ploughed in directly; but this will be apt to fill the land with weeds, and cannot be necessary if it was manured for the first hoeing crop.

Mode of Sowing. 1. Broad-cast. 2. Drilling.

Both modes have succeeded with different persons, and both have failed. Circumstances must govern the decision of the cultivator. If he be doubtful whether he shall be able to give a regular and constant attention to hand and horse-hoeing, or if he be satisfied with his crop lasting eight or ten years, then the broad-cast may be preferred. But if he be willing and able to have the crop perfectly well managed in respect to hoeing, and if he be desirous to have it last twenty or thirty years, he will then probably prefer the drill culture. Both have their advantages and disadvantages.

Time of Sowing.

Whichever method be adopted, the time of sowing is chiefly during the month of april. The end of march is commonly too early: and the chance of a failure is greater in may than in april, both on account of the drought and the fly. It should be sown later on heavy than on light lands; and if possible in dry weather, when there is a prospect of showers.

Columella directs it to be sown at the end of april, and it is remarkable that Pliny says it is sown in may, because if sown earlier it would be liable to injury from white frosts. If this be the case in Italy, how imprudent, it will be said, must it be, to sow here in april. Yet in practice I have scarcely ever known april-sown Lucern receive any material injury from frost.

Quantity of Seed.

In sowing broad-cast Rocque directs 14lb to an acre; in Kent they sow from 16 to 20lb; near East Bourn they sow 20lb, which is generally allowed to be the

¹ Young's Annals, 25. 87.

proper quantity: in France they allow near 30lb to an English acre. Some sow only 10lb, with 6lb of broad clover, to have a crop the first season, both with a thin crop of barley or oats. Where Lucern is put in broad-cast alone, it should not be too thin, because the method of cleaning it is so severe that the crop might be reduced too much whilst it is young and tender^m.

In drilling 6lb. of seed is by some thought sufficient to sow an acre in two-feet rows. In this proportion about 8lb will be required for eighteen inch rows, 12lb for twelve inch rows, and 18lb. for nine inch rowsⁿ. Mr. Belcher however directs 12lb, or about a gallon and half of seed to be sown on an acre, when the rows are two feet asunder^o.

Distance of Rows.

In the Drill culture of Lucern there is much difference of opinion respecting the best distance for the rows, and directions are given for distances from nine to forty inches. Those who approximate to the broad-cast culture are for the former, and still prefer it to that, because it will admit a good furrow with a narrow share instead of the broad-cast harrowing. But the advocates for the horse-hoeing culture prefer greater distances. Mr. Miller and Mr. Belcher recommend two feet. Mr. Harte stands almost alone for forty inches. Two-feet rows will admit of horse-hoeing; and Lucern cannot be kept clean without it, except at too great an expense.

Some respect should be had to the quality of the land. The rows may be closer on land that is less rich. Thus some recommend one-foot rows on soils worth 30s. an acre, and nine-inch rows on those which are worth only 20s: reputing soils of less value as in general not much to be recommended for Lucern^p.

Sowing with or without Corn, &c.

Mr. Miller was a decided enemy to sowing this or any other leguminous crop with corn. Others however are advocates for this mixture. Barley is most commonly used for this purpose, not more than one or two bushels to the acre; Sprat-Barley is better than the common, as less liable to lodge: but perhaps Oats should be preferred, two bushels to the acre, as being still less apt to lodge when sown thin. This is practised in Flanders, and a few pounds of Clover seed are added. If the land is very rich, six pecks an acre may be enough; but if not, two bushels should be sown, and upon poorer land three. In Kent they sow it with a thin crop of Barley. After the corn is sown and harrowed, sow the Lucern, and finish with a light harrow^q. The corn should be mown green and given to cattle^r. Some have tried Beans, and others Peas with the Lucern instead of Corn^s.

Broad-cast culture.

If the Lucern be sown with corn, and that be suffered to stand for a crop, as soon as harvest is over, nothing is to be done to it but keeping cattle out; or the stubble should be fed only by calves and young cattle, and that in dry weather. Rocque directs it to be harrowed when one year old with a large harrow, in dry weather, early in the spring to kill the weeds, and to dress it with rotten dung. Others delay this operation till after the second cutting of the Lucern. Some caution should be observed not to harrow so severely as may be done afterwards. The second spring Rocque directs to plough the ground with a drill plough without a coulter. Pliny says, that if weeds get ahead, the only remedy is frequent ploughing, till all other roots be destroyed. Tull gives a remarkable instance of a plant mangled by the plough for twenty-two years, and yet thriving. This plant therefore, when it has acquired strength, for it is very delicate at first, will bear the action of the plough, at least with a round share; or harrowing twice in a season, in may or june, and august or september, with a heavy harrow. The weeds should be collected and carried off, and then it may be levelled for the scythe with a barley roller. Half a growth in autumn, instead of being mown,

^m Young's ann. 25. 91.

ⁿ Ibid.

^o Id. 1. 305.

^p Id. 25. 92.

^q Id. 25. 91.

^r Id. 1. 307.

^s Id. 3. 435.

may be fed off with cattle. Before every harrowing, if there be any thin places, some seed may be scattered into them^t.

I do not see why in sowing Lucern broad-cast, the plants may not be singled out and kept clean with the hand-hoe, in the same manner with turneps^u.

Mr. Belcher says, that the best way to meliorate broad-cast Lucern is in autumn to strike the ground up into sharp ridges with a pointed share, that the plants may be injured as little as possible. Then in the spring to plough it without a coulter crosswise, with a pointed share, or only struck; and afterwards to harrow it down. When the Lucern shoots, if there be any vacant spots, sow afresh, and rake the seed in. When the ground is mellow, the autumnal strike-baulking, as it is termed in Kent, will not much injure the Lucern, which having stringy tough roots, the pointed share slips by them. But all the plants will not be so equally covered in this culture as in drills, over which each ridge may be centered. The snake-headed harrow would, if any, tear out the grafs from broad-cast crops, without the use of the plough: the time to use it would be in winter and wet weather. If the vacancies are neglected in april, they may be sown after the first cutting^x.

Dr. Tanner of Hadleigh in Suffolk had four acres sown broad-cast. The crop was four years old when Mr. Young examined it. He found it on a medium twenty-five inches high, thick and luxuriant, but far from being free of weeds. It had been harrowed in Mr. Rocque's manner, with a heavy harrow every year in march; which was thought to be of great service in loosening the ground, though not in destroying the weeds altogether. These four acres are the chief support of fourteen or fifteen horses and cows from the end of april till Michaelmas; after which it is fed down close with sheep till near Christmas. It was sown with spring corn after turneps, but the owner was of opinion, that if the field had been summer-fallowed for it, the Lucern would have entirely choaked all other grafs and common weeds.

Some Dutch Clover and Ray-grafs grows with it, which is found advantageous. One part of the field was well manured with dung, and the owner proposed doing the same by the rest of it; and after harrowing in february or march, to scatter some fresh seed, where the plants failed the most^y.

It having been found by repeated experiments that broad-cast Lucern will not succeed upon lands that are not perfectly clean, Mr. St. Leger adopted the following method.

In the month of august, he mowed the grafs from one acre three roods, and immediately after the hay was removed pared and burnt the surface. The ashes were put into two heaps, and covered with fods. The ground was then ploughed as deep as its staple would admit of. On the 11th of november he harrowed it with heavy harrows, and on the 25th ploughed it across. On the 4th of january it was harrowed again. One heap of the ashes was spread on the 23d of march, and on the 2d of april the land was ploughed and sown with lentils. Had the weather permitted they would have been sown immediately on spreading the ashes. At the beginning of august the lentils were cut, and the other heap of ashes was spread upon the surface; after which the land was ploughed, and immediately sown with turnep-feed. The turneps were well hoed, and produced an exceeding good crop. Being late sown, they consequently kept later in the spring than such as were sown at the usual season.

In may following the field was sown broad-cast with Lucern-feed, after being properly ploughed and harrowed. The quantity of seed 12lb. to the acre, sown at twice. The first season the plants should be hand-weeded, being then very tender; but the succeeding years, when the roots have penetrated the soil, the land should be run over with very heavy harrows, after every cutting, to tear up the grafs and weeds.

^t Young's ann. 25. 93.

^u Young's Southern tour, p. 3.

^x Young's ann. 1. 307.

^y Young's Southern tour, p. 65.

After the frosts are over, and vegetation begins, the land may be harrowed, if foul; but if clean, that operation will not be required till after the first cutting^z.

Mr. Fitch, of Pluckley in Kent, had two acres of broad-cast Lucern, sown twenty years before with barley; when Mr. Belcher viewed it, the plants were in patches or single, often two or three feet apart, yet it produced four tons of hay on an acre, at three cuttings. Its having stood twenty years without culture, is a proof that it will thrive on some soils, even when the grafs is become a turf. It shows also what a large space plants of Lucern will fill; and confirms Miller's assertion, that he had a plant, whose crown was eighteen inches in diameter, from which he cut near four hundred shoots at one time^a.

Drilled Culture.

When the rows are come up, and weeds begin to appear, in dry weather a shim should be run between them, to cut up the weeds and loosen the soil; and a hand-hoeing and picking should follow to clear them perfectly. These operations must be repeated, as they are wanted. The year following, so soon as the land is dry enough in the spring, and through the whole summer, it must be a constant conflict between the shim or hoe and any weeds that may appear. The crop must be kept constantly and absolutely clean; but the principal attention is to be given immediately after every cutting, the weeds being then best discovered and most easily destroyed, particularly by the horse-hoe, where the rows are wide enough to admit of that instrument. If the rows be very straight, the shim is of great use, because it may be directed so near the rows as to save much hand-hoeing; and for getting out such weeds as grow among the plants a pronged hoe is of much service.

A field of Lucern should never be weedy under a notion that the crop will mow well and free from dust; for if it be as luxuriant and thick as it ought to be, provided the rows are nearer in proportion as the soil is poorer, there will be no difficulty of that sort^b.

Mr. Belcher, who prefers drill-sowing of Lucern in general to broad-cast, directs it first to be cleaned by hand, and when it has obtained strength, to have the plough drawn deep between the rows after each cutting, especially some time after the last, at the end of october, the beginning of november, or later, at which time boards may be fixed to the plough, and the ground left in ridges till towards the spring, the end of february, or beginning of march, or later, before it is harrowed down again^c.

This winter-earthing the Lucern is of singular benefit in smothering the natural grafs, the arch-enemy of it, in our moist climate: and the vegetation of Lucern being at a stand during the winter, it does not suffer from the exclusion of the air any more than artichokes or asparagus. Mr. Belcher regards this operation as the corner-stone on which the profitable cultivation of this crop depends, in a moist climate^d. And yet it has been tried by others without any success, and has been found to retard the growth much, and even to destroy it^e.

In drill-sowing so small a seed as that of Lucern, it is a good way nearly to fill a bottle with it, and having corked the bottle, to bore a hole through the cork, and to insert a large quill cut at each end, or a small tin tube, such as feedsmen use to tap sacks of small feed, to draw a sample^f.

Mr. Belcher has given a journal of a field of Lucern for the three first years. It contained an acre and three roods, had been an old lay, but under corn for some years last past, good land, but somewhat too light in his opinion for Lucern.

Between may the 9th and the 16th he sowed eighteen pounds of Lucern, and the same quantity of clover feed, in alternate fifteen-inch rows, out of a flat quart bottle, through a hole in the cork, by a line, covering the seed with a hoe. A shower on the 12th brought up much of the first sowing in six days after, the

^z Hunter's Essays, p. 404.

^b Id. 25. 94.

^d Young's ann. 1. 302.

^f Mus. rust. 4. 308.

^a Young's ann. 3. 433.

^c M. S. information.

^e Id. 12. 49.

ground being extremely dry before, and cold afterwards. Towards the end of June he hand-hoed and hand-weeded: in some places it was eaten by the fly and weak, weaker in general than the clover, but in the best places higher. September the 6th began to mow them for the team, the clover producing the most by much; together a load on an acre, had it been made into hay. The horses eat it promiscuously. Stocked it after mowing with lambs and riders till the end of October, being a very dry time. At the beginning of November earthed for experiment seven rows of the Lucern as deep as possible, destroying the clover, also earthed shallowly the remainder of the Lucern, except eleven short rows, by turning the earth with one board over it from the clover on both sides, uncovering it afterwards (some earth having fallen on it) except a few short rows. The crop was very small; the ground considered, but the summer was very dry.

The second year on February the 23d uncovered part of a row, to see if doing it earlier than common were of importance. On the 27th it was preparing to shoot. On the 28th it was harrowed all down, the seven deep-earthed rows more than the rest. March the 24th it began to advance, but irregularly. That which was not covered at all was the weakest; and the seven deep-covered rows were the worst of all, some of the plants being seemingly destroyed. However covering had the proposed effect of smothering the natural grass. From this inequality in coming on, it seems that Miller's observation, that it may be fed, if pasture run short, from the middle of March to a week in April, is a very good one: for then, growing away together, it will be ready for cutting nearly as soon as if not fed. April 12th the Lucern was advanced considerably in spite of very cold weather; the seven deep-earthed rows still the weakest. The row of clover left covered through the winter now much inferior to the rest, but being thinner, flourished much afterwards. On the 30th observed the eleven short rows not worked at all to be yellower than their neighbours. May the 23d began to mow the Lucern and clover, though not ready, except for swine; but was fearful the clover, which was much the stronger, would damage the Lucern by overhanging it: the seven deep-earthed rows were now the most vivid and strongest of all. June the 6th the clover showed for bloom before the Lucern. Rakes with longer and more distant teeth than common, get Lucern up cleaner from dirt. In July, perceive that wet and cold check the growth much, and that it even turns yellow; but reviving and growing prodigiously in succeeding hot weather. Some unmowed plants did not flower till this month, though the Lucern and clover, cut as mentioned, began to blow on the 20th about two months afterwards, the former being now between two and three feet high. At this time it was mown again a fine crop, and in September afforded an inferior one; the seven rows prodigiously the strongest. After the third crop the pasturage by no means contemptible; and a part fenced afforded good mowing till November. Towards the middle of that month broad-shared the clover up, earthing the Lucern at the same time with mould-boards, twenty-two inches wide at the extremities. A forward or backward spring will make a month's difference in its advance.

The third spring, a backward season, on the 16th and 17th of March, boxed a bushel of tares an acre between the rows, after the ground had been loosened with the plough-share: it was afterwards harrowed down. April 1st, being a fine growing time, the Lucern begins to push. On the 19th sharp frosts have laid down the forward shoots; it being unequal as usual in the spring. May 7th to the 9th filled up vacancies, putting two plants in a hole made with a hop-pitcher, in a fine moist time. On the 20th began to mow for swine, the best being fifteen or sixteen inches high. June the 1st began for the horses. On the 11th where the Lucern is weakest, the tares are a foot high, being mown together for the first time. July the 9th began to cut it again; a fine crop of both, than which there is no better provender for horses; it

is also excellent for swine. Seed sown in some vacancies in the spring now coming up. Hoed round the plants set in May. Some of the strongest Lucern had grown twenty-four inches in as many days; so that though a backward spring, four good crops might have been cut; yet it slackens in its growth towards autumn.

Hence the great value of Lucern must be acknowledged for summer keep for teams in particular. Every one knows the precariousness of annual grasses; but in Lucern the farmer has a provision for his cattle, nutritious, plentiful, early and sure. Still to enhance it, part of the plantation may be sown with tares, and part with white oats; in order to cut for the first crop the part under which are the tares before they are advanced, for the second that with the oats, and thirdly that with the tares the second time. This last will be a prodigious crop, and by matting together, powerfully subdue the weeds. It must be a very indifferent acre that will not keep a horse the summer, and a very good one will maintain two^c.

From such minutes of experiments much more real information is acquired than from volumes of theory.

Transplanting.

The method of transplanting Lucern invented by Mons. du Chateauvieux, and treated in an elegant manner by the late Mr. Harte, in his Essays, is particularly applicable if the soil be dry only to the depth of three feet, and then is very wet, for upon such land Lucern, left to run down with its tap root, will soon perish; or upon any soil of very great fertility: on such land the crop should be thin.

The seed, for transplanting, should be sown in the spring, and early, in order to have sizeable plants for this case in August following. It is best sown in drills, and the young plants may be much assisted in their growth with a small hand-hoe, such as gardeners use among onions. The management of transplanted Lucern whilst growing must be the same as the drilled crop; only the first season, that being set in August, will only want one or two hoeings in the autumn^b.

Mr. Harte's experiments and directions are the following. In the end of March a common day-labourer was ordered to sow a pound and a half of Lucern seed, and to keep the ground clean from weeds. This should not be done in a very dry season, and especially in severe parching winds. By the middle of August some of the plants were eighteen inches high. Taking the advantage of a moist season in the beginning of September, which was however three weeks too late, the roots were dug up carefully, the long tap-roots were cut off eight, nine or ten inches below the crown of the plant, the stalks were clipped about five inches above the crown, and the plants were thrown into a large vessel of water which stood in the shade. The same day, with a dibble or setting-stick, filling every hole with water before the roots were put in, they were transplanted in rows, two feet asunder, and each plant six inches apart in the rows. The roots were placed firmly in the ground, and two inches of the stalks covered with mould. The rows were too narrow, and the plants too near, even though the ground was poor: nor was it foreseen that horse-hoe ploughing is five times more efficacious, as well as cheaper than hand-hoeing. After frequent experiments it appeared best to make the lines three feet four inches distant, and when the soil is good, to allow each plant a foot distance in the lines: thus the hand-hoers will work more commodiously, and a little hoe-plough may be guided safely up and down the intervals; the plants will be larger, more juicy and better tasted; for space and culture improve the herbage of plants. Nor will the quantity be lessened by such thin planting so much as might be imagined. A friend of Mr. Harte's having planted an acre in rows of two feet, the soil being extremely good, and the crop free from weeds, it soon appeared that the roots were too close. Next autumn therefore he took up every alternate row and plant, and a fresh acre of land being properly prepared to

^c Young's annals, 1. 314.

^b Id. 25. 89, &c.

receive them, he thus gained a new plantation at small expense and trouble: and the second acre, as was thought, bore a larger quantity of herbage than the first would have done, if it had continued without being thinned.

In ten days after transplanting, though a drought succeeded, some of the plants made shoots of three inches. In the spring it was found that out of four thousand roots only thirty or forty perished. The labourer filled up the vacant spaces from the nursery in about an hour; and in april most of the plants were nearly equal in size and strength, of a deep juicy verdure, with few or no discoloured sickly leaves. On the 8th of may sixty stems were counted on one root, and the produce of some chosen plants weighed near half a pound at one cutting. Yet Lucern is in a progressive state till the third summer after transplanting, and then Mons. Duhamel assures us, that one flourishing plant will produce a pound of well-dried hay; which must have weighed four pounds when it was green. This is much more than it ever yielded in England; here however many plants, the second year, have produced near half a pound of hay each.

As an acre of Lucern thus managed will contain about twenty-six thousand roots in two-foot rows, at six inches distance in the row, and consequently half that number in four-foot rows, at a foot distance in the lines, how great will be the produce of four or five cuttings every year, allowing only a pound of green fodder, or a quarter of a pound of hay to each plant at every cutting; and that confessedly the most nourishing and palatable food that cattle can eat. Thus much is certain, among other advantages, that if a field be industriously hoed, ploughed in the intervals, and hand-weeded in the rows, for the first two or three years, it is almost certain, that scarcely a single weed will be found among it.

The proper time for cutting Lucern is when the plants are fifteen or sixteen inches high, at an average; for some plants will be higher, some lower, according to the circumstances of health, space, situation, &c.

The cuttings of the second year of the transplanted Lucern were on may the 8th, june the 7th, july the 12th, august the 20th and october the 1st.

In the third year it was cut five times, and six times in the fourth; which make sixteen cuttings in three years. The sixth cutting, however, if it be after the first week in october, is little more than nominal. In the last year, by the 9th of april, some of the plants were near seventeen inches high, at a time when no field in the neighbourhood had grass of four inches height, five or six acres being taken together. The crop was cut twice, before any hay-making began in the country round, excepting in some few meadows lying near market towns.

Transplanted Lucern has two advantages over that which is drilled, and still more over broad-cast: first, that each root will stand at a proper distance from its neighbour, and receive its due proportion of nourishment: or if a few sets chance to fail, they may be supplied from the nursery, any moist day, from april to the middle of september: secondly, by cutting the tap-root, it is prevented from penetrating ten or twelve feet perpendicular into the ground, which it naturally does in three or four years, except it be obstructed by a stratum of rock, or chilled at root by weeping springs, or find admission into a bed of cold clay; in all which cases the crop makes a poor appearance, or goes off all at once.

When Lucern becomes languid and discoloured, probably some insect has attacked the root: in that case a dressing of foot is expedient.

Lucern should never be grazed, the crown of the root being so sweet, that cattle and especially sheep will often bite it too close, and heavy beasts will bruise it with their feet.

For the nursery, sixteen perches, with good management, may be sufficient to furnish sets for an acre; but it will be more prudent to allow thirty perches, and four ounces of seed at least to each perch; thus making allowances for accidents, and having a reserve for deficiencies in the plantation. The seed should be

sown in the same manner as turneps, in moist weather. The ground for the plantation should be well ploughed and harrowed, or if small dug, and picked clean from weeds, roots, stones, &c.

Lucern for the nursery is best sown in april, but it may be sown in may or any part of june, in warm moist weather. The late-sown will not be fit to transplant in august, but in april following. Thus there will be a choice of two seasons for transplantation instead of one.

The plants should be taken up from the nursery, in a moist time, with a sharp spade; and no more than can be transplanted before night.

The expense of preparing the ground, transplanting, and hoeing an acre, including nursery and seed, will be 6l. 12s.

It will always be found most convenient to horse-hoe the intervals the third day after each cutting; for by that time the new shoots will make the plants visible, nor will any side branches stand in the plough's way. A man and one horse, with a boy to lead him, will easily do an acre in a day. It will be proper also to hand-weed the lines once a year; and the larger weeds may be taken up expeditiously with the three-pronged spade. It is more adviseable to cut Lucern with a reap-hook than with a scythe. A boy may cut enough this way in an hour to feed four large horses a whole day¹.

It is obvious to remark from this short abstract of a very diffusive account, and eulogium of transplanted Lucern, drawn up with much elegance, learning and classical allusion by the late Rev. Mr. Harte, that among many excellent observations, there is much theory, and some mistakes. These are remarked incidentally in the following very sensible essay on the culture of Lucern by transplantation, by a writer under the signature of Mago, in the fourth volume of *Museum Rusticum*.

On the 17th of july a field of three acres and a half then under ray-grass and clover was ploughed deep, and sown with turneps. By the 27th of march following, the field had been twice ploughed, the first time ten, and the last time near twelve inches deep, with the Rotheram plough and four horses abreast: the soil light and stony, with a rock of gravel ten or twelve inches deep, and had never before been ploughed above six or seven inches deep.

The field was sown with Poland oats, and about twenty-eight rods were laid out in beds four feet wide, which were sown with Lucern seed broad-cast, as cabbages are sown in seed-beds; except one bed, which was sown in drills, at six inches distance, and half an inch deep. This bed afforded much the greatest quantity and the finest plants, and was kept clean with more ease and at less expense. The drills were covered with care, by the back of a rake. By the middle of august the plants were mostly in bloom, when they were mown and given to horses and cows.

The oats being got in, the field was deep ploughed again. A season of rain was waited for, which did not arrive till the 15th and 16th of september; when the field being first well harrowed, transplanting was begun on the 17th and continued to the 29th. There was no difference between the first and last planted; it is however better to plant earlier if possible, and from the last week in august to the middle of september seems a proper time. But filling each hole with water, making drills and half filling them with sea sand or wood ashes, and watering each plant, as Mr. Harte advises, is an endless and very expensive work, that can be done only in a garden or very small piece of ground.

The field was ploughed as level as possible, and then the ploughman went three bouts on each side the furrows, so that when harrowed across they could hardly be discovered.

Two men with spades dug up the plants; and two women cut them, six or seven inches long in the root, and the tops to about two inches, taking them up one by one, in order to throw by the faulty ones, and when they had about a dozen, cutting them at top and bottom

¹ Essay 2. 24, &c.

with one stroke of a sharp knife at each end. Each woman had a tub by her side, filled within about six inches with water: as they cut the plants, they set them in the tub; and as they filled one tub, another was brought. This operation may be performed in the afternoon preceding the day of planting; the plants receiving benefit by standing all night in water.

Men who are used to work in gardens will do the work of planting, in the same method as for Cabbages, with a dibble or planting stick. The rows were twenty inches apart, and the plants six inches in the lines; thus they may be kept clean with the single cultivator of Mons. du Chateauvieux; or if not, by drawing the alternate rows, they will stand at the distance prescribed by him and Mr. Harte.

The latter of these gentlemen cut each plant with scissars, which must be very tedious work; women however would handle a large pair, and cut a handful of plants with this instrument more readily than with a knife, and equally well. Mr. Harte also directs the plants to be cut to the length of nine or ten inches. Six or seven inches seems a much better length; for the ground being dug or ploughed twelve inches, the new roots will have five or six inches of well-loosened mould to strike into, and if gravel or a strong clay be near the surface, this must be a great advantage to the plants. Yet Mr. Harte says, that he cut his tap-roots too short. The length in my opinion should be suited to the depth of the staple. He also says, that he knew not how to manage a root that was very small. The best way with such is either to replant them in the nursery if they are likely to be wanted, or if not, to throw them away.

Mr. Harte's calculation of the expense must throw a stumbling-block in the way of cultivating Lucern by transplanting, with most gentlemen and every farmer.

Mago calculates the expense on an acre as follows:

| | | | |
|---|----|-------|-------|
| Digging sixteen rods for the nursery, at 3d | 0 | 4 | 0 |
| Seed three pounds, at 1s. | - | 0 | 3 |
| Weeding the nursery twice with the three- | | | |
| inch hand-hoe | - | 0 | 3 |
| Ploughing | - | 0 | 10 |
| Transplanting | - | 1 | 5 |
| Hand-hoeing the plantation once in Octo- | | | |
| ber, in dry weather | - | 0 | 5 |
| | | <hr/> | <hr/> |
| | £. | 2 | 10 |

This is the full expense of making the plantation; yet the author of the Essays has worked it up to 6l. 12s. an acre.

If the spring-ploughing for barley or oats has been nine or ten inches deep, then a ploughing in autumn of twelve inches will be sufficient, and cannot be charged at more than 10s. The trenching for the seed-beds may be done at leisure time; so may the weeding of the nursery, and the hand-hoeing of the plantation; then the real expense to the farmer will be only the seed and transplanting, or 1l. 8s. the acre. As to yearly charges; the plantation having been weeded in october, will lie very well till the end of february or the beginning of march: then, in dry weather, it may be hand-hoed again, at 5s. an acre; to which add four horse-hoings after each cutting at 11s. which makes 16s. an acre the annual charge. If Mr. Harte has set the charges too high, I much fear that Mago will be found to have set them too low.

Mr. Harte, enamoured with his favourite mode of transplantation, has certainly set the advantage of the broad-cast culture much too low, when he says that it may last two years, only one crop being tolerable, and then must perish. He must, as a traveller, have seen it do much better on the continent, where they practise no other method, and yet cut good crops for several years; but if it be said that in our moist climate the natural grass and weeds will quickly overbear it, this is in some degree true: but yet if the land was clean, with good harrowing, it may last some years, perhaps seven or eight; and may be cut three or four times in a season. To cut it four times indeed, the summer must be very favourable, and the last cutting will be

late; nor will it be fit for cutting so soon as drilled or transplanted Lucern by a fortnight or more.

Early growth.

The early springing of Lucern is one of its most valuable properties. It may be depended on for much earlier food for sheep and lambs than any grass; and in rich warm land will yield a feeding of some account by the 20th of march, and continue very productive all april, which is the season that the sheep-matter is more distressed than at any other time of the year. Sheep must not however be kept on it in such numbers, and so long as to make them eat into the crown of the plants, which damages them much; they will not however do this whilst there are any young shoots^k. Mr. Harte mentions its being seventeen inches high on the 9th of april, when grass was only four inches in height, and that it was cut twice before hay-making begun. Its earliness however in the spring is uncertain, and of course must depend upon the season.

Number of Cuttings.

The proper time of cutting grasses, and this with other leguminous plants, vulgarly called artificial grasses, is when they are in full blossom; but this rule can only be followed for hay. The best use of Lucern is for soiling, and consequently such portions of it should be set out for every day as will insure a constant supply. Broad-cast crops will not grow so fast as those which are drilled or transplanted, nor usually yield more than three full growths in the six growing months, though the number assigned by Mr. Rocque is from three to five; a broad-cast field therefore should be parcelled out into sixty divisions, one to be cut every day. Drilled and transplanted crops, on good land, may be distributed into forty divisions; but on very fine land, into thirty. By this means, which of course is to be varied as the cultivator finds the growth of his crop, he will always have a succession ready for the scythe. The growth, on well cultivated rich land is very great, rising to eighteen inches in thirty or forty days, and yielding five good cuttings between april and september^l.

The number of cuttings assigned by Columella is from four to six. In Catalonia it is cut from four to six or even seven times in a season, though broad-cast, all exceedingly thick and fine from two and a half to three feet in height when cut. But it is all watered every eight days. It would yield ten tons green on an acre at each cutting, and much of it a great deal more: if we suppose five cuttings or fifty tons an acre, this at 16s. a ton, is 40l. sterling an acre. All crops in England sink very much on comparison with the vast and luxuriant burthens given by these watered grounds. The finest crops with us are drilled, but the eye is deceived in drilled crops in proportion to the distance of the rows, they appear thick when they are not really so; but in broad-cast ones there is no deception; and those immense burthens, through which the scythe is with difficulty moved, produce more at one cutting than two-feet drills would at three with the advantage of the herbage being finer and softer. But weeds in England and Catalonia are very different things: it well deserves however, with us, a better trial than it has yet generally received. Rocque's broad-cast crops on a rich garden soil, and Dr. Tanner's on a common turnep loam, were certainly encouraging^m. Mr. Rocque says that his crop yielded near eight loads of hay on an acre.

I have seen many years together a crop drilled at twenty inches, in very indifferent land, cut six times every season. And Dr. Anderson informs us that he has cut a plant of Lucern six times in one season, allowing it to be about twenty inches high before each cutting. He adds a very good remark, that this and other succulent plants, such as Clover, may be consumed most profitably as green fodder, because as soon as they are cut, they quickly vegetate afresh during summer; pushing out very vigorous shoots which advance with great rapidity until the plant has attained nearly its full stature; after which it advances more slowly, till at length it becomes stationary, and is employed solely in maturing its fructification. It should

^k Young's Ann. 25. 96.

^l Id. ib.

^m Id. 8. 242.

be cut therefore when it approaches the stationary state, and thus a much greater quantity of vegetable food will be produced, than if it were allowed to arrive at greater maturity before each cuttingⁿ.

Lucern in small quantities is sown in gardens or plats where it is not convenient to turn in cattle to feed, in this case it must be cut as often as it is fit, which will be four, five or six times. But where cattle or sheep can be turned on, it is generally better to feed it in spring and autumn, and to take only three cuttings, which will be good ones, provided it be not stocked so hard as to damage the bulb or crown of the root. If it be not fed, a middling unequal crop may be cut at the end of april or beginning of may, a second about the first week in june, a third the second week in july, a fourth the third week in august, these three will be full crops, and a fifth at the end of september or beginning of october. This will generally be of little worth: and allowance must be made in the others for soil and seasons. Mr. Harte mentions its being seventeen inches high on the 9th of april; I have seen it eighteen inches high on the first of may; and have known it hardly fit to cut the first time till the 27th of may, or even the 3d of june, in untowardly seasons.

The reaping-hook or sickle has been recommended for cutting it, in preference to the scythe: this may do where small parcels are cultivated, and where the rows are forty inches asunder; but in broad-cast and closer-drilled Lucern, the scythe will do the work very well, and for less than a fourth of the expense. The Lucern should be gathered into a one-horse skeleton cart, and carried directly to the stable door, if it be for soiling horses^o.

Duration.

Broad-cast Lucern, with good management, may last seven or eight years. Columella and Palladius assign a life of ten years to it, and Pliny of thirty. Harte follows Columella. Mons. du Chateauvieux gives it twenty years. Dr. Anderson says that it lasts from twelve to twenty years in a favourable soil, but declines at last and dies away. Some assign eighteen or twenty years to it, and others only nine, or at most ten or twelve. Tull gives it a life of sixty years. I do not know that it has ever been suffered to stand so long, but I have little doubt of its attaining that age, in a good soil, with proper management. In that case, assisted with manure, I have not observed it to decline at any age. It does not attain its full vigour before the third, or according to others, not until the fifth year. This therefore is an objection to sowing broad-cast, which declines and even wears out very fast after the seventh or eighth year.

Manuring.

Upon soils not of extraordinary fertility manure should be occasionally bestowed upon this crop. Rotten dung is the best spread upon it early in winter; about twenty tons to an acre once in five or six years will be an ample allowance. If dung cannot be spared, foot or ashes may be substituted^p.

Rocque recommends fresh stable dung to be laid on before the last ploughing, and ploughed in directly, as a preparation for sowing.

Mr. Belcher directs pond mud, which has lain in a heap all summer, to be carried on in winter, after it has been well shaken by the frost, fifteen hundred bushels to the acre^q.

Mr. Harte recommends wood-ashes, foot and lime as proper dressings for stiff, cold, clayey lands; for hot, shallow, brashy ground a compost of calcined clay, rotten dung, and pond-mud, long exposed to sun and frosts, and frequently turned; and for ground of a middle nature, malt-dust. But as variations of soil are infinite, the compost-dunghill is the surest assistant.

Dung is probably not one of the best manures for Lucern, except it be very old, and corrected with mixtures of a sweet and fertilizing nature. For dung, if new, produces very luxuriant troublesome weeds,

and gives the crop a foul taste. No dung, even of the best kind, must be spread on Lucern, till it be two years old at least.

In moist grounds, especially of a clayey cast, preference should be given to foot-dressings, then wood-ashes secured from wet; next soap-boilers ashes, coal-ashes well sifted, charcoal-ashes, and malt-dust, sown over the crop in the spring. Nor might the ashes of lime be amiss, nor lime itself mixed with mould under turf. The compost-dunghill thrice turned will spread almost as well as ashes or foot, and will be very rich if it was moistened with brine, soap-suds, urine, &c.

With foot, ashes, lime, &c. it is sufficient to dress the rows only; because they may be dispersed very exactly, in the Berkshire manner, with a peat-ash spoon: but old dung, marl, compost-dressings, and other coarser manures, should be laid on the intervals as well as rows. Seven or eight bushels of foot, mixed with sand, or fifteen or sixteen bushels of wood-ashes, or malt-dust, will be sufficient for an acre, sown on the rows in moist weather, and renewed occasionally. A labourer, with a peat-ash spoon and feed-lip, may sprinkle the rows of an acre, with foot or ashes, in four or five hours^r.

Produce.

The produce of a Lucern crop, like that of all others, will depend on soil and management. They reckon in some parts of France that an acre of it produces more than six acres of good grass, in others, as much as three only; and of hay, more than four tons. Some of their crops have risen to nine tons. Mr. Wynn Baker mentions eight tons of hay to the Irish acre, which is five to the English measure. Others state good crops at from twenty to forty tons, and twenty-five at an average. Duhamel mentions forty tons; and near Barcelona the produce of green fodder amounts to fifty tons on an acre in one season. Rocque at Walham Green got eight loads an acre at five cuttings; and to the value of 35l. for soiling^s. Mr. Harte, the first year after transplanting, had about eight tons from an acre. Mr. Baldwin had above fourteen tons from four cuttings. From an acre of broad-cast, cut july the 15th, near five tons and a half, and two more crops were produced; from four acres and a half, seven years old, eighteen loads of hay were produced; and forty eight loads from another field of eleven acres^t.

The Rev. H. J. Close, of Trimley in Suffolk, from somewhat more than half an acre of transplanted Lucern, the second year, had eight tons two hundred and forty-one pounds of green food at five cuttings^u.

In the second year after transplanting, when Lucern is not yet arrived at its full size, and at the first annual cutting, which is not the best, Mr. Harte weighed a parcel of the prime plants, which one with another were about a pound and quarter each. But supposing that every plant weighed only one quarter of a pound, and admitting we give up the sixth cutting; then the produce is at least ten tons of green Lucern on an acre. He calculates that an acre of transplanted Lucern, rightly managed, will bring in 5l. a year, free and clear from all expenses, and that for a considerable tract of time^v.

Some persons are of opinion that constant mowing exhausts the crop; that however does not seem to be the case, but on the contrary agrees better with it than leaving it for a full crop of hay: yet even thus the advantage is considerable; for at three mowings a good acre will produce four tons of dry hay, and sometimes even five; which, though it does not greatly exceed two cuttings of clover, yet considering that the latter is exhausted in one year; and that Lucern lasts as long as you please, is a very great superiority^w.

Application.

One of the best uses to which Lucern can be applied green, is for soiling of horses in the stable, no food agreeing better with them. Mr. Baldwin found that an acre would keep five horses twenty-one days, at 90lb. a day to each horse. Mr. Hall's broad-cast

ⁿ Essays, 2, 26.

^o Young's Ann. 25. 97.

^p Id. ib.

^q Id. 4. 34.

^r Essays, 2. 108.

^s Young's Ann. 25. 100.

^t Weston's Tracts, 288.

^u Bath papers, 3. 64.

^v Essay, 2. 118.

^w Young's Ann. 25. 99.

crop paid him for seven years together 11l. 6s. an acre, by feeding horses at 2s. 6d. a week. Sir John Turner's, also broad-cast, kept five horses twenty-six weeks, which at 2s. is 13l. an acre. Mr. Butcher's at Chalk in Kent, at seven years old, maintained six horses to an acre, from may day to michaelmas. Mr. Reynold's broad-cast, kept four horses to an acre, from the middle of may to the middle of october; which at 2s. 6d. is 11l. 10s. an acre. Mr. Vernon's in Suffex; drilled at two feet, kept five horses on an acre from the beginning of may till the middle of october, which at 2s. 6d. is 14l. 7s. 6d. Dr. Lloyd's of Puddletown, in drills at eighteen inches; maintained four horses to an acre eighteen weeks; which at 2s. 6d. is 9l. Mr. Anderson's, drilled, in the fourth year, produced 9l. to an acre, and 5l. 9s. profit. The fifth year, 6l. 15s. profit. Mr. Clayton's broad-cast crop fed five horses on an acre, to the value of 9l.; and his drilled crop, four horses or 7l. 4s. Rocque reckons that three quarters of an acre maintained three horses². Mr. Belcher affirms, that it must be a very indifferent acre that will not keep a horse the summer, and a very good one that will maintain two. He informs us however that Mr. Fitch kept four horses from june to october, in working order, which cannot be set at less than 10l.³. Dr. Tanner's four acres, broad-cast, was the chief support of fifteen horses and cows, from the end of april till michaelmas; after which it is fed down close with sheep till near Christmas. Another year, five saddle horses and four cows had nothing else to eat, and five coach-horses were soiled with it daily^b. Three acres of Mr. Johnston's maintained eight horses, from the 2d of may to the end of september, twenty-two weeks; which at 3s. comes to 26l. 8s.^c Mr. Dann values Lucern at 2l. 10s. an acre, clear of rent and every expenſe, mowed daily, and given to horses and oxen, in the yard or stable^d. Mr. Harte is of opinion, that a person must be an excellent manager, who can keep two good cart or coach horses all the year round upon an acre of Lucern. For they will consume near 80lb. of green food in a day and night, with some dry food besides; and three tons and half of hay must be allotted for their winter support during seven months. Now it will be difficult to maintain these two horses with green Lucern, and to steal one cutting for hay. Nor will that hay be sufficient, except it be mixed with straw.

Horses, says Mr. Harte from Monf. Duhamel, fed with Lucern, except when employed in journies, or other hard work, will need neither oats nor beans. No food makes their coats so smooth and well coloured. But when a horse first begins this succulent food, he should have a small quantity, as ten pounds, which should be gradually increased for three weeks to twenty, thirty and perhaps forty pounds. It should also be given in small quantities, and slightly moistened with water, to such horses as are touched in their wind. It is too full of nourishment for hunters, and should be given in less quantities to saddle horses, than to coach and cart-horses. When they are first fed with it in the spring, it may not be amiss to take a little blood from them. And if those who feed them can be persuaded to give them a little and often, they will eat with more appetite, and make no waste^e.

Lucern is excellent for soiling cows and young cattle in a farm yard, and for working oxen. A middle-sized cow will eat from 90 to 110lb. of green Lucern in twenty-four hours. The same caution must be taken as with clover to prevent hoving or being blown. Mr. Baker found that an Irish acre would keep six cows one hundred and forty-five days; an English acre therefore would keep about four the same time. Sir Charles Turner kept four cows on a drilled acre^f. Mr. Ray two cows through the whole summer. According to Mr. Belcher, Lucern affords very good butter before it flowers, but indifferent afterwards; the milk and cream however is never bad. To pre-

vent its blowing bullocks he recommends it to be given them in racks with narrow stales^g.

Varro and Cato tell us, that 20lb. of Lucern hay was allowed, at night only, to a working ox. These and all sorts of kine are very-fond of it green; and in meadows sown with clover or trefoil, they will run immediately to their feeder, whenever he comes near them with a burthen of Lucern. They always prefer it; when it has been cut a day or two, and remained in a dry shady place^h.

It has been doubted whether Lucern could be successfully applied to fattening beasts. Mr. Herbert however, of Mucruſs in Ireland, found that it fattened them admirably, and considered this as its highest value. Bomare says expressly that it will fatten them quicklyⁱ. Mr. Belcher fattened bullocks with Lucern on a hill farm^k. Mr. Young remarks from an experiment of his own, that the effect of it in fattening is a proof of the great value of this plant; that its superiority to tares is prodigious; and that when once established it is far cheaper. The same second growth which fed his beasts three weeks, supported other cattle also, to the amount of feeding these ten a week and half more, which makes the value of this growth in beef something better than 10l. A considerable return, as he observes, could we procure a full plant without sacrificing a crop of corn^l.

Mr. Harte affirms, that cattle fed with Lucern may be made fit for sale more expeditiously and earlier in the year, than they can be brought to market in any other common method; since it is very easy to begin fattening at the end of april; and to finish about the middle of harvest, when meat bears an high price. Some caution should be used at first: each beast should lose a little blood; and after a little time a large ox may have 40lb. of green Lucern each day, and perhaps more^m.

With respect to Sheep; there is some doubt whether they are not apt to damage the crown of the root, and thereby to prevent or at least weaken the shoots that should furnish the succeeding cuttings. This should be a caution not to let sheep lie on Lucern too long. The first growth in the spring is of great use for ewes and lambs. Mr. Baldwin fattened Welsh wethers on it with great success. It is best given them in racks. It may be fed after the last cutting, in dry weather with any kind of stock, in wet weather with sheep. Certainly no plant is more acceptable to sheep, or more nourishing for them than Lucern. Mr. Harte says that he knows from his own experience, that Sheep will eat it green or dry, when they refuse every sort of food besides; and that there cannot be a better preservative, when the rot begins to threaten, than to give them green Lucern mixed with a little buck-bean, or Lucern-hay moistened with fresh brineⁿ.

Of Swine there is no doubt but that Lucern is excellent food for them, and they do it no damage. Mr. Belcher remarks that they like it best young, and that if they or any other stock fed with it, be pounded and well littered, the crop may thus be made richly to manure itself^o. Not biting close like sheep, Swine may eat it very safely, and a small field near the farm-yard would be useful for this purpose. It is better however to soil them with it in the yard or sty, on account of the great value of their dung^p.

Hay.

Lucern makes excellent hay. It should not be stirred about much, that the leaf may be preserved. Rocque directs that it should be mown for hay as soon as the bloom appears, or sooner, that it should lie in the tawth, and be turned as clover.

Mr. Harte informs us that on the continent it sells at a much higher price than the best upland hay. He would have it cut with the straw-cutter, and given to horses mixed with other hay; or reserved for sick horses and cattle. Monf. du Chateauvieux asserts that 2lb. of chopped Lucern-hay are equivalent to a quarter of oats.

² Young's ann. 25. 100, 103, &c. and Tours.

³ Young's ann. 1. 320. and 4. 36.

^b Southern Tour, 66, 67.

^c Id. 346.

^d Young's ann. 15. 259.

^e Essay 2. Sect. 12. p. 127.

^f Young's ann. 25. 100.

^g Young's ann. 1. 309.

^h Harte. Essay 2. 134, 136.

ⁱ Young's ann. 25. 102.

^k Id. 4. 36.

^l Id. 14. 154.

^m Essay 2. 134.

ⁿ Id. 137.

^o Young's ann. 1. 309.

^p Id. 25. 100.

Hay in our moist climate can only be made in a dry season, for if it lie long, it not only gets damaged itself, but materially injures the succeeding cutting. If it can be carried to an adjoining pasture, that is fed down close, that seems to be the best method, though an expensive and troublesome one, if the quantity be considerable. It seems preferable however to another method which Mr. Harte recommends; namely, to leave intervals of six feet, between every pair of rows, whereon to make the hay: for in the judgment of most persons his rows are too wide already. Sensible of the difficulties, he does not advise any one to attempt making any great quantities, especially since it is so valuable in a green state, and four tons of it shrink to one in drying. He directs such care and attention in making, as scarcely any person can be expected to give, and no person will get done by others: and in laying it up, he advises layers of wheat-straw to be placed between layers of Lucern¹.

After all, Mago does not think Lucern more difficult to be made into hay than clover; and affirms, that with one quartern of oats any gentleman will be well satisfied with the condition of his horses, even coach-horses².

Saving Seed.

Mr. Miller, from his own experience, commends English seed in preference to foreign. Others say that the seed is not worth saving in England. Rocque directs it to be saved, not from the first, but from the second growth. The difference between Lucern from English seed which Mr. Belcher raised himself, and that from French seed was amazing; the latter being prodigiously superior, sown the same day and on the same soil³. The home seed was larger, did not come up so soon by two days, and then not near so thick. Near a month after the foreign was much thicker and stronger. In June six plants of each were transplanted, and on August the 27th the produce being weighed was nearly equal in both: whence it appears that the difference was entirely at starting; and they were equal afterwards.

At present, says Mr. Belcher, there is far from any reason to think it worth while to save home-feed, more especially as Mr. Harte says it is injurious to the plants, which however he did not perceive⁴.

Mr. Harte says that he has saved Lucern-seed with no great difficulty in England, but that he never could see a reason for preferring it to foreign seed; which will be better ripened than our own, and some advantage will result from change of seed. However he directs those who choose to save their own seed, to take it from the third cutting; to cut off the tops of the feeding stalks with large horse-scissars or a small sickle, just after sun-rising; to dry the pods on a winnowing-sheet, and to thrash them out with a short stick, in the same manner with clover, and to pass them through a very fine sieve. After the seed-branches are cut off, the remainder must be mown as usual, and may serve as fodder for cart-horses, and lean cattle⁵.

Expenses.

One main obstruction to the more general culture of Lucern, has I apprehend been an idea of the great expense attending it. Mr. Harte's estimate is very high indeed, 6l. 12s. But his culture throughout is adapted entirely to a gentleman. Mago in the Museum Rusticum has reduced the expense of the first year to 2l. 10s. and the annual charge to 16s.

The following is another calculation of the expense attending the culture of an acre of Lucern, during the first year.

| | | | | | | | |
|------------------------|---|---|---|---|----|----|-----|
| Rent, &c. | - | - | - | - | 1 | 10 | 0 |
| Two spring ploughings | - | - | - | - | 0 | 18 | 0 |
| Harrowings | - | - | - | - | 0 | 2 | 6 |
| Eight pounds of Seed | - | - | - | - | 0 | 8 | 0 |
| Drilling | - | - | - | - | 0 | 2 | 6 |
| Horse-hoeing in autumn | - | - | - | - | 0 | 2 | 6 |
| Hand-hoeing in ditto | - | - | - | - | 0 | 5 | 0 |
| | | | | | £. | 3 | 8 6 |

¹ Essay 2. 153.

² Mus. rust. 4. 313.

³ Young's ann. 2. 62.

⁴ Id. 3. 440.

⁵ Essay 2. 192.

Second and succeeding years.

| | | | | | | | |
|-----------------------------|---|---|---|---|----|----|-----|
| Rent, &c. | - | - | - | - | 1 | 10 | 0 |
| Four horse-hoeings | - | - | - | - | 0 | 10 | 2 |
| Three hand-hoeings | - | - | - | - | 0 | 12 | 0 |
| Five mowings | - | - | - | - | 0 | 12 | 6 |
| Raking, loading and carting | - | - | - | - | 0 | 12 | 6 |
| Manuring | - | - | - | - | 0 | 12 | 0 |
| | | | | | £. | 4 | 9 2 |

Or perhaps the expenses may not be set too high at 5l. where the acre is well managed and highly cultivated. Great however as this expense is, the crop will answer exceedingly well⁶.

Another estimate of the annual expense of an acre of Lucern is thus given by Arthur Young Esq. in his Six weeks Tour through the Southern Counties.

| | | | | | | | |
|--|---|---|----|---|----|----|------|
| Rent | - | - | - | - | 1 | 10 | 0 |
| One cleaning to each of four cuttings at 2s. | 0 | 8 | 0 | | | | |
| Four cuttings at 2s. 6d. | - | - | - | - | 0 | 10 | 0 |
| Hand-weeding and cleaning the rows | - | 0 | 10 | 0 | | | |
| | | | | | £. | 2 | 18 0 |

But here is nothing charged for four horse-hoeings; nor for carrying and manuring. If these charges be added to the above sum, this estimate will not differ materially from the other. We may presume therefore that a fair crop of Lucern, will at least pay cent per cent, when it is once established.

Mr. Young however has observed very properly⁷; that a plant like Lucern, sown on well-cleaned land, and kept clean by hoeing afterward, is procured at an expense which is seldom calculated fairly. Besides the expenses stated above, a crop of corn on good land cannot be estimated at less than 5l. And to balance this, the produce the first year is very inconsiderable. The second year must be very good, to pay its own charges, and the drawback of the preceding year: now a cultivation, which at the end of two years shall have paid nothing in profit, is not worth attention. If it can be got with corn, the case is different; and foreign Lucern is all sown with corn.

When Lucern however is sown broad-cast, a small crop of barley or oats may be obtained, sufficient at least to pay all expenses, without much damaging the Lucern, if the season be favourable. Between the rows of drilled or transplanted Lucern, any of the crops usually drilled may be put in, as Beans, Cabbages, &c. Or Vetches may be sown in the intervals. Or broad Clover may be mixed with broad-cast Lucern, or sown in the spaces of that which is drilled or transplanted. This practice may in some degree meet the above objection to the culture of this valuable plant, and render it worth the attention even of the farmer in point of profit as well as convenience. But even supposing Lucern not to be so profitable as its too sanguine friends believe, and would persuade us to do so; yet still it may be convenient to have a small quantity for ewes and lambs early in the spring, for soiling horses occasionally, and supplying the deficiencies of other foddering crops.

7. Yellow Medick, and Variegated Medick.

Yellow Medick is hardier than Lucern, roots stronger, grows in drier soils, yields abundance of fodder very nearly allied to Lucern in quality, and loses less in drying. In the sandy fields of Suffolk, on the fallows, the strength of its roots defies the plough and the hungry sheep⁸. If the stems are prostrate, which Linneus makes one of the specific distinctions of Yellow Medick, it would be an objection to the culture of it, because it could not easily be mowed. Single plants may have prostrate stems, but when it comes to be cultivated in a thick crop, the stems will support one another; and the case is the same with Trefoil (*Medicago lupulina*) and many other plants.

Thomas Le Blanc, Esq. of Cavenham in Suffolk having been struck with the luxuriance of the Yellow

⁶ Young's Ann. 25. 105.

⁷ Annals, 14. 154. note.

⁸ Young's Ann. 6. 50. and 15. 278.

Medick in the poorest soils, determined to have the seed gathered, in order to cultivate it. Whilst engaged in this pursuit, he happened to find the Variegated Medick, and observing it to be more luxuriant even than the yellow, it commanded his attention:

It is less erect, he says, and less succulent than Lucern; but more succulent, and much more luxuriant than the yellow Medick. The seed pods partake of the shape of each, being less twisted than those of Lucern, but more so than those of Yellow Medick. The flowers are beautifully varied in every shade of blue and greenish yellow, and some are almost white. His reasons for preferring it to Lucern are, that it is hardier in bearing cold, that from its habit of branching below the surface of the ground, and the shoots being much more numerous, it is not choaked by natural grasses, and that for the same reason it will not be injured by being fed with sheep, and that it grows spontaneously upon the poorest soils.

In 1783 he began with a single plant, which he transplanted into his garden, the soil of which is a blowing sand. In 1784 he gathered the seed of it, and in april 1785 he sowed with it a bed consisting of five rows, thirty-nine feet long. The plants came up thick and strong; some of them blossomed at the beginning of july in the same year, and measured above two feet in height. Although all the seeds were gathered from one plant, yet the flowers differed very much in colour; some being almost yellow, some almost white, and others purple of various shades. In august the same year he took up the seedlings, six thousand six hundred in number, and transplanted them. Some of them measured two feet and a half in height. Most of the roots were cut through with the spade; one which was pulled up measured two feet nine inches in length. He likewise dug up a few wild plants, which he divided into a great number of slips, every one of which grew.

In june 1786 he cut down the garden plant not yet in full blossom; it was above five feet high, and weighed four pounds and a half. September the 6th he cut it again when it was only beginning to flower, and it weighed twenty-six ounces. The 29th of august he cut some plants for seed; much of it was lost by lying on the ground, the season being wet; much also was unripe, and many young shoots were in full blossom. The 4th of december the plants were not affected by the frost: at the same time the shoots of Lucern were entirely destroyed.

In february 1787 he observed many healthy young plants, self sown; where he had saved seed the preceding year, some of them an inch and half high, which must have come up before winter, and have stood the frost unhurt; the situation indeed was sheltered. At the end of february Le Blanc's Medick was not so forward as Lucern. A few days afterwards, both were equally cut off by the easterly winds. In december, he allotted for farther experiments, a piece of very poor sandy land, containing five roods; it had borne Saintfoin, which was quite worn out; and he had just taken from it a crop of carrots: the ground was by no means so clean from couch-grass as it ought to have been: the subsoil sand, and to a great depth. A bottom of chalk would probably be more favourable to it.

On the 17th of december he transplanted some roots which measured four inches in circumference. The 19th he transplanted a bed of seedlings out of the garden, fine strong plants; they had been sown the beginning of april, and had been cut down when in full flower. They were set in rows, twelve inches asunder.

In 1788 at the beginning of april, upon the same piece of land, he sowed the seed saved last year, in drills twelve inches asunder; and in the midst of it four rows of Lucern seed, at the same distances, in order to ascertain their comparative value. He mowed the crop this first year to feed weaned calves: the food was good, but the produce trifling.

In june 1789 Le Blanc's Medick was in blossom before the Lucern, and much fuller of flower. Both the transplanted and sown flowered luxuriantly: he

saved it for seed, but it produced a very small quantity: in november he dressed it with ashes.

May the 26th 1790, he cut a square yard of Lucern, and an equal measure of the Medick adjoining; the Lucern was tallest, and appeared the larger bundle, but upon weighing them, the Lucern was three pounds three quarters; the Medick four pounds and a quarter. The crop of Medick was very fine; and had the appearance of having been sown broad-cast; the intervals being so filled up, that the drills could not be distinguished, whereas the rows of the Lucern were very apparent.

The 2d of june he began to cut it for soiling eleven cart horses, a large tumbrel load every day: it was not in flower, nor arrived at its full growth, but he cut it so early to prevent any grass seeding in it. The five roods lasted the eleven horses fourteen days: it was excellent food, and the horse-keeper acknowledged it to be heartier than tares. The plants raised from seed are better than the transplanted ones.

He afterwards let it stand for seed, which being a very unequal crop, and ripening at different times, he gathered by hand, at the end of september and the first week in october; the quantity of it was very inconsiderable, and being very small, it was troublesome to thresh and clean it.

Mr. Young remarks upon this very satisfactory account of the introduction of a new plant into culture, that may bid fair to rival Lucern itself, that Mr. Le Blanc's farm at Cavenham being on a poor blowing sand, he has very happily fixed on a plant which appears to thrive better on such sand than in richer soils. Mr. Young tried it in moist loams, worth 15s. an acre, but never could get the plants to do so well as on the poorest sands^a.

8. Hop-Medick.

This plant has been much sown of late years for sheep feed in open fields, where it is a considerable improvement, first for the sweet food, and then to help the land by ploughing it in getting a good crop of wheat after it on indifferent soils. Mr. Zappa of Milan, says that it likes deep ground, rich and exposed to the sun, multiplies very well from the seed, grows chiefly in the spring, flowering at the beginning of may (in the Milanese) and ripening the seed at the beginning of june; it grows but little towards the end of summer and in autumn. It is cut with *Poa trivialis*, fifteen inches high, but is naturally procumbent. It is very nutritious, and increases milk in cattle^b. It is cultivated under the name of *Trefoil* or *Black Nonesuch*, and it seems as if some of the *Trifolia* or genuine Trefoils would answer the purpose of the farmer as well as this Medick, which has usurped the name, to the exclusion of all others.

The Earl of Orford observed two luxuriant patches of it left untouched in the month of may, in a field of various grasses, eaten bare by a flock of sheep indifferently kept^c. He might have observed the same of White Dutch Clover, or any other plant, however valuable, when run up to seed. But sheep prefer a short sweet bite of natural grass, though almost bare, to any thing else.

The seed of this plant falls so readily, that great loss ensues from moving it, and in threshing the least stroke clears it. It is a good way therefore to thresh it in the field on a cloth, which is moved to the seed, and not the seed to the cloth^d.

9. Sea Medick.

This plant is propagated by seeds, sown upon a warm border of dry soil in the spring, where the plants are designed to remain; when the plants are come up, two or three of them may be transplanted into small pots, to be sheltered in winter, because in very severe frost, those which are in the open air are frequently destroyed; though it will endure the cold of our ordinary winters, in a dry soil and sheltered situation. The remaining plants require only to be thinned and kept clean. It may also be increased by cuttings, planted in june or july in a shady border, covering

^a Young's ann. 15. 277.

^c Id. 16. 48.

^b Id. 6. 49.

^d Id. 20. 508.

them close with a glass to exclude the external air: they will take root in about six weeks, and may then be either planted in a warm border or in pots, and treated in the same way as the seedling plants.

to. *Variable Medick.*

Some of the varieties are common in flower-gardens among other annuals under the names of *Snails* and *Hedge-hogs*, from the singular form of their seed-vessels. They are propagated by seeds sown in the middle of April, where they are to remain; they require no culture but to be thinned, and kept clean.

[The variety called Heart Trefoil or Heart Clover, but more properly Heart Medick or Spotted Medick, is frequently very luxuriant among Lucern, Saintfoin and Trefoil, and might be cultivated for the same purpose as the latter, but on account of its hairiness and the roughness of the seeds, it should be cut or pastured when young.

MEDICAGO. See *Trifolium* and *Trigonella*.

MEDICK. See *Medicago*.

MEDIUM. See *Campanula* and *Convolvulus*.]

MEDLAR. See *Mespilus*.

MEDUSA'S HEAD. See *Euphorbia*.

[MEESIA. (From David Meese, Gardener in the University of Franeker.)

Lin. gen. Schreb. n. 1653. Hedw. fund. 2. 97.

Mnii species *Linn. Schmid. ic. t. 57. f. 4.*

Class. 24. 3. Cryptogamia Musci.

GENERIC CHARACTER.

Caps. oblong. Peristome double: outer with sixteen short blunt teeth; inner with as many sharp cilia, distinct or connected by network.

Males approaching the females, or discoid on a different plant.

MEESIA Gært. See *Walkera*.

MELAGO-CODI. See *Piper*.

MELALEUCA. (From μέλας, black, and λευκος, white.)

Lin. gen. Reich. n. 978. Schreb. n. 839. Gært. t. 35. Juss. 323.

Class. 18. 4. Polyadelphia Polyandria.

Nat. order of Myrti, Juss.

GENERIC CHARACTER.

CAL. Perianth turbinate, five-cleft, half superior.

COR. Petals five, rounded, inserted into the inner margin of the calyx.

STAM. Filaments many, very long, united in five bundles. Anthers incumbent.

PIST. Germ turbinate, fastened to the bottom of the calyx. Style one, filiform, upright. Stigma simple.

PER. Capsule subglobular, half-inferior, or half covered with the calyx, three-celled.

SEEDS oblong, when unripe linear-chaffy; when ripe usually winged.

ESSENTIAL CHARACTER.

Cal. five-cleft, half superior. Pet. five. Filam. many, very long, in five bodies. Style one. Caps. three-celled.

SPECIES.

1. *Melaleuca Leucadendron. Aromatic Melaleuca.*

Lin. syst. ed. 13. 582. ed. 14. 698. Reich. 3. 587.

ed. 15. 736. mant. 105. suppl. 342. α. Smith in

Linn. transf. 3. 274. Lour. cochinch. 468. ed.

Willd. 573.

Myrtus Leucadendron. Lin. spec. 676.

Arbor alba. Rumph. amb. 2. 72. t. 16.

Leaves alternate lanceolate acuminate obliquely sickled five-nerved, branchlets and petioles smooth.

2. *Melaleuca viridiflora. Green-flowered Melaleuca.*

Gært. fruct. 1. 173. Smith in Linn. transf. 1. 275.

M. Leucadendron β. Lin. suppl. 342.

Leaves alternate elliptic-lanceolate coriaceous five-nerved, branchlets and petioles pubescent.

3. *Melaleuca laurina. Spurge-Laurel-leaved Melaleuca.*

Smith in Linn. transf. 3. 275.

Leaves alternate obovate-lanceolate one-nerved, peduncles axillary dichotomous pubescent.

4. *Melaleuca stypheloides. Styphelia-like Melaleuca.*

Smith in Linn. transf. 3. 275.

Leaves alternate ovate mucronate-pungent many-nerved; flowers lateral, calycine teeth striated mucronate.

5. *Melaleuca ericifolia. Heath-leaved Melaleuca.*

Smith in Linn. transf. 3. 276.

Leaves scattered or opposite linear nerveless subrecurved awnless, flowers lateral clustered towards the top of the branchlets.

6. *Melaleuca nodosa. Knotted Melaleuca.*

Smith in Linn. transf. 3. 276.

Metrosideros nodosa. Gært. fruct. 1. 172. t. 34. f. 6.

Leaves scattered linear mucronate-pungent straight, flowers glomerate towards the top of the branchlets.

7. *Melaleuca armillaris. Diofma-like Melaleuca.*

Smith in Linn. transf. 3. 277.

Metrosideros armillaris. Gært. fruct. 1. 171. t. 34. f. 5.

Leaves scattered linear mucronate recurved at top, flowers lateral, filaments very long linear radiate-multifid at top.

8. *Melaleuca genistifolia. Broom-leaved Melaleuca.*

Smith in Linn. transf. 3. 277.

Leaves scattered lanceolate mucronate three-nerved many-dotted, flowering-branchlets terminating loose, filaments radiate-multifid at top.

9. *Melaleuca linariifolia. Toadflax-leaved Melaleuca.*

Smith in Linn. transf. 3. 278.

Leaves opposite linear-lanceolate three-nerved many-dotted beneath, flowering-branchlets terminating loose, filaments pinnate.

10. *Melaleuca thymifolia. Thyme-leaved Melaleuca.*

Smith in Linn. transf. 3. 278.

Leaves opposite elliptic-lanceolate nerveless, flowering branchlets lateral very short few-flowered, filaments branched to the middle.

11. *Melaleuca hypericifolia. St. John's-wort-leaved Melaleuca.*

Smith in Linn. transf. 3. 279.

Leaves opposite elliptic-oblong one-nerved, flowers clustered, filaments very long linear radiate-multifid at top.

Melaleuca lucida. See Metrosideros diffusa.

Melaleuca villosa. See Metrosideros villosa.

Melaleuca scoparia. See Leptospermum scoparium.

Melaleuca virgata. See Leptospermum virgatum.

Having referred *Leptospermum* to this genus, I here subjoin it, from Dr. Smith's botanical characters, in the third volume of the *Linnean Transactions*.

LEPTOSPERMUM. (From λεπτος, slender, and σπέρμα, seed.)

Forst. gen. t. 36. f. 1. Juss. gen. 323. Gært. t. 35.

Class. 12. 1. Icosandria Monogynia.

Nat. order of Myrti.

ESSENTIAL CHARACTER.

Cal. five-cleft, half-superior. Petals five with claws, longer than the stamens. Stigma capitate. Caps. four or five-celled. Seeds angular.

SPECIES.

1. *Leptospermum scoparium.*

Forst. gen. n. 6. Smith in Linn. transf. 3. 262.

Melaleuca scoparia. Lin. syst. 699. suppl. 343. Forst.

flor. austral. n. 210. escul. 78.

Philadelphus scoparius linifolius. Ait. hort. kew. 2. 156. 2. α.

Tea Plant. Cook's voy. 1. 100. t. 22.

β. *Leptospermum squarrosum. Gært. fruct. 174. t. 35.*

Philadelphus scoparius myrtifolius. Ait. hort. kew.

2. 156. 2. β.

Leaves ovate mucronate obsoletely three-nerved, calyxes smooth, teeth membranaceous coloured.

2. *Leptospermum aromaticum.*

Philadelphus aromaticus. Ait. hort. kew. 2. 156. 3.

Leaves linear-lanceolate nerveless quite entire, calycine segments coloured deciduous.

3. *Leptospermum flavesens.*

Smith in Linn. transf. 3. 262.

Leaves linear-lanceolate obtuse nerveless, calyxes smooth, teeth membranaceous coloured naked.

4. *Leptospermum attenuatum.*

Smith in Linn. transf. 3. 262.

Leaves lanceolate-linear acute three-nerved, calyxes silky-villose, teeth membranaceous coloured almost naked.

5. *Lep-*

5. *Leptospermum lanigerum*.
Smith in Linn. transf. 3. 263.
L. trinerve. White's voy. 229 ic.
Philadelphus laniger. Ait. hort. kew. 2. 156.
α. canescens. Leaves oval, with canescent villose hairs.
β. piliger. Leaves lanceolate-oblong hairy subreflex at top.
Myrtus amboinensis montana. Rumph. amb. 2. t. 18?
Leaves obovate-lanceolate three-nerved, calyxes silky villose, teeth leafy permanent.
6. *Leptospermum parvifolium*.
Smith in Linn. transf. 3. 263.
Leaves obovate nerveless, branchlets and calyxes hairy, teeth membranaceous coloured.
7. *Leptospermum arachnoideum*.
Smith in Linn. transf. 3. 263.
L. arachnoides. Gært. 1. 174. t. 35.
Leaves awl-shaped pungent, branchlets rough-haired, calyxes and teeth villose.
8. *Leptospermum juniperinum*.
Smith in Linn. transf. 3. 263.
Leaves linear-lanceolate pungent, branchlets silky, calyxes smooth, teeth membranaceous coloured naked.
9. *Leptospermum baccatum*.
Smith in Linn. transf. 3. 264.
Leaves linear-lanceolate pungent, branchlets rough-haired, calyxes smooth, teeth membranaceous coloured pubescent, capsule berried.
10. *Leptospermum ambiguum*.
Smith in Linn. transf. 3. 264.
Leaves linear recurved at the tip, calyxes smoothish, teeth leafy lanceolate naked, stamens longer than the corolla.
11. *Leptospermum virgatum*.
Forst. gen. 48. n. 7.
Melaleuca virgata. Lin. syst. 699. suppl. 343. Forst. flor. austral. n. 211.
Leaves opposite linear-lanceolate nerveless, umbels terminating.

DESCRIPTIONS, &c.

According to the observations of Dr. Smith, in his excellent treatise on the botanical characters of some plants of the natural order of Myrti, this genus is not naturally distinct from *Metrosideros*, the union of the filaments being all that distinguishes *Melaleuca*; for in the rest of the fructification, as well as in habit, they agree. Accordingly the younger Linnæus, the two Forsters and Schreber unite them, and Jussieu seems inclined to do so. But at the same time they confound with it the true genus of *Leptospermum*, than which nothing can be more distinct. Gærtner preserves all three separate; but several of his species of *Metrosideros* prove to be *Melaleuca*.

1. This is a tree with a black trunk and white branches, whence the name *Melaleuca*. Leaves quite entire, almost veinless, petioled. Fructifications sessile, agglutinated, scattered, below the leaves^a.

Loureiro describes it as a middle-sized tree, with a lofty flexuose trunk, and few, irregular, ascending branches. Bark thick, pale, lamellated, sessile and tough. Leaves flat, straight, ash-coloured, sweet-smelling, hardish, scattered. Flowers white, sessile, in long spikes towards the end, where it breaks out again into leaves. Bractes minute, ovate, acute. Calyx tubular, five-cleft: tube roundish, coriaceous, brownish red; segments rounded, deciduous. Petals roundish, concave, longer than the calyx. Filaments about forty, in five or six bundles, unequal, placed upon the edge of the tube of the calyx. Anthers very small, ovate. Germ three-lobed, surrounded by the calyx. Style equal to the stamens. Stigma thickish. Capsule roundish, opening at top, half-clothed with the truncated calyx, the segments having fallen off. Seeds many, very small, compressed-angular.

Native of some parts of the East Indies and Cochin-China. From it is distilled the green aromatic oil called *Cajeput*, from *Caya Puti*, a white tree, which is the Malay name; whence Linnæus gave the name of *Leucadendron* to this species^b. The oil has the taste of Pepper-Mint, but stronger and colder, and a smell like turpentine; but it seldom comes to Europe un-

adulterated^c. A decoction of the leaves is much used in Cochin-China, as a tonic, &c. The bark is very serviceable in caulking boats, covering houses, &c.^d

2. This is unquestionably a distinct species from the preceding, with which the younger Linnæus confounded it. The leaves are much more thick and rigid, straight; not falcated, nor so much pointed, of a lighter colour, with generally five, but sometimes seven nerves. The footstalks and younger branches are downy, which is not the case in *M. Leucadendron*^e. Gærtner remarks that the calyx is toothless. The flowers are pale yellowish green.

Native of New South Wales^f. Introduced in 1775, by John Reinhold Forster, L. L. D.^g

3. This is nearly allied to *M. suaveolens* of Gærtner, with which its inflorescence and fructification almost entirely agree, but the leaves of that are much broader and elliptical. Those of *M. laurina* have a great resemblance to *Daphne Laureola*. Neither is this species at all aromatic, which *M. suaveolens* should seem by its name to be. That comes from the hotter parts of New Holland, near Endeavour river. Specimens of this were brought to Sir Joseph Banks from New South Wales by Governor Philip.

4. This has altogether the habit of a *Styphelia*. The leaves are thick-set, twisted, harsh, pungent and striated, exactly as in several of that genus, and very slightly aromatic, so that it could hardly be taken for one of the Myrti, except by the fructification. The flowers are white, surrounding the lower part of the youngest branches in very short clusters. Calyx downy, with erect rigid spinous striated permanent teeth. Petals smooth, membranous. Stamens twice as long as the calyx.

Gathered near Port Jackson by Mr. David Burton.

5. The dried leaves taste strongly of coriander seeds. Flowers white, growing in short clusters round the branches, as in the following, but not quite so near the top. Its leaves differ widely from that species, being much smaller, not pungent nor rigid, but a little recurved. The young bark is of a silvery white.

6. Leaves numerous, scarcely an inch long, very narrow, though broader than those of *M. ericifolia*, stiff and sharp-pointed. Flowers small, whitish, clustered round the tops of the youngest branches, so as to appear like little heads; but after flowering the branch is protruded beyond them, and the ripening capsules remain investing it in an annular manner. Gærtner's figure represents them in their most advanced state, apparently bleached by exposure to the air^h. His description is—Calyxes in the middle of the branchlets aggregate, suberose, spherical, toothless, very smooth, shining, snow-white, smallish. Capsules immersed, three-celled.

7. This has much the habit of a *Diosma*, in the leaves especially, which are very distinctly marked, in a garden specimen, with a row of resinous spots on each side the midrib at the back; but these are less visible in the wild plant. Flowers white, clustered about the lower part of the branches, in the form of a long spike. The footstalk or claw of the united filaments is very long before it branches off, even thrice the length of the petalsⁱ. Calyx, according to Gærtner, subglobular, suberose, thick, five-toothed. Capsule immersed, three-celled.

8. This is, in some respects, like *M. nodosa*, but the leaves are lanceolate rather than linear, not above half so long as in that species, nor so rigid and pungent. The branches terminate in loose spikes, from the top of which the branch is at length continued, as in the other species. Flowers sessile, in alternate pairs, white. Claw of the stamens twice as long as the petals before the filaments branch off.—Sent from Port Jackson by Mr. David Burton.

9. This is a large tree, the bark of which is very thick and spongy, serving the purpose of tinder. The branches are clothed with tapering glaucous leaves, thrice as long as in the last species, and from the summits spring several young branches, set with a series

^a Linn. suppl.^d Loureiro.^e Smith.^f Id.^g Hort. kew.^h Smith.ⁱ Id.^a Linn. mant.^b Smith.

of opposite sessile solitary white flowers, not, as in that, in pairs ranged alternately, beyond which the branch is soon protruded. The essential character however of the species consists in the filaments, which are very long, being pinnated, or ranged with stamens on each side, more or less regularly, from near the base to the summit. The leaves have a flavour like nutmeg.

10. Flowers purple, ranged along the branches of a year or two old, in little short opposite spikes; which however soon prove to be real branches by the leaves shooting out at their ends, this lateral mode of inflorescence being common to almost the whole genus, *M. laurina* and *suaveolens* only having axillary branching flower-stalks; and no *Melaleuca* having been yet seen with terminating flowers.

The teeth of the calyx in this are permanent, and the whole of that part, as well as the back of the leaves, abounds with a fragrant essential oil, lodged in pellucid prominent dots. Mr. Fairbairn presented flowering specimens of this species to the Linnæan Society from Chelsea garden.

11. The flowers grow in a cylindrical form round the branches, and have some resemblance to those of *Metrosideros lanceolata*, commonly called *citrina*, occasioned by the radiated crimson filaments projecting in every direction. The claws of those filaments are very long, linear, and of a dull yellowish hue like the petals.

It is the most beautiful of the genus, is plentiful in the English gardens, and was generally taken for an *Hypericum*, till it produced its elegant flowers. It grows in swampy grounds, and is found, like all here described, except the first, in New South Wales^k.

LEPTOSPERMUM.

Descriptions, &c.

When that part of the Dictionary was printed in which this genus should regularly have stood, Dr. Smith's valuable observations on it were not published; they are therefore added here, rather than be wholly omitted, or reserved for a distant appendix.

To this genus naturally belong many shrubs, which were referred by Dr. Solander to *Philadelphus*. Forster confounded with them, under the name of *Leptospermum*, another most distinct genus, the *Metrosideros* of Banks and Solander. Gærtner first separated all these, and really understood this genus, though he did not point out the genuine essential character, the capitate stigma, which, as well as the shortness of the stamens, clearly distinguishes it from *Metrosideros*. With *Philadelphus* it has no resemblance in habit, nor scarcely any botanical characters in common. *Philadelphus* is clearly and strikingly distinguished by its more or less deeply quadrifid style, and simple stigmas, without adverting to the broad base of the petals, or the differences pointed out by Gærtner in the fruit.

The younger Linnæus and Schreber have confounded *Leptospermum* as well as *Metrosideros*, with *Melaleuca*, with which the latter only has any great natural affinity. Dr. George Forster has fallen into the same error in his Prodomus.

Many of the species are to be seen in the English gardens, and several have often flowered. There are other species in the gardens, which Dr. Smith had not yet seen in sufficient perfection to discriminate them^l.

1. This is a small tree or shrub, sometimes growing to a moderate height, and generally bare on the lower part, with a number of small branches growing close together towards the top; the younger ones silky. Leaves small and pointed, like those of the Myrtle; alternate, scattered, subsessile, quite entire, spreading, flat, even, dotted, dark green above, pale underneath. Flowers solitary, terminating, sessile at the ends of the twigs, white, the size of those of the Cherry. Bractes roundish, imbricate, concave, deciduous, surrounding and covering the calyx up to the middle. Calyx hemispherical; teeth ovate, concave, alternate with the petals, white within, red without, deciduous. Petals white, three times as long as the calyx. Filaments about twenty or twenty-four, shorter by half than the

petals, inserted in a single row into the margin of the calyx. Anthers twin, roundish. Capsule hemispherical, umbilicated with the calyx, plano-convex above, excavated at top, five-streaked, five-celled, five-valved, opening at top. Seeds many, very small, linear, cylindrical, extremely slender^m.

It grows commonly in dry places near the shores, in New Zealand. The underwood in Adventure bay, Van Diemen's land, chiefly consists of this shrub.

The leaves were used by Captain Cook's ships crews as tea, whence they named it the Tea plant. The leaves have a very agreeable bitter flavour, with a pleasant smell, when fresh; but lose something of both, when dry. If the infusion was made strong, it proved emetic to some, in the same manner as green tea. It was also used with spruce leaves, in equal quantity, to correct their astringency in brewing beer from them; and they rendered the beer exceedingly palatableⁿ.

This is the most commonly cultivated species in England, and flowers continually. Dr. Smith received it from the garden of Messrs. Lee and Kennedy, by the name of *Philadelphus floribundus*, along with three other specimens, which he suspects to be varieties of this. They were called *P. rubricaulis*, *P. rubriflorus*, and the original *P. aromaticus*^o.

This is called in the Kew catalogue *Philadelphus scoparius linifolius*, or narrow-leaved *Philadelphus*.

β. Is called there *Ph. scoparius myrtifolius*, or Myrtle-leaved *Philadelphus*. It was introduced into that garden in 1772, and flowers in June and July. This is a very slight variety, according to Dr. Smith, with shorter and broader leaves. It is however the *Lept. squarrosus* of Gærtner; of which he says the calyx is closely united with the capsule, and terminated by an unequal repand toothless margin: the capsules subglobular, flattened a little, umbilicate, five-celled, five-valved: the seeds linear, very numerous, ferruginous.

2. Dr. Smith, not having settled this species, omits it. It was observed in New Zealand by the Right Honorable Sir Joseph Banks, and was introduced into the Kew garden in 1772. It flowers there in July and August^p.

3. The flowers appear to be of a fine yellow in the dried specimens.

4. The flowers seem to be white, and generally grow two together on short flower-stalks, which are silky like the calyx.

5. This species varies with smooth and downy leaves; and the calyx is sometimes merely silky, sometimes clothed with long and thick projecting down.

Some varieties of it are in the gardens; especially β of *Hort. Kew.* which has small downy twisted leaves, with a little recurved point; and is commonly called *Philadelphus pubescens*. It may be a distinct species^q.

Introduced in 1774, by Tobias Furneaux, Esq. It flowers in June and July^r.

6. Of this Dr. Smith, having only one specimen, and not having seen it alive, says no more than it is very distinct.

7. Of this also he has but a single specimen, which agrees well with Gærtner's figure, and the original specimen at Sir Joseph Banks's^s.

Capsule, according to Gærtner, half-inferior, covered as with a bark with the very thin woolly five-toothed calyx, globular, flattened a little, five-celled, five-valved. Receptacle a globular tubercle at the inner angle of each cell, fastened to the axis of the fruit. Seeds very numerous, small, oblong, thickening outwards, angular, ferruginous.

8. Dr. Smith has not had an opportunity of observing the flowers fresh. Mr. Fairbairn gave it him under the name of *Philadelphus dioxyfolius*.

9. This is a low depressed shrub. The flowers seem to be yellow, and by the appearance of the dried fruit it must be very pulpy.

10. This is the only species that has the stamens longer than the corolla, which is a character of *Metrosideros*; but as it differs from that genus, and agrees with *Leptospermum*, in the much more important

^m Forster, escul.

ⁿ Cook's 2d voy. 1. 99. to 101. & 3d 1. 108.

^o Smith.

^p Hort. kew.

^q Smith.

^r Hort. kew.

^s Smith.

^k Smith.

^l Id.

character of the capitate stigma, as well as in habit, Dr. Smith does not hesitate to refer it to this. The flowers are white, and appeared magnificently in the garden of George Hibbert, Esq.

Dr. Smith received all these species (except the second) from New South Wales¹.

11. The under surface of the leaves is covered with dark resinous spots^a.

Perhaps, says Dr. Smith, this ought to be added to the list of known species; but the two specimens in the Linnæan herbarium are scarcely sufficient to satisfy his doubts. The stamens seem to be regularly ten. If the fruit therefore be one-celled or two-celled, it may be an *Imbricaria*, with double the number of stamens. If the capsules should be found to have three or four cells, it may be a decandrous *Bæckia*; with which genus its opposite leaves, as well as the size and appearance of the flowers agree; whereas the *Leptospermum* have alternate leaves. It must be left for future consideration^x. In the mean-time it may stand here.

For the reason given above respecting *Leptospermum*, I have added

FABRICIA. (So named from Fabricius.)

Gærtn. t. 35.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Myrti* Juss.

ESSENTIAL CHARACTER.

Calyx five-cleft, half superior. Pet. five; sessile. Stigma capitate. Caps. many-celled. Seeds winged.

SPECIES.

1. *Fabricia myrtifolia*.

Gærtn. fruct. 1. 175. Smith in Linn. trans. 3. 265. Calycine teeth nearly orbicular, capsules ten-celled.

2. *Fabricia lævigata*.

Gærtn. fruct. 1. 175. Smith in Linn. trans. 3. 265. Leaves obovate, calycine teeth triangular, capsules eight-celled.

DESCRIPTIONS, &c.

The numerous cells of the fruit, from eight to ten, and especially the winged seeds, sufficiently distinguish this genus from *Leptospermum*, to which it is next akin.

1. This species is twice as large as the second in all its parts. Calyx hemispherical, with the teeth nearly orbicular. Petals rounded, concave, sessile or without any claw. Capsule covered to the middle by the calyx, which becomes toothless, thick, aromatic; it is umbilicate, coriaceous, ten-celled, ten-valved. Receptacle central, globular, ten-grooved. Seed in each cell one or two, small, compressed, brown, terminated by a large membranaceous wing. It was named *Philadelphus myrtifolius* by Solander.

2. Leaves alternate, obovate, smooth, very obscurely three-nerved or five-nerved, of a light glaucous green. Teeth of the calyx triangular. Capsules axillary, sessile, eight-celled. In each cell from five to eight small winged seeds. Dr. Smith has received it from New South Wales, and it is plentiful in the gardens about London, but has never yet flowered.

PROPAGATION AND CULTURE.

All these plants must be kept in the dry Stove or glass-case, and may be increased by cuttings.

MELAMPODIUM. (From μέλας, black, and πούς, a foot.)

Lin. gen. n. 989. Reich. n. 1072. Schreb. n. 1338.

Gærtn. t. 169. Juss. 188.

Class. 19. 4. Syngenesia Polygamia Necessaria.

Nat. order of *Compositæ Discoidæa*. *Corymbifera*. Juss.

GENERIC CHARACTER.

CAL. Common five-leaved, flat: leaflets subovate, the length of the flower, spreading very much.

COR. Compound radiated. Corollets hermaphrodite in the disk: Female about five in the ray.

Proper of the Hermaphrodite one-petalled, funnel-form, five-toothed, erect:—of the Female, ligulate, ovate, entire or three-toothed.

STAM. in the Hermaphrodites: Filaments five, very small. Anther cylindric, tubular.

¹ Smith.

^a Linn. suppl.

^x Smith.

Pist. in the Hermaphrodites: Germ very small. Style bristle-shaped, the length of the corolla. Stigma obsolete.—In the Females: Germ subovate, compressed, with rugged sides, the top flat and membranaceous. Style very short.

PER. Calyx unchanged.

SEEDS in the Hermaphrodites none: in the Females solitary, obovate, compressed, four-cornered, prickly at the sides, crowned with a heart-shaped, involuted, converging calycle.

REC. chaffy, conical: chaffs lanceolate, coloured; the length of the florets.

ESSENTIAL CHARACTER.

Cal. five-leaved. Recept. chaffy, conical. Down one-leaved, involuted, converging.]

SPECIES.

1. *Melampodium americanum*.

Lin. spec. 1303. Syst. 790. Reich. 3. 923. hort. cliff. 425. Gærtn. fruct. 2. 436.

Calendula decumbens. Mill. dict. n. 9.

Caltha americana. Houst. reliqu. 9. t. 21.

Stem upright, leaves sublinear, with one tooth on each side.

[2. *Melampodium australe*.

Lin. spec. 1303. Syst. 790. Reich. 3. 923. Loeff. it. 268.

Stem decumbent, leaves oval serrate.

3. *Melampodium humile*.

Swartz prodr. 114. Ait. hort. kew. 3. 269.

Stem upright, leaves lyrate-toothed sessile.

DESCRIPTIONS, &c.

1: Stems many, round, herbaceous, villose, procumbent. Leaves opposite, an inch and half long; and an inch broad, usually divided into five segments; but sometimes entire, hairy on both sides; but chiefly at the back, where they are also hoary. Peduncles axillary, one-flowered. Calyx single, composed of five broad mucronate hirsute segments. Corolla yellow. A crown of shortish seeds, covered with a rough bark succeeds radial florets^a.

Mr. Miller describes the leaves as long, narrow; and indented on their edges in two or three places opposite to each other, so as to appear like three, five, or seven lobes. Peduncles long and naked, terminated by a single yellow flower, about the size of the Field Daisy. [Miller's description of the leaves agrees with Houstoun's figure: but Linneus's specific character does not agree either with that or his description.

According to Gærtner, there are about ten female florets in the ray. Receptacle flat: chaffs oblong, blunt, membranaceous, the inner ones gradually longer, so that the disk of the flower appears to be conical. Seeds obovate, flattened on both sides, brown; the back arched, striated, the belly curved and narrowed to an edge, the sides flat, rugged with tubercles. Crown cotyloid, standing obliquely on the top of the seed, pale straw-coloured, formed of a lamina, which when ripe becomes somewhat cartilaginous, one-leaved, obcordate; the edges are bent in so as to form two grooves within, or a cleft along the middle divided into two swelling lips.

Found by Houstoun near La Vera Cruz, in sandy soil, in the year 1731, flowering in the month of march, and bearing ripe seed^b, which he sent to Mr. Miller, who raised the plants in Chelsea garden.

2. Found by Loeffling in South America. Forskahl ascribes hooked hairs to the seeds^c.

3. Found in Jamaica and St. Domingo by Swartz. Introduced in 1782, by Mr. Gilbert Alexander. It flowers from June to October^d.

These are all annual plants.]

PROPAGATION AND CULTURE.

Sow the seeds in the spring on a hot-bed, and when the plants are fit to remove, put them into pots filled with light sandy earth, and plunge them into the tan-pit, shading them from the sun, giving them air in warm weather, and treating them as other tender plants from the same countries.

Melampyrum affinis f. cognata. See *Acanthus* and *Barleria*.

^a Houst. reliqu.

^b Id.

^c Jussieu. gen.

^d Hort. kew.

MELAMPYRUM. (Μελαμύρον, of Theophrastus. From μέλας, black, and πυρός, wheat.)

Lin. gen. n. 742. Reich. n. 800. Schreb. n. 999.

Tournef. t. 78. Juss. 101. Gært. t. 53.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of Personatæ. Pediculares Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, four-cleft: divisions slender, permanent.

COR. one-petalled, ringent. Tube oblong, recurved. Border compressed. Upper lip galeated, compressed, emarginate, the lateral little margins reflex. Lower lip flat, upright, the length of the upper, half-three-cleft equally, blunt, marked with two risings in the middle.

STAM. Filaments four, awl-shaped, curved, concealed beneath the upper lip; two shorter. Anthers oblong.

PIST. Germ acuminate. Style simple, situation and length of the stamens. Stigma blunt.

PER. Capsule oblong, oblique, acuminate, compressed; upper margin convex; lower straight; two-celled, two-valved, opening by the upper future: partition contrary.

SEEDS solitary or one in each cell (according to Linneus two) ovate, gibbous, elongated at the base.

ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. upper lip compressed, with the edge folded back. Caps. two-celled, oblique, opening on one side. Seeds two, gibbous.

SPECIES.

1. Melampyrum cristatum. Crested Cow-wheat.

Lin. spec. 842. syst. 550. Reich. 3. 110. fl. suec. n.

545. Hudf. angl. 269. Wither. arr. ed. 3. 544.

Engl. bot. t. 41. Relb. cant. n. 456. Hall. belv.

n. 311. Crantz. austr. 300. Scop. carn. n. 757.

Pall. it. 1. 20. Pollich pal. n. 584. Krock. filef.

n. 972. Villars dauph. 2. 414. Kniph. cent. 11.

n. 71. Riv. mon. t. 81. 1. Pluk. phyt. t. 99.

f. 2. Baub. hist. 3. 440. 2. Raii hist. 775. 3.

syn. *286. 1.

M. luteum angustifolium. Baub. pin. 234.

M. lut. linariæ folio. Baub. prodr. 112.

M. villosum spica purpurea quadrata. Mor. hist. f. 11.

t. 23. f. 2.

Spikes quadrangular, bractes heart-shaped compact tooth-letted imbricate.

2. Melampyrum arvense. Purple Cow-wheat.

Lin. spec. 842. syst. 550. Reich. 3. 111. fl. suec. n.

546. Gært. fruct. 1. 244. Hudf. angl. 270.

Wither. arr. ed. 3. 545. Engl. bot. t. 53. Hall.

belv. n. 310. Reyg. ged. 1. 159. n. 1. Crantz.

austr. 301. Neck. gallob. 265. Pollich pal. n.

585. Fl. dan. t. 911. Krock. filef. n. 973.

Villars dauph. 2. 415. Kniph. cent. 11. n. 71.

Riv. mon. t. 80.

M. purpurascens coma. Baub. pin. 234. Raii syn.

*286. 3. Mor. hist. f. 11. t. 23. f. 1.

M. purpureum. Ger. emac. 90. f. 2.

M. multis f. Triticum vaccinum. Baub. hist. 3. 439.

2. Raii hist. 774.

Triticum vaccinum. Dod. pempt. 541. 2. Lob. obs.

23. 1. ic. 1. 37.

Cratægonon flore vario. Park. wheat. 1327. 4.

Spikes conical loose, bractes tooth-bristled coloured.

3. Melampyrum nemorosum. Wood Cow-wheat.

Lin. spec. 843. syst. 550. Reich. 3. 111. fl. suec.

n. 547. Hall. belv. n. 309. Scop. carn. n. 756.

Gort. ingr. 97. Reyg. ged. 1. 159. Crantz.

austr. 302. Fl. dan. t. 305. Krock. filef. n.

974. Villars dauph. 2. 415. Kniph. cent. 11.

n. 72.

M. sylvaticum. Riv. mon. t. 81. 2.

M. cærulea coma. Baub. pin. 234. Raii hist. 775.

Barrel. ic. 769. 1. Mor. hist. f. 11. t. 23. f. 5.

M. cæruleum. Ger. emac. 90. f. 3.

Parietaria sylvestris. 1. Clus. hist. 2. 44.

Flowers directed the same way lateral, bractes toothed, the uppermost coloured barren, calyxes woolly.

4. Melampyrum pratense. Meadow Cow-wheat.

Lin. spec. 843. syst. 550. Reich. 3. 112. fl. suec.

n. 548. lapp. n. 240. Gært. fruct. 1. 244.

Hudf. angl. 270. Wither. arr. ed. 3. 545. Engl.

bot. t. 113. Lightf. scot. 324. Relb. cant. n.

458. Hall. belv. n. 308. Reyg. ged. 1. 159.

Crantz. austr. 304. Neck. gallob. 265. Scop.

carn. n. 758. Pollich pal. n. 586. Krock. filef.

n. 975. Villars dauph. 2. 416. Kniph. cent. 11.

n. 73.

M. luteum latifolium. Baub. pin. 234. Bess. cyst.

est. t. 150. f. 2. Mor. hist. f. 11. t. 23. f. 3.

M. latifolium flore albo, labio inferiore duabus maculis

luteis distincto. Tourn. par. Dillen. in Raii syn.

*286.

Cratægonon album. Ger. 84. 1, 2. emac. 91. 1.

C. vulgare. Park. theat. 1326. 1.

Parietaria sylvestris. Bess. cyst. æstiv. 12. t. 2. f. 2.

Gært.

Flowers directed the same way lateral, leaves in distant pairs, corollas closed.

[5. Melampyrum sylvaticum. Yellow Cow-wheat.

Lin. spec. 843. syst. 550. Reich. 3. 112. fl. suec.

n. 549. lapp. n. 240. Hudf. angl. 270. Wither.

arr. ed. 3. 546. Lightf. scot. 325. Relb. cant.

n. 457. Hall. belv. n. 307. Crantz. austr. 303.

Scop. carn. n. 759. Gmel. tub. 190. Fl. dan.

t. 145. Krock. filef. n. 976. Villars dauph. 2.

416. Kniph. cent. 9. n. 65.

M. sylvaticum flore luteo, f. Satureia lutea sylvestris.

Baub. hist. 3. 441. Raii hist. 775. syn. *286. hist.

775. 4.

Flowers directed the same way lateral, leaves in distant pairs, corollas gaping wide.

DESCRIPTIONS, &c.

1. The whole plant is nearly smooth; extremely branched; branches opposite. Leaves opposite, sessile, linear but tapering to a point; those beneath the branches reflex, on the branches parallel. Flowers in closely imbricated spikes, forming heads, terminating the stem and branches. Bracteal leaves large, purplish, finely toothed, the middle tooth lengthened into a long reflex horn, the upper ones with short horns, but none without: these bractes being folded at the back, and closely pressed together at the edges, form a kind of square, with concave sides, the horns being at the angles. Flowers reddish. Others say yellow, and white. According to Relhan, the helmet is purplish or white, with a yellow edge: Pollich ascribes the same colours to it; and adds, that the beard or lower lip is yellowish within, and streaked with purplish lines on the outside. Villars says that the flowers are red or white. Krock, that the corolla is variously coloured, but that the beard and inside of the throat are commonly yellow, and that the whole varies to white. Mr. Woodward remarks, that he has never observed the flowers to be yellow, though he has seen thousands of plants in Ripton and other woods in Huntingdonshire. In the autumn they grow eighteen inches or two feet high; and where there are numbers together, the numerous diverging branches are so entangled that it is very difficult to extricate them^a. It is common in the woods of Bedfordshire, and in Madingley and Kingston woods, Cambridgeshire. Found among corn in Walton-field near Wakefield, Yorkshire, by Dr. Richardson. Braybrook wood, Newton and Yarwell in Northamptonshire. Ray observed it in mountainous woods near Geneva; and it is found in many other parts of the continent. It flowers in June and July.

2. Stem upright, slightly hairy, branched. Leaves opposite, lanceolate, lengthened to a point, nearly sessile, slightly downy. Flowers in an oval head, with each a long lanceolate purplish bracte, pinnatifid with setaceous teeth at the base; entire upwards^b. Corolla yellow and dusky purple^c. Capsule like that of the fourth species, but more gibbous, and when open bifid at top. Seeds larger by half, pale yellow, shining, with a thick, fungose, white beak^d. These seeds, when ground with corn, give a bitterness and a grayish cast to the bread, but do not render it unwholesome^e.

This is a weed in corn in many parts of Europe, among wheat in the more southern parts, and among

^a Woodw. Mf.

^b Id.

^c Withering.

^d Gærtner.

^e Linn. suec.

rie in the northern. Found also in Japan. In England it is not very common. Mr. James Sherard found it near Lycham in Norfolk; Mr. Woodward and Mr. Crowe near Norwich. Ray did not know that it was a native of England, when he published his history.

3. Root small. Stem a foot and half high, upright, brachiate, four-cornered. Leaves either entire and ovate-acuminate, or somewhat sagittate, eared and toothed at the base, rough, hirsute beneath, with hispid edges; petiole short, thick and hirsute; the branches and leaves are very distant. Flowers single or two together in the axils of opposite bractes, not forming a perfect spike. Bractes blue-violet, laciniated at the base or toothed, woolly underneath and not blue; the upper ones blue on both sides. The plant is readily known by this *coma* or knot of barren bractes. Corolla herbaceous-yellow, with the origin of the throat and gape deeper yellow; the tube purple and curved inwards; lower lip trifid, more lengthened out than in the other species, orange-coloured. Anthers bearded at the base. Calyx coloured, woolly, on a short petiole^f.

Linneus seems struck with the beauty of the plant, and the splendour of the flowers. "*Coma foliorum violacea, subtus lucente fulvo florum colore, lucos umbrosos ita exhilarat hæc planta, ac si aulam ipsius Floræ aut Auroræ intrâres.*" He remarks also that it is not a native either of England, or of several provinces of Sweden^g. It is frequent in Upland and Scania, Denmark, Switzerland, Carniola, Austria, Silesia, Dauphiné, &c. Ray found it between Grenoble and the Grande Chartreuse. It flowers in July and August.

4. Leaves lanceolate, greatly tapering towards the point, all serrated, but the serratures extremely fine, and the edges of the leaves being rather turned back, they are not very readily seen. Stem feeble, cylindrical towards the bottom, four-cornered upwards. Calyx purplish without; segments with minute stiff bristles along the edge; the two upper longer. Corolla full yellow, very much compressed; the notch in the upper lip but barely perceptible; lower lip with two orange-coloured rising plaits; tube straw-coloured. Filaments supporting what appears a single anther, which is ovate, compressed, hairy at the edges, and opening at the front edge, divisible into four portions, but as readily breaking in any other direction; after flowering separating into two or four parts. Style corresponding to the bend of the upper lip, rising over the anther, and presenting its summit to the opening, whence the pollen escapes. Seed-vessel a yellow glandular substance at the base on the fore part, doubled down, and so brittle as not to admit being straightened^h. It is thus described by Gærtner. Capsule ovate, attenuated into a blunt beak, compressed, with a longitudinal groove on both sides, without brown, within silky white: partition very narrow, almost obsolete. Seed solitary, ovate-oblong, smooth, whitish, somewhat shining, elongated at bottom into an umbilical conical spongy beak.

This species is thus accurately described by Pollich. Root hardish, whitish, fibrous. Stem upright, or decumbent, erect towards the top, obscurely four-cornered, slightly pubescent, reddish green. Branches opposite. Leaves opposite, sessile, linear-lanceolate, bluntish, quite entire, bright green and slightly pubescent above, netted underneath; the larger ones more than two inches long, and three lines wide, purplish at the base; the floral leaves smaller and a little reflex, with two or four sharp toothlets at the base. Flowers solitary, subsessile by pairs in the axils of the leaves, chiefly on one side and forming a one sided spike. Bractes a pair of leaves to each pair of flowers. These are a little more than two lines in diameter, and almost eight lines in length. Calyx purplish green, smooth; teeth lanceolate, acuminate, the upper ones somewhat reflex, and less deeply divided. Corolla yellow; tube compressed, triangular, white at the base and smooth; helmet blunt, slightly cloven at the top, the edge a little turned back, pubescent within; beard blunt with three

blunt toothlets, and two small smooth elevations at the throat. Anthers green and yellow, converging above, villose at the base and edge. Germ ovate, compressed smooth, with a roundish yellow nectary at the base of it. Style white, smooth, bent in at top, standing out a little from the cleft of the helmet; stigma blunt, white. Pollich seems to regard this and the *sylvaticum* as one species.

Mr. Woodward informs us, that our species so frequent in the woods of Norfolk and Suffolk, and other parts of the kingdom, in a clayey soil, was looked upon to be the *M. sylvaticum* of Linneus; but from a doubt which occurred to him in the spring of the year 1785, he was induced to believe it to be *M. pratense*, and that *sylvaticum* was unknown in England, at least in those counties. This doubt was afterwards confirmed by Dr. Smith's assuring him, that the specimen of *M. pratense* in the Linnean herbarium corresponded exactly with our plant. He believes however that the *sylvaticum* of Linneus is merely a variety; and such was the opinion of Linneus himself in his early writings. In *Flora Lapponica* 194. he gives *M. pratense*, which is ours, as the species, and *sylvaticum* as the variety; thus distinguishing them: in the first, the stem is more upright, the leaves more upright and converging, the corolla white but becoming yellow towards the lips, the mouth or the lips closed, and it inhabits meadows and drier places: in the second, the stem is more nodding, the leaves altogether spreading, the corolla entirely fulvous, and much shorter than in the preceding, the mouth open and gaping, and it inhabits woods and bushy places.

If *Melampyrum latifolium* flore albo, labio inferiore duabus maculis luteis distincto. *Tourn. par. Raii syn. ed. 3. *286. 2^a.* be *M. pratense*; and *M. sylvaticum* flore luteo, &c. *Baub. hist. Raii syn. *286. 2.* be *M. sylvaticum*; then Dillenius regarded the former as a variety only of the latter.

Other authors distinguish them. Haller thus describes his n. 308. which is Linneus's *Mel. pratense*. Stem weak, a long span in height. Leaves very long lanceolate, the lowest entire, the middle ones having a few large teeth at the base, the uppermost trifid, hastate, with reflex hooks. Flowers in pairs, as in the next species, sessile in the axils, all on one side. Corolla white; tube long, slender, wrinkled, widening in front. Gape, like that of a fish, converging; helmet yellow; pale at the edge; lips converging; two risings divide the beard into three very short teeth: these risings are deep yellow. Anthers glued together. Lightfoot's and Relhan's descriptions are chiefly taken from Haller. According to Krocker, it differs from *sylvaticum* in having a smaller calyx, of a purplish green colour, constantly marked with purple lines and smooth: corolla compressed, bent upwards, smooth, closed, variegated yellow and red, or more often entirely yellow, with a white tube; beard purple on the outside, trifid. Anthers converging, yellowish green, villose. Leaves parallel to the horizon, varying in their incisions; the lower ones on short petioles, ligulate; the uppermost jagged, hastate, beneath veined and slightly pubescent. Stem upright or decumbent, obscurely four-cornered, pubescent, from six inches to a foot in length.

Dr. Stokes remarks, that the lower lip of the corolla is straight, not bent downwards as in *M. sylvaticum*. Dr. Withering adds, that *M. pratense* has been frequently mistaken for *sylvaticum*, probably because it generally grows in woods, or on the skirts of them; but this is not the only instance in which too much attention to a trivial name has been the occasion of error.

It is an observation of Linneus's, that where this plant abounds, the butter is yellow and uncommonly good; that kine are very fond of it, though they reject the *arvense*, that sheep and goats eat it, and that horses and swine refuse it; that the latter however are very fond of the seeds.

5. According to Linneus, this differs thus from the preceding. Stem more nodding, leaves fully spreading, corolla only half as long, entirely yellow, and not with the tube white, mouth or opening between the lips gaping wide. But *M. pratense* has sometimes the whole

^f Krocker.^g Fl. succ.^h Withering.

whole of the corolla yellow, so that colour, as usual, must not be too much trusted. Stem upright or nodding, weak, branched, leafy. Leaves very entire, all undivided, very long, lanceolate.

Haller describes the stem as upright or nodding, weak, branched and leafy. Leaves quite entire, very long, lanceolate. Flowers in pairs, sessile in the axils, all pointing the same way, the whole of a deep yellow, gaping wide, the beard more deeply trifid; compared with the leaves three times less than in the preceding. Fruit ovate-conical, curved inwards.

Relhan describes the stems as square, reddish, smooth: leaves linear-lanceolate, veined, quite entire, smooth, almost sessile. Bractes jagged. Flowers in pairs, sessile, remote. Calyx coloured. Corolla yellow, gaping a little; lower lip convex, three-toothed.

According to Villars, it is smaller in all its parts, and the leaves are very narrow and entire, the flowers also are smaller, paler and open, the calyx is square at the base.

Krocker says, that this has a very small root; is lower in stature; the stem roundish, a span or half a foot in length, branched, villose, angular; leaves quite entire, linear-lanceolate, yellowish green; peduncles hirsute; the calyx has four raised streaks; corollas shorter by half, gaping wide, yellow all over; helmet not compressed but roundish, smooth on the outside, bearded with yellow hairs within, emarginate and folded back at the edge; by which marks it may easily be distinguished: lower lip flat, trifid, yellow with red lines. Anthers sagittate, like those of *Euphrasia*, greenish yellow, bearded on one side, toothed at bottom. Capsule ovate-compressed, triangular, two-celled, with many testiculate seeds.

Native of many parts of Europe in woods. Much rarer than the preceding in England, if it differs from it, or if the true *sylvaticum* of foreign authors be found with us. Found at Wick Cliffs by Mr. Swayne. Stechworth, White-wood, and Hatley-wood in Cambridgeshire. In the way from Taymouth to Lord Breàdalbane's cascade, and about Finlarig at the head of Loch-Tay.

All the species are annual. Leaves opposite. Flowers opposite, accompanied by bractes, forming a terminating spike.]

PROPAGATION AND CULTURE.

These plants are seldom cultivated in gardens. Some of them indeed are common weeds, but not noxious in England. The second sort grows very plentifully among corn in Flanders and other parts of the continent, and is said to make the bread dark, and to affect the head in the same manner with Darnel; but Ray affirms that he has often eaten this bread, without perceiving any disagreeable taste in it, and that it was not accounted unwholesome by the country people; Tabernæmontanus also declares, that he has often eaten it without harm, and that the bread in which it is mixed is even not unpleasant. It is a delicious food for cattle, and might be cultivated for fattening oxen.

The seeds of all these plants should be sown in the autumn soon after they are ripe, otherwise they seldom grow the first year. When the plants come up, weed them in the spring whilst young. As soon as they begin to show their flowers, cattle may be turned in upon a space hurdled off; for if they are permitted to run over the whole field, they would trample down the crop, and destroy a great part of it.

The third sort makes a pretty appearance with its purple tops during the months of July and August, and deserves a place in the flower garden among other annuals.

[*MELAMPYRUM*. See *Barleria*, *Hebenstreitia*, *Ranunculus*, *Selago*.

MELANDRIUM. See *Lychnis*.

MELANIUM. See *Lythrum* and *Viola*.

MELANOMPHALE. See *Ornithogalum*.

MELANOSCHOENUS. See *Schoenus*.]

MELANTHIUM. (*Μελανθιον* of *Theophrastus* and *Dioscorides*. From *μελας*, black, and *ανθος*, a flower.)

Withering.

Lin. gen. n. 454. *Reich. n.* 489. *Schreb. n.* 618.

Juss. 47. Clayton. Wurmbea. Thunb. gen. 18.

Schreb. n. 617.

Class. 6. 3. Hexandria Trigynia.

Nat. order of *Coronariee*. *Junci*, *Juss.*

GENERIC CHARACTER.

CAL. none, unless the corolla be so called.

COR. *Petals* six, ovate-oblong, spreading, with linear longer claws, permanent.

STAM. *Filaments* six, filiform, erect, the length of the corolla, into which they are inserted above the claws.

Anthers globular.

PIST. *Germ* conical, striated. *Styles* three, distinct, curved. *Stigmas* blunt.

PER. *Capsule* ovate, three-cornered, three-grooved, three-celled, composed of three capsules united within.

SEEDS very many, compressed, half-ovate.

ESSENTIAL CHARACTER.

Cor. six-petalled. *Filam.* from the elongated claws of the corolla.

SPECIES.

1. *Melanthium virginicum*. *Virginian Melanthium*.

Lin. spec. 483. syst. 348. Reich. 2. 126. Gron. virg. 59. Pluk. amalth. t. 434, f. 8. (Asphodelo affinis.)

Flowers panicled, *petals* with claws hirsute on the outside.

2. *Melanthium lætum*. *Spear-leaved Melanthium*.

Ait. hort. kew. 1. 488.

Raceme oblong, *petals* sessile, *leaves* smooth lanceolate-linear, *stem-leaves* remote.]

3. *Melanthium sibiricum*. *Siberian Melanthium*.

Lin. spec. 483. syst. 349. Reich. 2. 127. amoen. 2. 349. t. 4. f. 11. Gmel. sib. 1. 45. t. 8? (Ornithogalum.)

Panicle very long, *petals* sessile, *leaves* linear acuminate.

4. *Melanthium capense*. *Spotted-flowered Melanthium*.

Lin. spec. 483. syst. 349. Reich. 2. 127. amoen. 6. afr. 12. p. 87. Thunb. prodr. 67.

M. punctatum. *Mill. dict. n. 3.*

Petals dotted, *leaves* lanceolate cowed.

5. *Melanthium indicum*. *Indian Melanthium*.

Lin. syst. 349. Reich. 2. 127. mant. 226.

Petals linear-lanceolate, *leaves* linear.

6. *Melanthium cochinchinense*. *Cochinchinese Melanthium*.

Lour. cochinch. 216. ed. Willd. 268.

Petals sessile, *leaves* three-sided, *flowers* solitary axillary.

7. *Melanthium viride*. *Green-flowered Melanthium*.

Lin. syst. 349. suppl. 213. Thunb. prodr. 67.

Leaves ovate-lanceolate, *corolla* reflex.

8. *Melanthium ciliatum*. *Fringe-leaved Melanthium*.

Lin. syst. 349. suppl. 213. Thunb. prodr. 67.

Leaves ensiform cowed, *flowers* in spikes, *petals* with claws.

9. *Melanthium triquetrum*. *Rush-leaved Melanthium*.

Lin. syst. 349. suppl. 213. Thunb. prodr. 67.

Leaves three-cornered smooth, *flowers* in spikes.

10. *Melanthium monopetalum*. *One-petalled Melanthium*.

Lin. syst. 349. suppl. 213.

M. spicatum. *Burm. cap. 11. Houtt. nat. hist. 12. 429. t. 85. f. 2.*

M. wurmbeum. *Thunb. prodr. 67.*

Wurmbea capensis. *Thunb. gen. 1. 18. Lin. syst. 348.*

Lin. transf. 2. 231.

Corolla one-petalled, *leaves* cowed lanceolate.]

DESCRIPTIONS, &c.

1. Flower-stalks from six to eight inches high, branching at top into three or four divisions, with two or three linear-leaves below the flowers. Corolla of a dusky colour, rarely succeeded by seeds in England.

Native of Virginia and other parts of North America. [Cultivated by Mr. Miller in 1768. It flowers in June and July.

2. Native of North America. Introduced in 1770, by George W. Earl of Coventry. It flowers in June.

3. Root bulbous, oblong. Leaves radical, half a foot long, linear, acuminate, striated, attenuated into the petioles. Stem naked, a foot high, round, surrounded by a single, linear, short leaf. Flowers panicled: peduncles alternate, one-flowered; the lowest

* Hort. kew.

peduncle.

peduncle longer, with alternate pedicels. Bractes lanceolate, sessile, acuminate, at the base of each peduncle, coloured, very short. Petals lanceolate, reflex, permanent, white. Nectary obcordate, bifid, fastened to the base of the petals. Filaments awl-shaped, shorter by half than the corolla, and fastened to it at the base of the nectary. Styles erect, awl-shaped. Capsule acuminate, with compressed valves. Seeds oblong, membranaceous, angular.

It differs from the first species in having the petals sessile, and the filaments not rigid and permanent. The appearance however is quite the same with that^b. Native of Siberia.

Willich is of opinion, that Gmelin's name belongs rather to *Anthericum ramosum*.

4. Stem quite simple. Leaves embracing, sheathing at bottom, the sheath widening at top: there are four of them on the stem, the uppermost and lowest very small. Raceme terminating. Petals oval, with very short claws. Stamens generally inserted into the receptacle^c.

Native of the Cape of Good Hope. Introduced, according to the Kew Catalogue in 1788. Miller however seems to have cultivated it in 1768.

5. Root bulbous. Herb the stature of *Ornithogalum luteum*. Stem simple, upright, smooth and even. Stem-leaves three, longer than the stem. Peduncles terminating, commonly two; one one-flowered, the other two-flowered: floral leaves two, wider, shorter. Flowers shorter than the leaves, dark purple. Stamens and pistils shorter than the corollas. Capsule triangular, smooth and even, the size of a Coffee seed.—Native of Tranquebar in the East Indies^d.

6. Stem six feet high, shrubby, round, slender, branched, procumbent, with short scattered prickles. Root consisting of a bundle of oblong, fleshy, reddish-brown tubers. Leaves linear, stellate-tern, quite entire, smooth, smallish, unequal. Flowers white, on one-flowered peduncles. Seeds roundish, very black, rugged, one or two of each only ripen.—Frequent in dry hedges in China and CochinChina. It is allied to the preceding^e.

7. Stem half a foot high, leafy, subpubescent. Leaves alternate, sessile, upright. Peduncles alternate, side-flowering, filiform, one-flowered, the length of the leaves. Flowers drooping. Petals narrow-lanceolate, purple, narrower at the base with the edge converging and yellow. Stamens short.—Found at the Cape of Good Hope by Thunberg^f and Masson; and introduced by the latter in 1788^g.

8. Leaves shorter than the stem. Petals white, lanceolate.—Found at the Cape of Good Hope by Thunberg.

9. Found at the Cape of Good Hope by Thunberg^h and Masson. Introduced by the latter in 1788ⁱ.

10. Root globular, smooth. Stem none, or a finger's length, round, simple, sheathed, striated. Leaves three, alternate, sheathing or cowl'd at the base, lanceolate-subulate, channelled, longer, distich, even, recurved. Spike an inch long, flexuose. Flowers alternate, somewhat remote, whitish, with the teeth black at the edge. It varies with white and purple corollas, with a black and purple edge, with a shorter and longer tube. It resembles *M. capense*. The one-petalled corolla is not sufficient to make this of a separate genus, since the proportion of the tube varies in this and *M. fibricum*, and it may easily be divided by a needle.—Found at the Cape of Good Hope by Sparrmann^k, Thunberg and Masson. Introduced by the latter in 1788^l.]

PROPAGATION AND CULTURE.

1, 2, 3. Plant the roots in a border of light earth, not too dry. They will produce their flowers, but seldom increase.

4, &c. Plant the roots in a border, covered in winter with a garden frame; and treat them in the same way as is directed for *Ixia*.

^b Linn. amoen. ^c Idem. ^d Linn. mant. ^e Loureiro.
^f Linn. suppl. ^g Hort. kew. ^h Linn. suppl.
ⁱ Hort. kew. ^k Linn. suppl. ^l Hort. kew.

[*MELANTHIUM*. See *Garidella*.]

MELASMA. See *Gerardia*.]

MELASTOMA. (So named by Burman from *μελας*, black, and *στομα*, a mouth; because the pulp blackens childrens mouths in eating the fruit.)

Lin. gen. n. 544. Reich. n. 589. Schreb. n. 742.
Burm. Gært. t. 126. Juss. 329. Acinodendron.
Edit. prior. Fothergilla. Aubl. 175. Mayeta.
Aubl. 176. Tibouchina. Aubl. 177? Tococa.
Aubl. 174?

Class. 10. 1. Decandria Monogynia.

Nat. order of *Calycanthemæ*. *Melastomæ*. Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, ventricose at the base, four or five-cleft, permanent.

COR. Petals four or five, roundish, inserted into the throat of the calyx.

STAM. Filaments eight or ten, inserted into the calyx, short. Anthers long, somewhat curved, upright, one-celled, gaping at top with an oblique hole. Scalelets two, very small, diverging, annexed to each filament below the anther, the rudiment of another cell.

PIST. Germ roundish, in the belly of the calyx. Style filiform, straight. Stigma blunt or headed.

PER. Berry two, three, four or five-celled, wrapped up in the calyx, roundish, crowned with a cylindric rim.

SEEDS. very many, nestling.

ESSENTIAL CHARACTER.

Cal. five-cleft, bell-shaped. Petals five, inserted into the calyx. Berry five-celled, wrapped up in the calyx. (Capsule with a soft pulp, five-celled, opening in five parts at top. G.)

SPECIES.

1. *Melastoma Acinodendron*.

Lin. spec. 558. syst. 403. Reich. 2. 284. hort. cliff.
162. 1. Pluk. mant. t. 264. f. 2. (Acinodendron).
Plum. ic. 142. f. 2. (Grossularia).

Leaves toothletted with three nerves or thereabouts ovate acute.

2. *Melastoma grossularioides*.

Lin. spec. 558. syst. 403. Reich. 2. 285. Pluk.
phyt. t. 249. f. 4.

Leaves toothletted triple-nerved ovate acuminate.

3. *Melastoma scabrosa*.

Lin. spec. 558. syst. 403. Reich. 2. 285. Swartz
obs. 174. Brown. jam. 219. 5. t. 24. f. 3.

Leaves triple-nerved toothletted ovate rugged hirsute, flowers axillary aggregate sessile eight-stamened.

4. *Melastoma hirta*.

Lin. spec. 559. syst. 404. Reich. 2. 285. Swartz
obs. 175. Pluk. phyt. t. 264. f. 1.

Leaves toothletted five-nerved ovate-lanceolate, stem hispid.

5. *Melastoma fragilis*.

Lin. syst. 404. suppl. 236. Vahl ecl. 1. 44.

Leaves serrate five-nerved netted, racemes with sessile flowers all directed one way.

6. *Melastoma aspera*.

Lin. spec. 560. syst. 404. Reich. 2. 286. fl. zeyl.
n. 172. Gært. fruct. 2. 203. Rumph. amb. 4.
135. t. 71.

Katou-kadali. Rheed. mal. 4. 91. t. 43. (sec. Gært.)
Raii hist. 1493. Burm. zeyl. 154. t. 72. ind.
105.

Leaves quite entire three-nerved lanceolate rugged.]

7. *Melastoma holosericea*.

Lin. spec. 559. syst. 404. Reich. 2. 286. hort. cliff.
162. 2. Swartz obs. 176. Vahl ecl. 1. 42?

Pluk. mant. t. 250. f. 2. (Acinodendron). Breyn.
cent. 3. t. 2. & f. in p. 4. (Arbor racemosa)
Marcgr. bras. 117.

Leaves entire three-nerved sessile ovate acute villose-filky, racemes brachiate, branches two-parted, stem acutely quadrangular.

8. *Melastoma strigosa*.

Lin. syst. 404. suppl. 236.

Leaves quite entire three-nerved strigose ovate, flowers solitary.

9. *Melastoma sessilifolia*.

Lin. spec. 558. syst. 404. Reich. 2. 286. Brown.
jam. 219. t. 24. f. 1, 2. Pluk. phyt. t. 249. f. 2.

Leaves quite entire triple-nerved spatulate sessile tomentose underneath.]

10. *Melaetoma malabathrica*.
Lin. spec. 559. *syst.* 404. *Reich.* 2. 286. *fl. zeyl.*
n. 171. *Gartn. fruct.* 2. 203. *Burm. zeyl.* 155.
t. 73. *ind.* 104. *Forst. flor. austral. n.* 193. *Rheed.*
mal. 4. 87. *t.* 42. (Kedali). *Rumph. amb.* 4. 137.
t. 72. (*Fragarius niger*).
 Leaves quite entire five-nerved lanceolate-ovate rugged.
- [11. *Melaetoma laevigata*.
Lin. spec. 559. *syst.* 404. *Reich.* 2. 287. *Gartn.*
fruct. 2. 204. *Swartz obs.* 176. *Brown. jam.*
 219. 3. *Sloan. jam.* 2. 140. *Raii dendr.* 26.
 (*Grossularia*).
 Leaves quite entire five-nerved ovate-oblong levigated
 acuminate, even about the edge.
12. *Melaetoma discolor*.
Lin. spec. 560. *syst.* 404. *Reich.* 2. 218. *Jacqu.*
amer. 130. *t.* 84. *piet.* 65. *t.* 125. *Plum. ic.*
t. 142. *f.* 1. (*M. procera*. *Swartz*). *Sloan. jam.*
 2. 86. *t.* 198. *f.* 1. (*Grossularia*). *Pluk. phyt.*
t. 264. *f.* 4. (*Arbor americana*).
 Leaves quite entire five-nerved oblong acuminate smooth
 and even at the edge, racemes cymed, flowers eight-
 stamened.
13. *Melaetoma octandra*.
Lin. spec. 560. *syst.* 404. *Reich.* 2. 287. *Os. it.*
 213.
 Leaves quite entire three-nerved ovate smooth hispid at
 the edge.
14. *Melaetoma grossa*.
Lin. syst. 404. *suppl.* 236.
 Leaves quite entire five-nerved subcordate rugged.
15. *Melaetoma crispata*.
Lin. spec. 560. *syst.* 404. *Reich.* 2. 288. *Rumph.*
amb. 5. 66. *t.* 35. (*Funis murænarum*).
 Leaves quite entire five-nerved in fours, branches curled.
Species from Swartz.
 * Ten-stamened, with three-nerved leaves.
16. *Melaetoma procera*.
Swartz prodr. 68. *Plum. ic.* 142. *f.* 1.
 Stem arborescent, leaves three-nerved somewhat toothletted
 smooth, raceme terminating spikes simple erect, calyxes
 truncated.]
17. *Melaetoma patens*.
Swartz prodr. 68.
M. umbellata. *Mill. dict. n.* 10.
 Leaves three-nerved, somewhat toothletted cordate hirsute,
 raceme terminating patulous, flowers distinct twelve-
 stamened.
18. *Melaetoma rigida*.
Swartz prodr. 69.
 Leaves three-nerved somewhat toothletted ovate subcor-
 date rigid rugged behind, panicles terminating fer-
 ruginous-hirsute.
19. *Melaetoma quadrangularis*.
Swartz prodr. 69.
 Leaves three nerved entire ovate-lanceolate smooth, nerves
 coloured, branches quadrangular, raceme straight, ter-
 minating.
20. *Melaetoma scandens*.
Swartz prodr. 69.
 Leaves three-nerved toothletted ovate acute smooth, ra-
 ceme terminating, spikes mostly pointing one way, stem
 climbing.
21. *Melaetoma montana*.
Swartz prodr. 69.
 Leaves three-nerved toothletted oblong acute smoothish,
 raceme terminating with patulous spikes, petals retuse,
 calyx truncated.
22. *Melaetoma trinervia*.
Swartz prodr. 69.
 Leaves three-nerved without any marginal nerve, oblong
 attenuated at the base and tip entire, smooth on both
 sides thinner, racemes almost simple terminating.
23. *Melaetoma ramiflora*.
Swartz prodr. 69.
 Leaves three-nerved entire ovate-lanceolate somewhat rug-
 ged, branches flower-bearing, flowers peduncled some-
 what clustered.
 ** Ten-stamened, with triple-nerved leaves.
24. *Melaetoma prasina*.
Swartz prodr. 69.

- M. laevigata*. *Aubl. guian.*
 Leaves triple-nerved quite entire broad lanceolate smooth,
 panicle terminating spreading very much.
 *** Ten-stamened, with five-nerved leaves.
25. *Melaetoma argentea*.
Swartz prodr. 70. *Sloan. jam.* 2. 84. *t.* 199. *f.* 1.
 (*Grossularia*).
 Leaves five-nerved somewhat toothletted ovate smooth,
 tomentose and white underneath, panicles terminating
 spreading.
26. *Melaetoma elata*.
Swartz prodr. 70.
 Leaves five-nerved ferrate-toothletted oblong coriaceous,
 ferruginous-tomentose underneath, panicles terminating
 spreading, flowers sessile.
27. *Melaetoma Tamonea*.
Swartz prodr. 70.
Tamonea guianensis. *Aubl. guian.* 441. *t.* 175.
Grossularia fructu arbor maxima. *Sloan. jam.* 2. 84.
Pluk. phyt. *t.* 264. *f.* 4.
 Leaves five-nerved oblong-lanceolate acute entire, tomen-
 tose-hairy underneath, racemes compound terminating,
 racemelets brachiate, bractes in pairs under the flowers.
28. *Melaetoma albicans*.
Swartz prodr. 70.—an, holosericea. *Vahl ecl.* 1. 42.
 Leaves five-nerved entire ovate acute smooth above, to-
 mentose whitish-ferruginous underneath, racemes ter-
 minating erect, flowers clustered sessile.
29. *Melaetoma impetolaris*.
Swartz prodr. 70.
 Leaves five-nerved toothletted subsessile oblong acuminate
 coriaceous tomentose-ferruginous underneath, panicles
 terminating and axillary erect.
30. *Melaetoma splendens*.
Swartz prodr. 70. *Plum. ic.* 140.
 Leaves five-nerved entire oblong acuminate smooth on both
 sides, shining above, panicles terminating erect.
31. *Melaetoma coriacea*.
Swartz prodr. 70.
 Leaves five-nerved cartilaginous-toothletted ovate wrin-
 kled smooth coriaceous, branches and petioles strigose,
 branches of the panicle four-cornered.
32. *Melaetoma strigillofa*.
Swartz prodr. 71.
 Leaves five-nerved somewhat toothletted subcordate acu-
 minate, strigose-hairy above tomentose underneath, ra-
 cemes axillary solitary, flowers pedicelled clustered.
 **** Eight-stamened, with three-nerved leaves.
33. *Melaetoma fascicularis*.
Swartz prodr. 71.
 Leaves three-nerved entire ovate acute rugged, branches
 flower-bearing, flowers shortly peduncled clustered.
34. *Melaetoma angustifolia*.
Swartz prodr. 71.
 Leaves three-nerved linear-lanceolate entire hoary under-
 neath, branches wand-like, panicles terminating, flowers
 erect.
35. *Melaetoma Micranthus*.
Swartz prodr. 71.
 Leaves three-nerved toothletted oblong acute smooth, ra-
 cemes axillary reclining, flowers acuminate.
36. *Melaetoma capillaris*.
Swartz prodr. 71.
 Leaves three-nerved somewhat toothletted broad-lanceo-
 late attenuated smooth, peduncles capillary three-flow-
 ered axillary.
37. *Melaetoma rubens*.
Swartz prodr. 71. *Brown. jam.* 219. *n.* 8.
 Leaves three-nerved toothletted ovate-lanceolate acuminate
 very smooth, branches and petioles coloured, raceme ter-
 minating, flowers clustered dioecous.
38. *Melaetoma purpurascens*.
Swartz prodr. 71.
 Leaves three-nerved entire oblong acute striated very
 smooth, racemes lateral patulous, flowers distinct.
39. *Melaetoma glabrata*.
Swartz prodr. 71.
 Leaves three-nerved somewhat toothletted ovate acute
 smooth coriaceous, peduncles terminating solitary one-
 flowered.

40. *Melaetoma alpina*.
Swartz prodr. 71.
Leaves three-nerved entire ovate coriaceous smooth, peduncles simply trichotomous, flowers distinct.
41. *Melaetoma hirsuta*.
Swartz prodr. 72.
Leaves three-nerved somewhat toothletted broad-lanceolate attenuated hirsute, peduncles axillary three-flowered divaricated.
42. *Melaetoma hirtella*.
Swartz prodr. 72.
Leaves three-nerved hispid at the edge, peduncles very short axillary three-flowered.
43. *Melaetoma microphylla*.
Swartz prodr. 72.
Leaves three-nerved somewhat toothletted ovate obtuse, hispid above, tomentose underneath, peduncles trifid axillary.
44. *Melaetoma tetrandra*.
Swartz prodr. 72.
Leaves three-nerved entire oblong acuminate emarginate at the base smooth somewhat convex, raceme erect terminating, flowers four-stamened.
***** Eight-stamened, with triple-nerved leaves.
45. *Melaetoma virgata*.
Swartz prodr. 72.
Leaves triple-nerved entire ovate lanceolate acuminate very smooth, branches flower-bearing, racemes decussated diffused scattered.
46. *Melaetoma Eleagnoides*.
Swartz prodr. 72.
Leaves triple-nerved entire broad-lanceolate whitish-tomentose underneath, peduncles terminating trichotomous, flowers solitary.
***** Eight-stamened, with five-nerved leaves.
47. *Melaetoma umbrosa*.
Swartz prodr. 72.
Leaves five-nerved toothletted broad-ovate acuminate rough-haired on both sides, branchlets flower-bearing, racemes dichotomous spreading, branches and petioles hirsute.
48. *Melaetoma pilosa*.
Swartz prodr. 72.
Leaves five-nerved toothletted oblong acute hirsute underneath, racemes lateral hirsute.
49. *Melaetoma hispida*.
Swartz prodr. 72.
Leaves five-nerved somewhat toothletted ovate acute, strigose-hirsute above, netted-tomentose underneath, panicles terminating divaricated.
50. *Melaetoma aquatica*.
Swartz prodr. 73. Aubl. guian. 430. t. 169.
Leaves five-nerved cordate acute crenulate, rough-haired above, even underneath, panicles terminating trichotomous diffused.
From Forster.
51. *Melaetoma glabra*.
Forst. flor. austral. n. 194.
Leaves quite entire three-nerved elliptic-lanceolate rugged, calyxes cut round.
From Vahl.
52. *Melaetoma grandiflora*.
Vahl symb. 3. 59. Aubl. guian. 414. t. 160.
Leaves cordate five-nerved serrulate, both they and the stem rough-haired, peduncles bifid, five stamens barren.
* Twelve-stamened.
53. *Melaetoma calyptrata*.
Vahl ecl. 1. 40.
Leaves elliptic-lanceolate attenuated three-nerved smooth obsoletely toothletted, flowers paniced.
** Ten-stamened, with three-nerved leaves.
54. *Melaetoma aromatica*.
Vahl ecl. 1. 41.
Tibouchina aspera. Aubl. guian. 445. t. 177.
Leaves ovate shining, somewhat hairy underneath, nerves and stem strigose, calyxes with imbricate bractes at the base.

55. *Melaetoma crenata*.
Vahl ecl. 1. 41.
Hispid, leaves subcordate oblong crenate acuminate, racemes axillary few-flowered the length of the petiole.
56. *Melaetoma decussata*.
Vahl ecl. 1. 42.
M. racemosa. Aubl. guian. 406. t. 156?
Leaves lanceolate-oblong serrulate ciliate very smooth above, spikes racemed two-parted, flowers clustered.
*** Ten-stamened, with five-nerved leaves.
57. *Melaetoma elegans*.
Vahl ecl. 1. 44. Aubl. guian. 427. t. 164.
Hispid, leaves cordate unequally crenate-toothed, racemes in the forkings and terminating few-flowered.
58. *Melaetoma physiphora*.
Vahl ecl. 1. 45.
Tococa guianensis. Aubl. guian. 437. t. 174.
Leaves ovate attenuated toothletted ciliate, petioles hispid bladdery at the tip.
59. *Melaetoma capitata*.
Vahl ecl. 1. 45.
Leaves broad-lanceolate quite entire, heads terminating involucred, branches four-cornered, filaments appendicled.
*** Eight-stamened, with three-nerved leaves.
60. *Melaetoma triflora*.
Vahl ecl. 1. 46.
Leaves elliptic-lanceolate quite entire, branches petioles and calyxes strigose, flowers axillary subpeduncled in threes.
**** Eight-stamened, with triple-nerved leaves.
61. *Melaetoma acuminata*.
Vahl ecl. 1. 47.
Leaves ovate outwardly toothletted acuminate hoary underneath, corymbs terminating fastigate.
62. *Melaetoma verticillata*.
Vahl ecl. 1. 47.
Leaves ovate oblong attenuated toothletted villose rugged above, racemes axillary, flowers in whorls.
63. *Melaetoma lateriflora*.
Vahl ecl. 1. 48.
Leaves obovate acuminate setaceous-subferrate smooth, peduncles intrafoliaceous aggregate one-flowered.
***** Eight-stamened, with five-nerved leaves.
64. *Melaetoma coccinea*.
Vahl ecl. 1. 48.
Leaves elliptic-ovate acuminate smooth quite entire, thyrses terminating, peduncles and pedicels knotted hispid.
65. *Melaetoma sessiliflora*.
Vahl ecl. 1. 49.
Villose-subtomentose, leaves lanceolate-ovate toothletted subpetioled, flowers axillary sessile in a sort of whorl.
From Loureiro.
66. *Melaetoma septemnervia*.
Lour. cochinch. 273. ed. Willd. 335.
Leaves seven-nerved quite entire lanceolate-ovate hispid.
67. *Melaetoma dodecandra*.
Lour. cochinch. 274. ed. Willd. 336.
Leaves five-nerved quite entire smooth, flowers twelve-stamened.

DESCRIPTIONS, &c.

These are trees or shrubs. Leaves opposite, strongly nerved at the back. Flowers oppositely corymbed, paniced or spiked, axillary and terminating, sometimes (as in n. 3. 12. 33 to 50. 60 to 65.) four-petalled and eight-stamened with a four-celled fruit. Species 53. and 67. have twelve stamens. Calyx in most of the species contracted above the fruit, and prominent beyond it, in some equal to the truncated fruit and not contracted. The petals in some are appendicled on one side. Germ, according to Linneus, wrapped up in the calyx; according to Jacquin subinferior;—to Gærtner, superior; or as Aublet says, sometimes inferior, sometimes superior. Aublet mentions some with a three-celled, others with a two-celled fruit, some with a capsular fruit divisible into valves, some with a calyx two-bracted on the outside, some with an herbaceous stem more allied

allied to *Rhexia*, one with five barren stamens, one with a ten-toothed calyx. This genus has now been augmented so much by modern discoveries, that it requires farther examination, and perhaps to be distinguished into several genera. *Fothergilla* of Aublet belongs to this genus^a. *Melastoma* is distinguished from *Rhexia* principally by the fruit, which in the former is a berry, in the latter a capsule. Number is no criterion in this genus. These trees are chiefly natives of the West Indies; some few of the East Indies.]

1. This becomes a large tree, having many crooked branches, covered with a brown bark. Leaves smooth, entire, above five inches long, and two broad in the middle, with three deep veins running through them; both sides are of a light green, the edges are sharply indented, and they end in acute points. The fruit grows in loose spikes at the end of the branches, is thinly placed in the spikes, and of a violet colour.

[Native of South America. It is an obscure species. Sloane's plant, assigned to this by Linneus, belongs to *M. argentea* of Swartz^b, n. 25.

2. This was found in Surinam by Bartsch^c. Mr. Miller has one under this name, but he refers to the third species, which is not this plant.

3. Stem shrubby, scarcely a fathom in height, branched, hirsute: branches erect, round, hirsute. Leaves larger, subdecussate, ovate, attenuated, blunt, toothletted, triple-nerved, rugged with papillas which terminate in a hair and are excavated underneath, hirsute-tomentose. Petioles long, loose, round, thick, hirsute. Flowers axillary, very much clustered, sessile, extremely minute, whitish red, eight-stamened. Calyx four-cleft, purple, hirsute, with the hinder segments awl-shaped, minute. Petals four, scarcely larger than the calyx, lanceolate, acute, spreading, white. Filaments eight longer than the corolla, knee-jointed. Anthers linear, acute. Germ inferior, covered by the calyx. Style columnar, thickish. Stigma blunt. Berry minute, roundish, surrounded and crowned by the calyx, hirsute, rufous, four-celled.—Native of the cooler mountains of Jamaica, flowering in november and december^d.

4. Stem shrubby, a fathom in height, hispid. Branches upright, hirsute, round; branchlets ferruginous-hispid. Leaves ovate or ovate-lanceolate, acuminate, toothletted, five-nerved, wrinkled, soft, very hirsute. Petioles longish, round, hirsute. Flowers axillary and terminating, largish: peduncles very short, aggregate, (three or four) hirsute. Calyx five-cleft, hirsute with blood-red hairs: segments ovate, augmented behind with linear, acute, erect, hirsute segments. Petals five, ovate, white. Filaments ten, inserted into the calyx within, short. Anthers oblong, bifid. Germ ovate. Style thick, round. Stigma blunt, concave. Berry clothed and crowned by the calyx, hirsute, blue, five-celled.

It varies with a six-cleft calyx, six petals, twelve stamens, and a six-celled berry.

Native of the woody mountains of Jamaica, flowering in spring and autumn^e.

5. This is a stiffish shrub. Leaves on short petioles, ovate, five-nerved, even, ferrate, ciliate, netted, very brittle. Raceme terminating, brachiate; racemelets trifid, floriferous from the base. Flowers directed one way, upright. Anthers in the bottom of the umbilicus, ten. Fruits larger, globular, like peas, smooth, with an excavated umbilicus—smaller, with the umbilicus closed by five scales.

Found at Surinam by Dalberg^f. Probably also native of Mexico and Brasil, if it be Texauatl of Hernandez, and Coa-ghiyryo of Marcgraaf, and Piso, as Vahl supposes from consulting Marcgraaf's specimen.

6. In Herman's specimen, the leaves of *M. malabathrica* are narrower, more smooth, three-nerved. Calyxes less hispid, collected into racemes, not terminating the stem, as in that^g. Calyx cylindric-urceolate, obsoletely grooved, smooth. Capsule ovate, slightly narrowing upwards, five-celled, opening by

five clefts at top, the edges of the clefts bent back, inso-much that a careless observer might suppose there were ten apertures. Seeds very small^h.—Native of the East Indies.

7. Stem shrubby, rough-haired, with membranaceous corners. Leaves cordate at the base, acuminate, whitish underneath, nine-nerved with three nerves thicker. Racemes opposite, subdivided, with a sessile flower in the forkings; the last pedicels three-flowered. Corollas rather large. Calyx oblong, five-cleft: segments lanceolate, acute. Petals five, obovate roundish, blunt, spreading, longer than the segments of the calyx, violet-purple. Filaments ten, the length of the corolla, filiform, purple. Anthers very long, sickle-shaped. Germ oblong. Style long, curved. Stigma thickish. Fruit a berryⁱ.

Swartz affirms that the plant thus described is the same with *M. holofericea* in the Linnean herbarium. Vahl informs us that Linneus confounded two different species under this name; the first described by him from the specimen in Clifford's herbarium; the second received many years later, which from some resemblance he took to be the same. The plant described by Vahl is the same with that which is described by Linneus in the Species Plantarum, and different from that which is described above from Swartz, and is in the Linnean herbarium.—Native of Jamaica and Brasil.

8. This is a shrub with the stem rugged from strigæ pressed close to it. Leaves subpetioled, strigose above, the nerves only strigose underneath. Peduncles opposite or terminating, one-flowered, drooping, generally two-leaved. Calyx very strigose. Corolla purple.—Found in New Granada by Mutis^k.

9. Native of Jamaica.

10. This is a tree with rugged branches. Leaves petioled, broad-lanceolate, rugged above with stiffish bristles, beneath chiefly on the nerves, scarcely ferrate on the edge except by stiffish bristles as on the upper surface; five distinct nerves run from the base to the top, the outermost of which is near the edge. Calyxes at the tops of the branches, hispid with whitish bristles^l. Capsule clothed with the urceolate calyx, rugged with rigid bristles pressed close, ovate, five-celled, opening at top by five clefts: cells stuffed with a soft dark blood-red pulp. Seeds numerous, small, kidney form-globular, of a dun colour^m.—Native of the East Indies.

11. This is an upright shrub, the height of a man. Stem smooth and even. Branches upright, from round angular, smooth and even. Leaves petioled, opposite and decussate, lanceolate-ovate, smooth on both sides, very thin, sometimes wrinkled a little underneath, somewhat shining, deep green. Racemes terminating, compound, erect, paniced: branches opposite, decussate; branchlets also opposite: flowers clustered, on short pedicels, white, small. Calyx superior, five-toothed: teeth blunt, short. Petals five, inserted below the teeth, subsessile, roundish, entire. Filaments ten, fixed to the calyx below the petals, longer than the corolla, knee-jointed. Anthers erect, perforated at the top. Germ roundish. Style erect, longer than the stamens. Stigma thickish, truncate, concave. Berry roundish, at first white, then blue and at length black, five-celled, with a very dark blue juiceⁿ. According to Gærtner, the fruit is globular, grooved, the size of the common red Currant. Seeds large in proportion to the size of the fruit, angular, lucid, yellowish with a broad dark spot at the umbilicus. Embryo subcylindric, subspiral, making a turn and half.—Native of Jamaica.

12. This tree is about fifteen feet high, with sub-reclining, ash-coloured branches, the younger ones tomentose. Leaves sometimes very slightly crenate at the edge, green and smooth above, tomentose and yellowish underneath, petioled, the inner nerves uniting before they arrive at the base. Racemes branched, tomentose, terminating, in pairs. Flowers small, void of scent, yellow. Calyx four-toothed. Petals four,

^a Jussieu. ^b Obs. ^c Linn. spec. ^d Swartz obs.
^e Idem. ^f Linn. suppl. ^g Linn. zeyl.

^h Gærtner. ⁱ Swartz. ^k Linn. suppl.
^l Linn. zeyl. ^m Gærtner. ⁿ Swartz.

twice as long as the calyx. Germ roundish, tomentose, subinferior. Style longer than the stamens. Berry subglobular, four-celled. Seeds very small, nestling. Juice of the berry purple.—Native of the West Indies, flowering in march.

13. Native of the East Indies.

14. This is a tree with stiffish, round, hispid branches. Leaves cordate, ovate, stiffish with hairs, very thick and tomentose. Flowers at the ends of the branches, subsessile. Calyx stout, strigose with hairs. Corolla a little hairy on the outside.—Found in New Granada by Mutis^p.

15. This shrub, when alone, grows erect, and throws out long branches, which lie on the next trees or shrubs; when it is next to a tree, it shoots right up, and fixes itself into the bark by fibres, at the same time throwing out its long lateral branches.—Native of Amboina^q.

16 to 50. We have here a prodigious harvest of new species found by Swartz in the West Indies. N. 24. in Jamaica, Hispaniola, &c. N. 25, 27, 29, 32, 34, 40, 43, 46, 49, 50, are natives of the West Indies in general. N. 30. of Hispaniola. N. 31. of Montserrat. N. 47. of St. Christophers: and all the rest of Jamaica. I have to lament that the descriptions are not yet published, or at least not arrived in England.

Aublet has twenty-one species under the name of *Melaetoma*, besides others under different names. Some of these are the same with those of Swartz.

24. *M. prasina* is *M. laevigata* of Aublet, who thus describes it. Trunk four inches in diameter, and five or six feet high, with a whitish, solid, compact wood. Branches and twigs from the top, long, four-cornered. Leaves pale green, slightly toothed at the edge, ending in a point, five-nerved; nerves red. Flowers very small. Petals five, white. Filaments ten. Berry blue, small, not very succulent, four or five-celled.—Native of the West Indian islands and Guiana.

25. Trunk as thick as the human thigh, with a russet-coloured bark almost smooth, very straight, and twenty feet high. Branches and twigs opposite, square. Leaves sessile, a foot and half long, and half as broad in the middle, very green above, white beneath and smooth, having five large ribs. Flowers white^r.

27. This is a middle-sized tree, with a trunk four or five feet high, and four or five inches in diameter, covered with a gray bark. Wood white and brittle. Branches long, subdivided, red, having four blunt corners. Leaves decussated, yellowish green above, slightly downy and tawny underneath: the largest are six or seven inches long, and three wide. Petiole an inch long, channelled above, convex beneath. Calyx five-toothed, red, with two small leaves or scales at the base. Petals five, white, with a yellow or red claw. Filaments ten, yellow. Anthers two-celled, each of which opens by two valves, and at the base on the outside is a gland. Berry not very succulent, three-celled.—Native of Cayenne and Guiana^s.

28. *Melaetoma holosericea* of Vahl may probably be the same with *M. albicans* of Swartz.

50. Height about three feet. Stem four-cornered, with russet hairs, throwing out very slender branches from the top. Leaves decussated, with a very short russet down above, smooth underneath, with five and sometimes seven nerves. Petiole short, villose, channelled above and convex beneath. Calyx divided into five sharp lobes. Petals five, white. Filaments ten, on a red disk, red. Anthers two-celled. Capsule five-celled, and opening at top by five valves.—Native of Cayenne^t.

51. Native of the Society Isles. Found in may 1774.

52. Branches herbaceous, four-cornered, rough-haired, as is the whole plant. Leaves two inches long, a little attenuated, five-nerved besides those on the edge, very seldom seven-nerved, soft on both sides with abundance of distinct hairs. Petioles an inch long. Peduncles axillary, opposite, longer than the leaf, once

or twice bifid at top. Pedicels one-flowered; a flower in the forking shortly peduncled. A petioled leaf on each side at the divisions of the peduncle, of the same structure with the stem-leaves, but smaller. Flowering calyx oblong, with five linear-subulate segments, longer than the calyx itself, smooth within. Petals five with short claws. Filaments ten, five at the bottom of the calyx, on one side longer, stronger, antheriferous, the length of the corolla, one knee-jointed longer than the rest; five more slender, inserted into the claws of the petals, shorter, without any anthers. Anthers stout, attenuated into an awl-shaped beak thickened at top. Style the length of the stamens. Capsule globular, smooth, the size of a pea, with a slender groove and two raised lines.—Cayenne, von Rohr^u, and Aublet.

53. Branches four-cornered, smooth. Leaves opposite, from four to six inches long, spreading very much, sharp at both ends, obscurely toothed outwards, smooth on both sides, having three besides the marginal nerves. Petioles two inches long, subtriquetrous. Panicle terminating, erect, a palm in length: branches spreading, the lowest four, the rest opposite, smooth, trichotomous, jointed, as is also the common peduncle: joints a little widened at the tip; branchlets divaricated, three-flowered. Flowers pedicelled, calyptred: calyptre conical, acute, transversely deciduous. Calyx the size of Coriander seed, truncate, even, very smooth, greenish ash-colour. Petals five, oblong, yellow. Stamens twelve or thirteen, the length of the corolla. Anthers linear, blunt at both ends, yellow on the back, pale at the edge, subemarginate at the base.—Found at Montserrat by Ryan.

54. Branches roundish at bottom, obscurely four-cornered at top, covered with strigas pressed close and subferruginous, rugged: branchlets floriferous, opposite, four-cornered, strigose. Leaves opposite, an inch long or a little more, acute, three-nerved, subtriplicate; the younger ones hairy on both sides, those which are more advanced shining above, very finely striated, smooth except in the middle between the nerves and towards the edge; paler underneath, more rugged and hairy; hairs on the younger leaves broad at the base, ending in a bristle, vanishing with age. Petiole very short, channelled above, convex beneath, strigose. Peduncles from the upper axils, solitary, opposite, at the ends of the branchlets and branches in threes; the lateral one-flowered, the middle three-flowered, the flowers on short pedicels. Bractes six, imbricate, ovate, mucronate, shorter than the calyx, covered with strigas. Calyx oblong, covered with close-pressed strigas, broader and longer than in the rest of the plant; segments five, awl-shaped, erect, smooth within. Petals five, one larger than the rest, wide, rounded, purple. Stamens ten, below the insertion of the petals.—Found in Guiana by von Rohr and Aublet.

55. Branches round, purplish, as are also the petioles, peduncles and calyxes rendered hispid by rufescent hairs. Leaves opposite, two inches long, subhispid with yellowish hairs, especially about the edge, cut out at the base into a small sinus, with a short blunt point, having three nerves besides the marginal ones, meeting below the point, paler underneath. Petiole short, channelled above, keeled underneath. Racemes commonly solitary, but sometimes in pairs, scarcely longer than the petiole, five-flowered: pedicels opposite, spreading very much, one-flowered. Calyx oblong: segments five, bristle-shaped. Petals oblong. Stamens ten, the length of the corolla. Anthers linear, acute, bluntish at the base. Berry the size of black Pepper.—Native of South America.

56. Branches obscurely four-cornered, smooth, above between the petioles hairy, even, purplish. Leaves opposite, remote, decussated, from two to three inches in length, and sometimes a little longer, a little acuminate, three-nerved besides those at the edge; above even, veinless, purplish at the edge; beneath smooth, except that rufescent hairs are scattered over the nerves, between the nerves very finely remotely and simply veined, veins commonly quite smooth, and purplish

^p Jacquin. ^p Linn. suppl. ^q Rumphius. ^r Sloane.
^s Aublet. ^t Idem.

^u Vahl symb.

as are the nerves. Petioles very short, purplish, channelled above, rough-haired about the edge, but especially towards the tip. Racemes terminating with a branchlet growing out beyond, solitary, brachiate, four inches long. Common peduncles compressed-four-cornered, subvillose at top; partial opposite, very short, two-parted: a minute bracte under the ramifications and each flower. Flowers clustered, smooth, on the upper side of the branchlet. Calyx obsoletely five-lobed, the size of Mustard seed. Petals five, wedge-form. Stamens ten, the length of the corolla. Anthers curved inwards, bright purple at the sides, whitish within and at the tip, brown on the back, a little longer than the petals. Style the length of the stamens.

Vahl regards the species figured by Aublet t. 156. as the same with this, but it is probably different. He also doubts whether *M. ciliata*, act. soc. hist. nat. par. 1. 109. be different from this.—Found in Cayenne by von Rohr.

57. Branches round, dichotomous, with a brown bark, these with the petioles, both sides of the leaves, peduncles and calyxes hispid with long distinct bristles; those on the branches thicker at the base, rufescent, spreading very much; those on the leaves and other parts pale yellow. Leaves two or three inches long, acuminate, bluntish; the teeth emarginate with a bristle, alternately a little larger, having five nerves besides those at the edge, the inner ones meeting below the point, simply veined between them. Petioles an inch long, grooved above. Peduncles at the forkings and end of the branches, solitary, sometimes in pairs, an inch and half long; pedicels opposite, commonly four, a little thicker towards the flower, spreading very much, short; the lowest often three-flowered, with the middle flower sessile. The five segments of the calyx bristle-shaped; when in fruit it is subovate. Petals five, oblong, short. Stamens ten, the length of the petals. Anthers pale at the edge, waved, awl-shaped, curved in at the base, a little longer than the filaments. Berries a little smaller than black Pepper.—Found by von Rohr and Aublet in Cayenne.

58. Branches purplish, alternately compressed towards the top, the angles hispid with long spreading purple bristles, the sides smooth and even. Leaves remote, a foot long, five-nerved, the tender ones three-nerved, transversely veined, somewhat netted, marked with lines above along the veins, and having a few yellow hairs scattered between them; they are pale green underneath, with the nerves and veins standing out and purple, the larger ones are pubescent. Petioles two inches long, flat, striated, hispid at the edge, terminated at top by an obovate bladder, an inch long, with some bristles scattered about it. Raceme terminating, upright, a palm or somewhat more in length, subcompounded. Common peduncle alternately compressed, somewhat angular by means of a raised decurrent line, purple, seldom hispid; to the partial peduncles a little wider. Partial peduncles opposite, short; the lowest trifid, the lateral pedicels one-flowered, the middle one three-flowered; the rest three-flowered, with the middle flower sessile. Calyx turbinate, purple, very short, five-toothed, having a few long hairs scattered about the sides and edge. Petals five, roundish. Stamens ten, the length of the corolla. Anthers short, a little longer than the filaments, awl-shaped, purple on the back and at the top, pale about the edge. Style the length of the stamens. Stigma flattened out, orbiculate, a little convex above. Found in Cayenne by von Rohr, in Cayenne and Guiana by Aublet, who fond of multiplying genera, makes this a distinct genus by the country name of Tococa.

59. The branches seem to be scandent; they are acutely four-cornered, compressed at top, with strigose ruggedish angles. Leaves two or three inches long, attenuated, acute, obtuse at the base, five-nerved, having close-pressed hairs scattered over the upper surface, with a small impression to each hair, by no means rugged, greenish yellow underneath, smooth except on the nerves and at the edges, where they are hairy. Petioles short, flat, hairy. Peduncle terminating, erect,

an inch long or more. Flowers five or six, collected into a head, sessile. Involucre four-leaved; the two outer leaflets lanceolate, an inch and half long; the two inner ovate, shorter by half; all coloured at the base, the rest very like the leaves, generally five-nerved. Bracte at the base of each flower, membranaceous, lanceolate, almost the length of the calyx, hairy at the back. Calyx smooth, tubular, surrounded at the base by long gray hairs, submembranaceous, nerved, short, five-cleft; segments lanceolate, attenuated, subciliate. Petals five, oblong, shorter by half than the calyx. Stamens ten, longer than the corolla: at the top of the filaments are two little bodies, which are oblong, subpedicelled, yellow, blunt, appendicled: anthers the length of the filaments, linear, acute, yellow, brown at the back, straight. Germ oblong, crowned by many bristles. Style filiform, the length of the stamens.—Native of the West Indies, where it was found by Schumacher, a Danish surgeon.

60. Branches obtusely quadrangular, covered at top, as are also the petioles and calyxes, with frequent close-pressed bristles. Leaves three inches long and more, attenuated to both ends, acute, three-nerved, besides those along the edge, with yellowish close-pressed bristles along the nerves and veins, those on the branches a little narrower, scarcely rugged, pale green underneath. Petioles short, roundish. Flowers commonly three at each axil, on very short peduncles. Calyx turbinate, obscurely four-toothed. Petals four, ovate. Stamens eight, shorter than the corolla. Anthers short, linear-oblong, blunt, purple, dusky-purple on the back.—Native of the Caribbee islands*.

It differs from *M. fasciculata* of Swartz, in having broader leaves, rugged above, with soft hairs underneath; flowers infrastoliateous on longer peduncles several; calyxes smaller, smooth.

61. Branches roundish at bottom, four-cornered towards the top, hoary with meal, dilated below the leaves. Leaves from three to five inches in length, those next the corymb lanceolate, below quite entire; the upper surface very smooth and even, hoary underneath except the marginal nerves springing from the base, veins simple remote, the nerves of the more advanced leaves yellowish; the younger leaves mealy. Petioles and peduncles mealy, flat above, keeled underneath. Corymbs terminating, trichotomous, fastigiate. Universal peduncles in threes, compressed, as are also the partial ones, jointed, with the joints wider at top. Calyx yellowish green, somewhat mealy, globular at the base, contracted above: border somewhat flattened out, obscurely four-lobed. Petals four, oblong, yellow. Stamens eight, a little longer than the corolla. Anthers linear, yellow at the back, whitish at the edge.—Found in Montserrat by Ryan.

62. Branches softly and closely villose, four-cornered, jointed; joints three inches long, gradually shorter upwards, channelled alternately on the opposite sides, by a narrow membranaceous edge standing out. Leaves four or five inches long, triple-nerved besides those on the edge which spring a little above the base, very finely toothletted, ciliate, villose on both sides, especially underneath on the midrib and nerves, rugged above with raised dots, underneath not dotted, less rugged, paler. Petioles closely villose, short, roundish. Peduncles from the alternate axils, solitary, two inches long. Flowers six in each whorl, remote, the lower pedicelled, the upper sessile. Pedicels one-flowered, sometimes two-flowered; the lowest longer, unequal. Calyx four-cleft, villose; segments linear-lanceolate, short, reflex. Petals four, lanceolate, small. Stamens eight, a little longer than the petals. Berry globular, three times the size of Mustard seed.—Native of the Caribbee islands*.

63. Stem from two to three feet high. Branches round below, four-cornered above, dichotomous, smooth, purplish. Leaves above on the branches, from two to three inches long, oblong, attenuated at the base, subcoriaceous, a little reflex at the edge, the serratures very minute, remote, ending in a short bristle, pressed close to the margin of the leaf, which is triple-nerved,

* Forsyth.

* Idem.

smooth on both sides, pale underneath, somewhat rugged. Petiole an inch long, somewhat channelled above, convex underneath. Peduncles six or seven, short. Flowers small. Calyx truncated, substrigose when examined with a glass. Petals four, small, ovate, attenuated. Stamens eight, the length of the petals. Anthers rufous, paler at the edge, oblong, blunt at both ends, the length of the filaments. Style longer than the stamens. Stigma blunt, subcapitate. Berry the size of Coriander seed, globular, when examined with a glass appearing to have strigose close-pressed hairs thinly scattered over it.—Found in the island of Montserrat, towards the tops of the mountains, by Ryan.

64. Branches obscurely quadrangular, trifid, smooth below, above subhispid with gray scattered curled hairs, as are also the petioles and peduncles. Leaves three inches long, smooth on both sides, even, having frequently minute white dots scattered over the upper surface, especially the younger ones; underneath pale green, netted-veined, nerves and veins yellowish: the younger ones marked with lines above along the transverse nerves. Petioles ciliate, smoother and thicker towards the base. Thyrses brachiate, a palm in length. Partial peduncles opposite, as are the common peduncles at the ramifications knotty, the younger ones dirty gray with short hairs, once, twice, seldom thrice trichotomous, the last branch three-flowered. Pedicels short. A lanceolate leaf on each side beneath the lowest ramifications of the thyrses. Bractes bristle-shaped. Calyx commonly four-lobed, dotted with white, smooth: lobes rounded. Petals four, oblong, smooth. Stamens eight. Style longer than the corolla.

Ryan, who discovered it in Montserrat, observes that it is a very beautiful shrub, from four to six feet high, with a regular head like an Orange tree. The large scarlet flowers, in thyrses, cover the whole head. The leaves are wrinkled; and the flowers are sometimes white.

65. Branches obtusely quadrangular, tomentose with close curled ferruginous hairs, gray-rufescent at top. Leaves on very short petioles, from two to three inches long, bluntish at both ends, very finely toothletted, above somewhat wrinkled and rugged, underneath soft, yellowish gray, with five nerves besides those on the edge; the younger leaves are gray-tomentose on both sides. Flowers three or four on each side, small. Calycine segments four, ovate, small, villose on the outside. Petals four, oblong. Stamens eight, the length of the corolla. Anthers linear-oblong, purple, almost the length of the filaments. Berry globular, the size of Coriander seed.—Found by von Rohr in the West Indies².

66. Stem shrubby, six feet high, upright, round, hispid, with spreading branches. Leaves hairy on both sides, rugged, petioled. Flowers large, red-purple, on many-flowered, upright, terminating peduncles. Calyx five-cleft. Petals five, rounded, spreading. Filaments ten, brown, bent back, with a long tail hanging down. Berry calycine, ovate, hispid, juiceless, five-celled. Seeds many, ovate, very small, without any pulp.—Common in Cochinchina.

Fragarius niger of Rumphius, which Linneus assigns to his *malabathrica*, scarcely differs from this except in the number of nerves. *M. grandiflora* of Aublet (n. 52.) which is seven-nerved, is very nearly allied to this, but differs in having the base of the leaves cordate, and the stamens unequal.

67. This is a small shrub, about ten inches high, upright, even. Leaves ovate. Flowers rose-coloured, on few-flowered, terminating peduncles. Stamens twelve, six of which are bent back and have tails; the six other interior ones are upright, awnless, all fertile. Berry roundish, crowned with the segments of the calyx, five-celled, many-seeded.—Native of China about Canton, and Cochinchina.

It differs from *M. lævigata* and *discolor* more in stamens than leaves^{*}.

Gærtner remarks, that the fruit in this genus being so various, some species bearing genuine berries, others

capsules differing in situation and number of cells, the essence of it, so far as concerns the fruit consists in the seeds being void of any albumen, and lying in a soft pulp without any proper receptacle, and having a curved embryo.

We are cautioned by Ryan, to whose diligence we owe many of the species from the West Indies, not to attend too much to the smoothness or hairiness of the leaves in this genus, that of *Psychotria*, and other inhabitants of mountains; because they vary much in this respect, according as they grow in a rich soil and peaceful valley, or on a rugged brow exposed to winds and weather.]

Mr. Miller has eighteen species, natives of the warm parts of America, where he says there are many more species. Most of those which he has mentioned were found by Dr. Houstoun in Jamaica, whence he sent many of the seeds to Europe, some of which succeeded; but most, if not all the plants which were raised from them were lost in the severe winter of 1740, since which time they have not been recovered in Europe. There is great beauty in the diversity of leaves in these plants; many of them are very large, and most of them are of different colours on the two surfaces, their under side being white, gold colour, or russet, and their upper of different shades of green. Their flowers have no great beauty, but for the singularity of the leaves, they deserve a place in all curious collections.

[Mr. Miller's species are so confused, that it would be difficult to ascertain any of them, if many of his specimens did not yet exist in the Banksian herbarium.]

1. *Melaetoma Plantaginis folio*; as he calls it. His references are the same with those which Linneus puts to his *M. Acinodendron*, which is very different from this. Miller thus describes it.] It rises four or five feet high, the stem and branches being covered with long russet hairs. Leaves five inches long and two broad, covered also with the same russet down; having five ribs running from end to end, but the three inner join before they reach the base, with small transverse ribs. The fruit is produced at the end of the shoots; it is a pulpy blue berry, as large as a nutmeg.

5. [*M. grossularioides* of Miller seems to be the same with *M. lævigata* of Linneus, our eleventh species.] It seldom grows more than seven or eight feet high, spreading out into many slender branches, covered with a smooth purple bark. Leaves lanceolate, five inches long, and two broad in the middle, smooth on both sides, entire, acute pointed. The flowers are produced in pretty long hanging bunches, of an herbaceous colour, with styles stretched out a good length beyond the petals, and permanent. Fruit small, black when ripe.

6. *M. bicolor*, rises four or five feet high, dividing into many slender branches, which are smooth. Leaves lanceolate, three inches long and one inch and a quarter broad, of a lucid green on the upper side, but white on the under, having three ribs which join before they reach the base, they are entire and placed alternately on the branches. The flowers are produced in a loose panicle at the end of the branches; they are small, white, and have pretty long tubes. Fruit small, purple.

7. *M. malabathrica* [very different from the plant of the same name in Linneus. Thus described by Miller.] Stem angular, six or seven feet high, sending out branches opposite. Leaves lanceolate, oval, rough, hairy, dark green on the upper side, but pale green on the under. The flowers are produced at the end of the branches, two or three standing together; they are large, and of a rose colour, inclining to purple, sitting in large hairy calyxes: these are succeeded by roundish purple fruit, crowned by the calyx, and filled with a purple pulp surrounding the seeds.

8. [*M. lævigata* of Miller is the same with *M. argentea* of Swartz, our n. 25.]

10. *M. umbellata* of Miller is the same with *M. patens* of Swartz, our n. 17.] Stem shrubby ten or twelve feet high, covered with a hairy bark, and dividing into many branches towards the top. Leaves heart-shaped ending in acute points; they are five inches

² Vahl Eclogæ,

^{*} Loureiro.

inches long and three broad towards the base, entire, dark green above and hoary underneath, with five longitudinal nerves, and many smaller transverse ones; they stand upon hairy footstalks, two inches and a half in length. The flowers are produced at the end of the branches in a sort of umbel; they are of a pale rose-colour, and pretty large, sitting on hairy calyxes, and succeeded by small black fruit, a little larger than Elder-berries.

[There are also specimens of his eleventh species *M. racemosa*, of his twelfth, *M. verticillata*, of his acuta, n. 13., of his glabra, n. 14., of his quinque-nervia, n. 15., and of his octandria, n. 16.: but whether these correspond with any of the species already set down from Swartz or Vahl, or are distinct from them I cannot determine. Miller's octandria may perhaps be the same with *fragilis* of Linneus's Supplement.]

PROPAGATION AND CULTURE.

The best way to obtain these plants is to have the entire fruits put up in dry sand as soon as they are ripe, and forwarded by the quickest conveyance. They should be taken out as soon as they arrive, and the seeds sown in pots of light earth, and plunged into a moderate hot-bed of tanner's bark. When the plants come up, and are fit to remove, plant each in a small pot of light earth, plunging them into the tan-bed. Afterwards treat them in the manner directed for ANNONA.

[MELEAGRIS. See *Fritillaria*.

MELENOMPHALE. See *Ornithogalum*.]

MELIA. (*Melia* of Dioscorides. The wood fit for spears, commonly translated the Ash-tree.)

Lin. gen. n. 527. Reich. n. 576 Schreb. n. 724.

Gärtn. t. 180. Juss. 265. Cavan. diff. t. 207.

Class. 10. 1. Decandria Monogynia.

Nat. order of Tribilatae. *Meliæ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, very small, five-toothed, upright, blunt.

COR. Petals five, linear-lanceolate, spreading, long.

Nectary cylindric, one-leaved, the length of the corolla, with a ten-toothed mouth.

STAM. Filaments ten, very small, inserted within the apex of the nectary. Anthers not exceeding the nectary, oblong.

PIST. Germ conical. Style cylindric, the length of the nectary. Stigma capitate, with five converging valves.

PER. Drupe globular, soft.

SEED. Nut roundish, five-grooved, five-celled.

ESSENTIAL CHARACTER.

Cal. five-toothed. Pet. five. Nect. cylindric, bearing the anthers at its mouth. Drupe with a five-celled nucleus.

SPECIES.

1. *Melia Azedarach*. Common Bead-tree.

Lin. spec. 550. Reich. 2. 271. hort. cliff. 161. 1.

f. zeyl. n. 162. Gron. orient. 133. Kniph.

cent. 2. n. 44. Cavan. diff. 7. 363. t. 207.

Azedarach. Dod. pempt. 848. Burm. zeyl. 40. Herm. lugdb. 652. Raii hist. 1546.

Arbor fraxini folio, flore cæruleo. Baub. pin. 415.

Pseudo-Sycomorus. Cam. epit. 181.

Zizypha candida. Ger. 1306. f. 1. emac. 1491. f. 1.

Leaves bipinnate, leaflets flat shining with ferruginous dots underneath.

2. *Melia sempervirens*. Evergreen Bead-tree.

Swartz prodr. 67. obs. 171. Lin. spec. & Reich.

1. β.

Azedarach sempervirens & florens. Tournef. inst. 616.

Comm. hort. 1. 147. t. 76.

Leaves bipinnate, leaflets somewhat wrinkled commonly seven.

3. *Melia Azadirachta*.

Lin. spec. 550. Reich. 2. 272. hort. cliff. 161. 2.

f. zeyl. n. 161. Cavan. diff. 7. 364. t. 208.

Gärtn. fruct. 2. 474. Pluk. phyt. t. 147. f. 1.

Azedarach foliis falcato-ferratis. Burm. zeyl. 49. t. 15.

ind. 101.

Azadirachta indica, folio fraxini. Breyn. ic. 15.

t. 1.

Arbor indica fraxino similis. oleæ fructu. Baub. pin. 416.

Aria-bepou. Rheed. mal. 4. 107. t. 52.

Leaves pinnate.

DESCRIPTIONS, &c.

1. This in warm countries grows to a large tree, spreading out into many branches. Leaflets notched and indented on their edges, deep green above, and paler underneath. The flowers come out from the side of the branches in long loose bunches. Petals blue. Fruit oblong, the size of a small Cherry, green at first, but when ripe changing to a pale yellow. Nut four or five-celled, with one oblong seed in each cell. It flowers in July, but does not often produce seeds. It drops the leaves in autumn, and puts out fresh ones in spring. The pulp surrounding the nut is poisonous, and mixed with grease, it is said will kill dogs. The nuts are bored and strung for beads by the Roman Catholics.

Native of Syria, and now common in Spain and Portugal. [Cultivated in 1656, by Mr. John Tradescant Jun.^a

2. This which has been generally regarded as a variety, is thought by Swartz to be a distinct species, differing from that in being smaller and often flowering for two years together; the leaflets which are bright green, are seldom more than seven, wrinkled a little, deeper and more unequally serrate and acuminate.

Native of the East Indies.] Mr. Miller says, that some plants have been introduced into the West Indies, where he is informed they continue flowering and fruiting most part of the year; that he has received the fruit by the name of Indian Lilac, from which he raised many plants, but found them to be the same with that from Syria.

3. This becomes a large tree in India. The stem is thick, the wood of a pale yellow, and the bark of a dark purple colour and very bitter. The branches extend wide on every side. The leaves are composed of five or six pairs of oblong acute-pointed leaflets, terminated by an odd one: they are serrate, of a light green colour, and of a strong disagreeable odour; they stand upon pretty long footstalks, opposite or alternate. The flowers are produced in long branching panicles from the side of the branches; they are small, white, and sit in small calyxes, cut into five acute segments. Fruit oval, the size of small Olives, green, turning yellow, and when ripe changing to purple: the pulp is oily, acrid and bitter: the nut is white and shaped like that of the former. [Gärtner describes the fruit as a berried drupe, of an elliptic-globular form, and black, with a soft pulp, and a bony white shell; it has five or six grooves, and five or six cells, a wide little cavern within the base, from which a narrow canal ascends towards the top of the shell, opening into the cells at the top by five or six little apertures. Umbilical chords very short, reaching from the axis to the apex of the seed through the apertures. Seeds solitary, oblong, attenuated to both ends, compressed wedge-form, a little wrinkled, very dark rust coloured. The number of grooves and cells varies. Commelin gives only four cells, Gärtner's specimen had six, but the natural number is five.

Cavanilles has another species from Lamarck's herbarium, native of the East Indies, whence it was brought by Sonnerat.]

PROPAGATION AND CULTURE.

1. This sort is propagated by seeds (which may be obtained from Italy or Spain, where these trees annually produce ripe fruits in the gardens where they are planted:) the seeds or berries should be sown in pots filled with good light fresh earth, and plunged into a moderate hot-bed of tanners bark, where, if the seeds are fresh, they will come up in about a month or five weeks time. When the plants are come up they should be frequently watered, and should have a large share of free air, by raising the glasses every day; in June they should be exposed to the open air, in a well sheltered situation, that they may be hardened before winter. In October the pots should be removed under a

^a Hort. kew.

hot-bed frame, where they may enjoy free open air when the weather is mild, and be covered in hard frost. During the winter season they must be refreshed gently with water, but by no means repeat this too often, nor give them too much at a time; for their leaves being off, they will not be in a condition to throw off a superfluity of moisture.

In march following, you may shake out the plants from the seed-pots and divide them, planting each into a separate small pot, filled with light fresh earth, plunging them into a moderate hot-bed, which will greatly promote their rooting, and increase their growth, but they must not be drawn too much; and in june you should remove them out into the open air as before, and during the three or four winters, while the plants are young, you must shelter them, to secure them from the cold; but when the plants are grown pretty large and woody, they will endure to be planted in the open air against a south wall. The best season for this is in april, at which time you should shake them out of the pots, being careful not to break the earth from the roots, but only pare off with a knife the outside of the ball of earth; then open your holes and put in the plants, closing the earth to their roots, observing if the weather is dry, to give them some water, which should be repeated twice a week until the plants have taken root; but you must observe to plant them on a dry soil, otherwise they will be liable to miscarry in severe frosty weather.

3. This sort is now very rare in England, and also in the Dutch gardens, where some years past it was more common; it is propagated by seeds in the same way as the other sort, but being much tenderer, the plants should be kept constantly in the tan-bed while young. In the summer they may be placed under a frame, but in winter they must be removed into the bark-stove, and treated in the same way with other plants from the same countries. When the plants have obtained strength, they may be treated more hardily, by placing them in winter in a dry stove, and in the middle of summer they may be placed abroad for two or three months in a warm sheltered situation, but they should not remain too long abroad; and during the winter season they should be sparingly watered: with this management the plants will produce flowers annually, and as they retain their leaves all the year, they are ornamental in winter in the stove.

MELIANTHUS. (From *μελι* and *ανθος*, honey-flower.)

Lin. gen. n. 795. Reich. n. 859. Schreb. n. 1068.

Juss. 297. Tournef. 245. Herm. lugdb. 415.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of Corydales. Rutaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* large, five-parted, coloured, unequal: the two upper segments oblong, erect; the lowest very short, like a bag, gibbous downwards; the middle segments opposite interior, lanceolate, the uppermost simple, erect.

COR. *Petals* four, lanceolate-linear, with the tops reflex, from parallel spreading, turned outwards, forming the lower lip, as the calyx itself does the upper, connected at the sides in the middle.

Nectary one-leaved, placed within the lowest segment of the calyx, and fastened to it with the receptacle, very short, compressed at the sides, gashed at the edge, turned downwards by the back.

STAM. *Filaments* four, awl-shaped, upright, the length of the calyx; the two lower shorter, united at the base.

Anthers cordate-oblong, four-celled in front.

PIST. *Germ* four-cornered, gibbous, four-toothed. *Style* upright, awl-shaped, of the same length and in the same situation with the stamens. *Stigma* four-cleft, with the upper segment larger.

PER. *Capsule* quadrangular, half-four-cleft; angles sharp, distant; cells inflated; partitions open in the centre for a receptacle of the seeds, gaping between the angles.

SEEDS in fours, subglobular, annexed to the centre of the capsule.

ESSENTIAL CHARACTER.

Cal. four-leaved, the lower leaf gibbous. *Pet.* four, with the nectary within the lowest. *Caps.* five-celled.

VOL. II.

SPECIES.

1. *Melanthus major.* Great Honey-flower.

Lin. spec. 892. syst. 581. Reich. 3. 204. hort. cliff. 493. 1. upf. 181. Mill. illustr. Kniph. cent. 12. n. 70.

M. africanus. *Herm. lugdb. 414. t. 415.*

Stipules solitary fastened to the petiole.

2. *Melanthus minor.* Small Honey-flower.

Lin. spec. 892. Reich. 3. 204. hort. cliff. 493. 2. Vahl symb. 3. 85. Kniph. cent. 8. n. 68. Curt. magaz. t. 301.

Stipules in pairs distinct-racemes axillary elongated, flowers in whorls, bractes linear elongated.

[3. *Melanthus comosus.*

Vahl symb. 3. 86.

M. africanus minor foetidus. *Comm. rar. 4. t. 4. Raii dendr. 120.*

Stipules distinct, racemes infrafoliaceous, flowers alternate, bractes cordate, leaves villose above.

DESCRIPTIONS, &c.

These are shrubby, with alternate unequally pinnate leaves on a winged petiole, with stipules either distinct or fastened to the petiole. Flowers in spikes either axillary or terminating, each having a bracte. This genus is allied to *Tropæolum* in the cowl of the calyx, and in the situation of the petals and stamens, but it more resembles *Dictamnus* in the habit, fruit and perisperm; it however differs very much from both ^a.]

1. Root woody, perennial, spreading. Stems many, woody, four or five feet high, herbaceous towards the top. Leaves large, embracing the stem at the base, where they have a large single stipule fastened on the upper side of the footstalk, with two ears at the base, which also embrace the stem. The leaves have four or five pairs of very large leaflets, deeply jagged into acute segments; and between them runs a leafy jagged border or wing along the upper side of the midrib, so as to connect the leaflets at the base; they are of a gray colour. Spikes pretty long, springing from between the leaves towards the top of the stalks. Corolla brown or chocolate colour.

[Linneus remarks, that if this plant be shaken whilst it is in flower, it distils a shower of nectar. He also informs us that it was sent from the Cape of Good Hope to Thomas Bartholinus in Holland by Hermann, in the year 1672.—It was introduced into England in 1690, by Mr. Bentick ^b.]

2. This rises with round, soft, woody stalks, five or six feet high, sending out two or three branches from the side. Leaves not half so large as those of the preceding, deep green on the upper, and whitish on the under side. The flowers come out from the side of the stalks in loose hanging panicles, each sustaining six or eight flowers, smaller than those of the first sort: the lower part of the petals is green, the upper saffron-coloured, and on the outside, in the swelling part of the petals, is a blush of fine red.

[The leaflets are smooth above, hoary underneath. Raceme a foot long, upright. Flowers remote, in whorls of four, pendulous. Bractes the length of the calyx. Segments of the calyx lanceolate, attenuated ^c.

Mr. Curtis remarks, that the stem, which is shrubby, and from three to five feet high, during the flowering season is apt to exhibit a naked appearance, having then fewer leaves on it, and those not of their full size; that the foliage has an unpleasant smell; and that the nectar does not flow so copiously as in the large sort, but is retained at the bottom of the corolla, and is of a dark brown colour.

Native of the Cape of Good Hope. Cultivated in 1708 by the Dutchess of Beaufort ^d.

3. Branches round, warted below, hoary above. Leaves at the ends of the branches, approximating, alternate, five-paired. Leaflets opposite, sessile, an inch and half long, lanceolate, deeply ferrate; the ferratures sharper than in *M. minor*, acuminate, veinless, villose and greener on the upper surface, marked with lines along the nerves, hoary underneath, soft. Petiole somewhat winged with the edge of the leaf running down it. Stipules awl-shaped. Racemes al-

^a Jussieu.

^b Hort. kew.

^c Vahl.

^d Hort. kew.

M E L

ternate, frequent, below the leaves on the branches, the uppermost sometimes axillary, three inches long, nodding. Flowers approximating. Pedicels and peduncles villose-tomentose, a little thicker under the flower. Bractes villose, a little longer than the pedicel. Two segments of the calyx wide, ovate, acute, villose; the third linear, inferior. Capsule hoary.

Native of the Cape of Good Hope.*]

PROPAGATION AND CULTURE.

1. This plant was formerly preserved in a greenhouse as a tender exotic, but if planted in a dry soil and a warm situation, it will endure the cold of our ordinary winters very well; and if in a severe frost the tops should be destroyed, yet the roots will abide, and put forth again the succeeding spring. The plants which grow in the open air always flower much better than those in the green-house, being less drawn, which is always hurtful to the flowering of plants. The surest method to have them flower in the open air is to cover the shoots in frosty weather with reeds or mats: and if they are planted against a south wall and on dry rubbish, they may be fastened up to the wall and covered, and not shooting so vigorously as in rich ground, they will be less succulent, and therefore not so liable to suffer by cold.

This plant may be propagated by taking off its suckers or side shoots, any time from march to september, observing to chuse such as are furnished with fibres, and after they are planted and taken root, they will require no farther care but to keep them clear from weeds: they may be also propagated by planting cuttings, during any of the summer months, which, if watered and shaded, will take root very well, and may afterwards be transplanted where they are designed to remain.

2. This not spreading like the first, is not propagated so easily, but cuttings planted upon an old hot-bed, the heat of which is over, and covered close with bell or hand-glasses to exclude the air, will take root pretty freely; these may be planted in pots and sheltered in the winter under a common frame for a year or two till they have obtained strength, then they may be planted in a warm border, and treated in the same way as the former sort, with which management I have seen them flower much better than any of those which have been treated more tenderly, and these plants have perfected their seeds in good seasons.

MELICA.

Lin. gen. n. 82. Reich. n. 88. Schreb. n. 113.

Gartn. t. 80. Juss. 31.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume two-flowered, two-valved: valves ovate, concave, nearly equal.

COR. two-valved: valves ovate, awnless; one concave, the other flat and smaller. A corpuscule between the florets, turbinate, pedicelled.

Nectary one-leaved, horizontal, surrounding the germ, fleshy.

STAM. Filaments three, capillary, thickened at the base, connate, the length of the flower. Anthers oblong, forked at each end.

PIST. Germ obovate, turbinate. Styles two, bristle-shaped, spreading, naked at the base. Stigmas oblong, feathered.

PER. none. Corolla inclosing and dropping the seed.

SEED single, ovate, grooved on one side.

OBS. The peduncled corpuscule (which is the rudiment of a flower) gives the essential character: it consists of two rudiments, or truncated alternate florets, with convoluted pellucid glumes. Linn.—Add, that the stamens are dilated at the base and connate, with a one-leaved nectary. S.

ESSENTIAL CHARACTER.

Cal. two-valved, two-flowered: with the rudiment of one or two florets that are abortive, between the two others.

* Vahl.

M E L

SPECIES.

1. *Melica ciliata*. *Ciliated Melic-grass*.
Lin. spec. 97. Syst. 112. Reich. 1. 181. Willd. 381. Fl. suec. n. 77. Pollich pal. n. 83. Gmel. fib. 1. 99. Hall. helv. n. 1517. (Arundo). Honckeny syn. germ. n. 413. Krock. files. n. 130. Villars dauph. 2. 88.
Gramen avenaceum montanum lanuginosum. Baub. pin. 10.
Gr. aven. spica simplici, locustis densissimis candicantibus & lanuginosis. Scheuch. gram. 174.
The outer petal of the lower floret ciliate.
2. *Melica gigantea*. *Gigantic Melic-grass*.
Thunb. prodr. 21. Lin. spec. ed. Willd. 382.
Aira villosa. Lin. suppl. 109.
Corollas hirsute awned, panicle whorled, culm upright.
3. *Melica geniculata*. *Jointed Melic-grass*.
Thunb. prodr. 21. Lin. spec. ed. Willd. 382.
Corollas rough-haired, panicle contracted, culm decumbent.
4. *Melica decumbens*. *Prostrate Melic-grass*.
Thunb. prodr. 21. Lin. spec. ed. Willd. 382.
Corollas hirsute, flowers racemed nodding, culm decumbent.
5. *Melica racemosa*. *Racemed Melic-grass*.
Thunb. prodr. 21. Lin. spec. ed. Willd. 382.
Corollas rough-haired, racemes drooping, culm erect.
6. *Melica nutans*. *Mountain Melic-grass*.
Lin. spec. 98. Syst. 112. Reich. 1. 182. Willd. 382. fl. suec. n. 76. Lapp. n. 36. Schreb. gram. 62. t. 6. f. 2. Gartn. fruct. 2. 5. Wither. arr. ed. 2. 82. Curt. lond. n. 70. Fl. dan. t. 962. Gmel. fib. 1. 97. Hall. helv. n. 1472. (Poa). Honckeny syn. germ. n. 414. Villars dauph. 2. 89.
M. montana. Hudf. angl. 37.
Aira nutans. Wiggers holf. 7.
Gramen montanum avenaceum spicatum. Baub. pin. 10.
Gr. aven. locustis rarioribus. Mor. hist. 3. 215. f. 8. t. 7. f. 49. (potius 48.)
Gr. montanum spicatum. Clus. hist. 2. 218.
Petals beardless, panicle nodding simple.
7. *Melica uniflora*. *Single-flowered wood Melic-grass*.
Retz. obs. 1. 10. n. 9. Wither. arr. ed. 2. 81. Curt. lond. 5. 10. Sibth. oxon. n. 123. Lin. spec. ed. Willd. 383. Honckeny syn. germ. n. 415.
M. nutans. Hudf. angl. 37. Pollich pal. n. 84.
M. Lobelii. Villars dauph. 2. 90. t. 3. f. 3.
Gramen montanum avenaceum locustis rubris. Baub. pin. 10. prodr. 20. Scheuch. gram. 171. t. 3. f. 16. D. E. F. Mor. hist. 3. 215. f. 8. t. 7. f. 48. (potius 49.)
Gr. aven. rariore grano nemorense danicum. Baub. hist. 2. 434. Lob. adv. app. 2. 465.
Gr. av. nemorense, glumis rarioribus ex fusco xerampelinis. Raii syn. 403.
Panicle thin, calyxes two-flowered, one floret hermaphrodite the other neuter.
8. *Melica ramosa*. *Branching Melic-grass*.
Thunb. prodr. 21. Lin. spec. ed. Willd. 383.
Corollas smooth awnless, panicle contracted, culm branched.
9. *Melica capensis*. *Cape Melic-grass*.
Thunb. prodr. 21. Lin. spec. ed. Willd. 383.
Corollas smooth awnless, panicle spreading very much, leaves subfiliform.
10. *Melica minuta*. *Small Melic-grass*.
Lin. mant. 32. spec. ed. Reich. 1. 182. Willd. 383. Syst. 113.
Culm branched, leaves bristle-shaped, petals beardless.
11. *Melica cœrulea*. *Purple Melic-grass*.
Lin. Syst. 113. Reich. 1. 183. Willd. 383. Wither. arr. ed. 2. 82. Curt. lond. 5. 11. Lightf. scot. 96. Relb. cant. n. 61. Sibth. oxon. n. 122. Fl. dan. t. 239. Pollich pal. n. 85. Leers herb. n. 58. t. 4. f. 7. Cullum fl. angl. spec. 26. Honckeny syn. germ. n. 412.
Aira cœrulea. Lin. spec. 95. Hudf. angl. 33. Scop. carn. n. 91.
Poa. Lin. lapp. n. 29.
Arundo. Hall. helv. n. 1518.
Gramen arundinaceum enode minus sylvaticum. Baub. pin. 7. theat. 97. Scheuch. gram. 209.

Gramen

Gramen pratense serotinum, panícula rari purpurascēte.

Mor. hist. 3. 201. f. 8. t. 5. f. 22.

Gr. prat. serot. pan. longa purp. *Raii hist.* 1288: *syn.* 404.

β. Gr. paniculatum autumnale, pan. ampliore e viridi nigricante. *Scheuch. gram.* 207. *Pollich* β.

Gr. arund. enode majus montanum. *Baub. theat.* 66.

Gr. enode majus sylvat. *Scheuch. gram.* 207. t. 4. f. 11, 12. *Gouan illustr.* 3.

Panicle contracted, flowers cylindrical.

12. *Melica papilionacea*. Pea-flowered Melic-grass.

Lin. mant. 31. *syn.* 113. *Reich.* 1. 183. *Willd.* 384.

M. brasiliensis. *Ard. spec.* 2. 17. t. 6. f. 1, 2.

Gramen spica brizæ, &c. *Sloan. jam.* 1. 206. t. 64. f. 1.

Lower valve of the calyx very large coloured, outer petal subciliate.

13. *Melica altissima*. Tall Melic-grass.

Lin. spec. 98. *syn.* 113. *Reich.* 1. 184. *Willd.* 385. *hort. ups.* 20. *Gmel. sib.* 1. 98. t. 20.

β. *Gramen avenaceum*, locustis rarioribus muticis; virginianum majus. *Mor. hist.* 3. 216. f. 8. t. 7. f. 51.

Petals beardless, panicle contracted directed one way.

14. *Melica Falx*.

Lin. suppl. 109. *syn.* 113.

Cynosurus falcatus. *Thunb. prodr.* 23. *Lin. spec. ed.* *Willd.* 411.

Spike directed one way compressed imbricate.

DESCRIPTIONS, &c.

1. Root perennial. Culms several, upright, from two to three feet high, round, smooth, with seven smooth, purple joints. Leaves lanceolate, mucronate, flat, from three to nine inches long, one or two lines wide, smooth underneath, slightly pubescent above, somewhat rugged downwards. A white nerve runs along the back. Ligule white, cloven. Sheaths striated, the lower a little pubescent and rugged, the upper ones smooth. Panicle erect, cylindric, spiked, round, from two to three inches long, four lines wide, when young appearing to be smooth, but becoming feathered by age. Branches two or one spring from the scape, which are somewhat rigid, and divided from the very base into smaller and even very small branches; the final peduncles, on which the flowers are placed either singly or in bundles, are very short. Spikelets lanceolate, mucronate, striated, two-flowered, green white and purple, shining, compressed a little, near three lines long, closed, scarcely one line wide. Larger glume of the calyx longer than the corolla, lanceolate, mucronate. Outer valve of the corolla, in the larger sessile floret adorned with white feathers standing out; but in the smaller pedicelled floret smooth; both are awnless. Anthers white. Stigmas white, feathered. The scape is entirely covered with the spikelets^a.

Native of the North of Europe. Introduced in 1771, by Monf. Richard. It flowers in July^b.

2. Native of the Cape of Good Hope.

3. Is this different from *Ehrharta calycina*, Smith, *ic. ined.* 33. which is also a native of the Cape? In the Supplement of the younger Linneus it is named *Aira capensis*.

4, 5. Both natives of the Cape of Good Hope^c.

6. Root perennial, somewhat creeping. Culms a foot or a foot and half high, simple, upright, rugged, striated, somewhat angular, below purplish. Leaves at the base of the culm short scale-like, brownish, as they ascend becoming longer and narrower, a line and half broad, and slightly rugged. Ligule none. Panicle two or three inches long, bending down a little, with the flowers inclining one way, simple or branched; peduncles capillary, pressed a little to the rachis, flexuose, upright, villose when magnified, especially at the flower, where they are somewhat thickened. Spikelets usually three-flowered; rudiment of the pedicelled floret forming a sort of club. Calycine valves unequal, blunt, faintly ribbed, at first purple and finally of a brownish hue. Outer valve of the corolla large, many-ribbed, most of the ribs scarcely reaching half

its length; the inner one broad, flat and much shorter. Filaments quite distinct. Anthers yellow. Germ broad-ovate, pellucid. Styles naked below, above feathery and spreading. Nectary two little glumes; fleshy and truncated^d. Seed ovate-oblong, attenuated downwards, convex on one side, and having a longitudinal groove along the other, smooth, shining as if oiled, dark-bay and almost chestnut-coloured^e.

Native of many parts of Europe, particularly the northern countries, in rocky and shady situations: with us in Yorkshire, Westmoreland and Cumberland; also in Scotland. It flowers in July and August.

This plant, as Mr. Curtis observes, accords so ill with *Gramen montanum spicatum* of Clusius, which is referred to it by Schreber, Haller and Scheuchzer, that he probably intended some other species.

7. Root perennial. Culm simple, a foot and half or more in height, where it is covered with the sheaths of the leaves somewhat angular, rugged and striated, at bottom of a dull purple colour. Stem-leaves about five; yellowish green, flat, a line and half or almost two lines broad, terminating gradually in a point, feeling rough when drawn backwards between the fingers, on the upper side somewhat hairy, the edges when magnified appearing finely serrate: ligule scarcely any, but what is very remarkable, a small ovate leaf with a long point, upright and coloured, rises from the fore part of the mouth of the sheath. Flowers in a loose panicle; the lowermost flower-stalks growing two together, the one shorter than the other, bearing three flowers, and even seven or eight when cultivated in a garden; the uppermost growing singly. Spikelets pedicelled, at first of a dark purple colour, beardless, each containing two flowers. Calycine valves coloured and shining; the outer ovate, concave, five-ribbed, ending in a short point; the inner less, ovate-lanceolate, three-ribbed. Hermaphrodite flower sessile, the outer valve large, bellying, with its edges embracing the inner, which is flattish, with membranaceous edges turned back, especially near the base: sterile flower pedicelled. Germ smooth, shining, yellowish: styles separate at bottom and spreading out: stigmas villose. Nectary a very minute entire scale, at the base of the germ. Seed ovate, rather large and blackish. The delicacy and striking colour of the panicle, joined to its place of growth, in woods, readily distinguish this from all our other grasses^f.

Native of Sweden, Germany, Switzerland, France and England. In most of the woods near London. Mungewell, Ardley and Stokenchurch woods in Oxfordshire, &c.

There is a confusion in some of the synonyms of these two species; those of Bauhin and Morison are clearly wrong.

8, 9. Natives of the Cape of Good Hope^g.

10. Culms filiform, very narrow, half a foot high, very much branched, covered with the sheaths of the leaves. Leaves very narrow, rolled inwards, spreading a little at the base. Racemes terminating, simple, capillary, few-flowered. Calyx shorter by half than the florets, which are oblong and awnless, with a truncated barren pedicelled floret between them.—Found in Italy, by Scopoli^h.

11. Root perennial, thick, whitish or brownish, flexuose and villose. Culm from a foot to two feet in height, somewhat bulbous at the base, upright, having only one knot, and that near the base, above naked and smooth. Leaves for the most part three or four, about a hand's breadth in length, blueish-green, rather broad, acuminate, stiffish, the lower ones flat, the upper ones somewhat rolled up, hairy at the edges. Ligule none. Sheath short, striated. Flowers in a branched panicle, a hand's breadth or more in length; the branches closing together so as to form a kind of spike. Spikelets containing two, three or four flowers, but most commonly three, with the rudiment of a flower in most of them: the young ones flattened, the full-grown ones roundish, obtuse, slightly diverging. Calycine valves pointed, keeled, with purple edges.

^a Curtis.

^c Gartner.

^f Curtis.

^g Thunberg.

^h Linn. mant.

^a Pollich.

^b Hort. kew.

^c Thunb. prodr.

Valves of the corolla nearly equal, the outer, which is rather larger, embracing the inner, three-ribbed, slightly pointed, the edges purple; the inner valve two-ribbed, paler, obtuse, and a little shorter. Nectary, two very short broad truncated emarginate scales. Anthers purple. Germ very minute, smooth and somewhat ovate: styles branched to the bottom and purple.

Linneus at different periods placed this grass in different genera: in his *Flora Lapponica* it appears as a *Poa*; in his *Species Plantarum* and *Flora Suecica* as an *Aira*; in his *Systema Vegetabilium* as a *Melica*. If the spikelets be examined when the plant is young, they are very like those of *Poa*, being pointed, flattened, and containing usually from three to five flowers; as they advance, their form alters, they become rounder, and more like the flowers of *Aira aquatica*; so that if the rudiment were wanting, it might be difficult to determine in which genus it should be placed, but that being present, we are under no difficulty in classing it with *Melica*.

This grass is easily known by its having only one knot, and that near the base; and by the stamens and stigmas being of a deep purple colour. Merret's name of *Gramen spica lavendulæ* is very expressive of its appearance when in flower.

It is common on wet moors and heaths, flowering from July to the end of September. Being harsh and late, it does not seem adapted to agricultural purposes. It varies greatly in sizeⁱ.

The fishermen in the isle of Skie make ropes for their nets of this grass, which they find by experience will bear the water well without rotting^k.

12. This has the stature of the next succeeding species. Panicle rod-like, with slender peduncles longer than the flower, branched especially below. Lower valve of the calyx obovate, blunt, very large, coloured; upper valve, only one-sixth of the size, remote from the lower, scarious and coloured at the top. Flowers two, alternate, besides the rudiment. Outer petal to each oblong, striated with sixteen nerves; the middle ones mucronate; the side ones ciliate with many bristles; but the apex of the petal is scarious with a thin even membrane, blunt and coloured. Inner petal simple. Rudiment oblong.

Native of Brasil, *Arduini*^l. Jamaica, *Sloane*.

13. Leaves two lines and a half wide. Panicle often half a foot long, thick and branched, the branchlets pressed close to the culm. Spikelets three or four-flowered. Calycine valves obtusely mucronate, the inner longer. Florets alternate, not very remote, smaller the higher they are; the outer glume embraces the other and the next floret above; inner valve shorter by half or a third, flat or concave outwards, blunt, membranaceous with a green edge. The extreme floret is pitcher-shaped, one-valved, permanent, containing the rudiment of a germ with a short style; it is therefore a female or neuter floret.

Native of Siberia^m. Introduced in 1770, by Monf. Richardⁿ.

β. Is a native of Canada, and differs so much in habit that it is probably a distinct species^o.

14. Leaves on the culm two, alternate. Culm a foot and half in height, even, with two joints. Spike a finger's length, imbricate with lateral, lanceolate, acuminate, three-nerved leaflets, a little longer than the flowers, one to each. Flowers pubescent, with a white edge. Calycine leaflets flat; the inner shorter than the floret. Florets two to each calyx, a larger and a smaller, besides the rudiment. Outer valve of the corolla obovate, white-ciliate, very blunt, emarginate; inner long, narrower, even, lanceolate.

Native of the Cape of Good Hope, where it was found by Sparrmann^p. Thunberg, who also found it at the Cape, has with reason removed this species into the genus *Cynosurus*; but not having been noticed in this work under that genus, it is inserted here.

PROPAGATION AND CULTURE.

These grasses are easily propagated by the seed, or by parting the roots in autumn. None of them are

ⁱ Curtis. ^k Lightfoot. ^l Linn. mant. ^m Gmelin.
ⁿ Hort. kew. ^o Willdenow. ^p Linn. suppl.

cultivated for feeding cattle; though both *ciliata* and *nutans* are said by some to be very agreeable to sheep. *M. nutans* and *uniflora* being elegant grasses deserve a place in curious gardens, together with some of the Cape species.

MELICOCCA. (So named by Browne, from *μελι* honey, and *κοκκος* granum, a grain or seed.)

Lin. gen. n. 472. Reich. n. 514. Schreb. n. 648.

Jacqu. amer. 108. Gært. t. 42. Juss. 248.

Class. 8. 1. Octandria Monogynia.—Polygamia Dioecia. Sw.

Nat. order of Sapindi, Juss.

GENERIC CHARACTER.

CAL. Perianth four-parted: leaflets ovate, concave, blunt, spreading.

COR. Petals four, oblong, equal, bent back entirely among the leaflets of the calyx.

STAM. Filaments eight, awl-shaped, upright, short. Anthers oblong, upright.

PIST. Germ ovate, almost the length of the corolla. Style very short. Stigma large, subpeltate, extended on both sides, oblique.

PER. Drupe barked, roundish, bluntly acuminate.

SEED. Nut coriaceous, roundish, smooth.

OBS. PER. Berry ovate, acuminate, coriaceous, thickish, one-celled.

SEED single (seldom two or three) ovate, grooved on one side, berried with a glutinous pulp.

ESSENTIAL CHARACTER.

Cal. four-parted. Pet. four, bent back below the calyx. Stigma subpeltate. Drupe (or berry) coriaceous.

SPECIES.

1. *Melicocca bijuga*.

Lin. spec. 495. Syst. 360. Reich. 2. 157. Gært.

fruct. 197. t. 42. Swartz obs. 146. Jacqu.

amer. 108. t. 72. pist. 55. Brown. jam. 210.

Pluk. phyt. t. 207. f. 4.

DESCRIPTION, &c.

This is a tree with a middle-sized unarmed trunk. Branches spreading. Leaves pinnate, with two pairs of leaflets. Common petiole elongated, almost round, but a little compressed between the leaflets, seldom winged. Leaflets subsessile or on very short petioles, ovate, acuminate at both ends, entire, nerved, smooth on both sides, bright green. Racemes compound, terminating; branchlets alternate, simple, upright, many-flowered. Male flowers more abundant, deciduous, more yellow: the hermaphrodites scarcely larger. Nectary and anthers yellow. Drupe twice as large as a nutmeg, with a thin and somewhat brittle bark covering the nut, which has a sweet acid gelatinous substance in it, like the yolk of an egg^q.—Gærtner describes it as a superior ovate berry, smooth or rugged with small miliary granules, acuminate at top or at both ends, coriaceous thickish, one-celled, having a groove on one side.

Jacquin was informed at Curaçoa that there were male and female trees, but Swartz has ascertained that one tree bears hermaphrodite flowers, another male flowers, and that the latter are most common. They flower in April, and the fruit is ripe about midsummer.

Native of South America, and cultivated in the East Indies. Browne says it was brought to Jamaica from Surinam; that it thrives well in the low lands about Kingston, rising sometimes to the height of sixteen or eighteen feet or more; that the fruit is very mellow and grows to the size of a large plum, and that it seldom brings more than one stone or seed to perfection. He calls it Genip tree, which is from the Dutch *Knippen*. The Spaniards call it *Monos*. According to Jacquin it is wild about Carthagena, and commonly cultivated at Curaçoa. It was introduced here in 1778, by Thomas Clark, M. D.

MELICOPE. (So named by Forster, from *μελι* honey, and *κοπη* a section or incision: the nectary being very much cut.)

Lin. gen. Schreb. n. 656. Forst. gen. t. 28. Juss. 429.

Entogonium, Banks. Gært. t. 68.

Class. 8. 1. Octandria Monogynia.

^q Swartz.

^r Hort. kew.

M E L

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, four-parted, permanent.

COR. *Petals* four, ovate-oblong, acute, longer than the calyx.

Nectary, glands four, large, twin, surrounding the germs.

STAM. *Filaments* eight, awl-shaped, erect, shorter than the corolla, inserted into the receptacle on the outside of the nectary. *Anthers* subcordate, erect.

PIST. *Germ* four, superior. *Style* filiform, longer than the stamens, deciduous. *Stigma* four-cornered, flattened, concave at the centre.

PER. *Capsules* four, elliptic, compressed, divaricated, one-celled, gaping at the upper margin.

SEEDS solitary, elliptic, compressed.

ESSENTIAL CHARACTER.

Cal. inferior, four-leaved. Pet. four. Nect. Glands four, twin. Caps. four, one-seeded.

SPECIES.

1. Melicope ternata.

Forst. gen. 28. flor. austral. n. 166.

Entoganum lævigatum. Gært. fruct. 1. 331.

Native of New Zealand.

MELICYTUS. (So named by Forster, from μέλι honey, and κενος a cavity or hollow: the anthers being fastened to the cavity of the nectary.)

Lin. gen. Schreb. n. 1513. Forst. gen. 62. Gært. t. 44. Juss. 428.

Class. 22. 5. Dioecia Pentandria.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* five-toothed, very short.

COR. *Petals* five, ovate, acute, horizontal, longer than the calyx.

Nectary: scales five, clubbed, cup-shaped, excavated at top, stamiferous on the inside, upright.

STAM. *Filaments* none. *Anthers* five, ovate-roundish, four-grooved in front, fastened longitudinally to the nectaries within, and a little longer.

* Female.

CAL. and COR. as in the males.

Nectary: five scales, triangular, acute, incumbent on the germ, shorter than the calyx.

PIST. *Germ* ovate. *Style* very short. *Stigma* flat, four or five-lobed: lobes rounded, small.

PER. *Capsule* berried, globular, smooth, coriaceous, one-celled, four or five-valved.

SEEDS about five, convex on one side, angular on the other, nestling in the pulp.

ESSENTIAL CHARACTER.

Cal. five-toothed. Cor. five-petalled, three times as long as the calyx. Nect. five scales.

MALE. *Anthers* five, without filaments, fastened to the inside of the nectary.

FEM. *Stigma* flattened out, four or five-lobed. *Caps.* berried, one-celled. *Seeds* nestling.

SPECIES.

1. Melicytus ramiflorus.

Forst. gen. 62. flor. austral. n. 371.

M. umbellatus. Gært. fruct. 1. 206.

Native of New Zealand. Found in Queen Charlotte's Sound november the 10th, 1774.

MELILOBUS. See *Gleditsia*.

MELILOT and] MELILOTUS. See [*Medicago*, *Trifolium*,] *Trigonella*.

MELISSA. (A bee, from μέλι, honey.)

Lin. gen. n. 728. Reich. n. 786. Schreb. n. 983.

Tournef. t. 91. Juss. 115. Calamintha. Tournef.

t. 92. Horminum. Ed. pr.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ*. *Labiata*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, subcampanulate, dry-scarious, spreading a little, angular, striated, permanent, with a two-lipped mouth. *Upper lip* three-toothed, reflex-spreading, flat. *Lower lip* shorter, sharpish, two-parted.

COR. one-petalled, ringent. *Tube* cylindrical. *Throat* gaping. *Upper lip* shorter, erect, arched, roundish, bifid. *Lower lip* trifid: middle segment larger, cordate.

M E L

STAM. *Filaments* four, awl-shaped, two the length of the corolla, two shorter by half. *Anthers* small, converging in pairs.

PIST. *Germ* four-cleft. *Style* filiform, the length of the corolla, inclining along with the stamens beneath the upper lip of the corolla. *Stigma* slender, bifid, reflex.

PER. none. *Calyx* larger, unchanged, fostering the seeds in its bosom.

SEEDS four, ovate.

ESSENTIAL CHARACTER.

Cal. dry, flattish above: upper lip subfastigiata. Cor. upper lip somewhat arched, bifid; lower lip with the middle lobe heart-shaped.

SPECIES.

1. Melissa officinalis. Official or common garden Baum or Balm.

Lin. spec. 827. Reich. 3. 83. hort. cliff. 307. 1. upf. 163. mat. med. 152. Woodv. med. bot. 398.

t. 147. Hall. helv. n. 242. Scop. carn. n. 739.

Sauv. monsp. 149. Villars dauph. 2. 368. Krock.

filef. n. 959. Kniph. cent. 4. n. 48. Sabb. hort. 3.

t. 61. Zorn. ic. 134. Berg. phyt. 2. 197.

Melissa. Riv. mon. t. 45. Ger. 558. emac. 689. Raii hist. 570.

M. hortensis. Bauh. pin. 229. Mor. hist. f. 11. t. 21. f. 1.

M. vulgaris. Park. theat. 40.—odore citri. Bauh. hist. 3. 232. Mor. hist. 3. 408.

Melissophyllum. Blackw. herb. t. 27.

Apiastrum f. Melissophyllum. Lob. ic. 277.

β. Melissa romana. Roman Baum.

Mill. dict. n. 2.

Racemes axillary whorled, pedicels simple.

2. Melissa grandiflora. Great-flowered Baum.

Lin. spec. 827. Reich. 3. 84. Scop. carn. n. 732.

(Thymus). Villars dauph. 2. 369. Kniph. cent. 7.

n. 56. Curt. magaz. 208. Berg. phyt. 2. 203.

Calamintha magno flore. Bauh. pin. 229. Riv. mon. t. 46. Mor. hist. f. 11. t. 21. f. 1.

C. montana præstantior. Lob. ic. 512. Ger. 556. 2. emac. 687. Park. theat. 37. 2. Besl. exst. æst. 7.

t. 7. f. 1. Raii hist. 569.

C. mont. magno flore ex calice longo. Bauh. hist. 3. 229.

Peduncles axillary dichotomous the length of the leaves, calycine segments almost equal.

3. Melissa Calamintha. Mountain Baum or Calamint.

Lin. spec. 827. syst. 542. Reich. 3. 84. hort. cliff.

307. 2. mat. med. 153. Hudf. angl. 263. Wither.

arr. ed. 2. 626. Relb. cant. n. 448. Hall. helv.

n. 241. Crantz. austr. 285. Neck. æt. palat. 2.

473. Villars dauph. 2. 369. Kniph. cent. 4.

n. 47. Ludw. æt. t. 33. Bulliard fr. 251.

Zorn. ic. 111. Berg. phyt. 2. 201.

Thymus Calamintha. Scop. carn. n. 733.

Calamintha. Camer. epit. 481. Riv. mon. t. 46.

C. vulgaris. Park. theat. 36. Raii hist. 569. syn. 243. Pet. brit. t. 34. f. 1.

C. vulg. officinarum. Ger. emac. 687. 3.

C. vulg. vel. offic. Germaniæ. Bauh. pin. 228. Mor. hist. f. 11. t. 21. f. 3.

C. flore magno vulgaris. Bauh. hist. 3. 228.

C. montana. Dod. pempt. 98. 1. Blackw. herb. t. 166. Besl. exst. æst. 7. t. 7. f. 2.—vulgaris. Lob. obs.

274. 2. ic. 1. 513. 1.

Peduncles axillary dichotomous the length of the leaves, lower lip of the calyx longer than the upper segments.

4. Melissa Nepeta. Field Baum or Calamint.

Lin. spec. 828. syst. 542. Reich. 3. 84. hort. cliff.

308. 3. Hudf. angl. 263. Wither. arr. ed. 2.

626. Relb. cant. n. 449. Curt. lond. n. 65.

Gisecke ic. 1. n. 14. Gron. virg. 1. 65. 2. 90.

Hall. helv. n. 240. Sauv. monsp. 149. Villars

dauph. 2. 369. Blackw. t. 167.

Calamintha odore pulegii. Ger. emac. 687. 3. Raii hist. 569. syn. 243.—f. Nepeta. Bauh. pin. 228.—

altera odore pul. foliis maculosis. Park. theat. 36. 3.

—flore minore, od. pul. Bauh. hist. 3. 229. t. 230.

f. 1.

C. folio incano. Riv. mon. t. 47.

Pulegium sylvestre f. C. altera. Dod. pempt. 98. 2.

3 U

C. alt.

- C. alt. od. gravi Pul. fol. mac. *Lob. obs.* 275. 1. *ic.* 513. 2.
 β. C. montana præalta, pul. od. *Bocc. mus.* 2. t. 40. & 38. *Kniph. cent.* 7, n. 57.
Peduncles axillary dichotomous longer than the leaf, calycine segments equal.
 5. *Melissa cretica*. *Cretan Baum.*
Lin. spec. 828. *syft.* 543. *Reich.* 3. 85.
Calamintha incana, *Ocymi foliis.* *Baub. pin.* 228.
C. fol. et flore parvo incana. *Baub. hist.* 3. 230. f. 2. *Raii hist.* 569.
C. minor incana. *Park. theat.* 36. t. 37. f. 4.
C. montana vulgaris. *Ger.* 556. 1. *emac.* 637. 1.
C. pulegii odore minor. *Bar. ic.* 1166.
Racemes terminating, peduncles solitary very short.
 6. *Melissa fruticosa.* *Shrubby Baum.*
Lin. spec. 828. *syft.* 543. *Reich.* 3. 85. *D'Affo. arrag. n.* 546.
Calamintha hispanica frutescens marifolia. *Tournef. inst.* 194.
C. montana incana minor. *Mor. hist.* 3. 413. n. 6.
Branches attenuated rod-like; leaves tomentose underneath, stem shrubby.

DESCRIPTIONS, &c.

1. Garden or common Baum has a perennial root, and an annual stalk, which is square, branching, from two to three feet high. Leaves by pairs at each joint, two inches and a half long, and almost two inches broad at the base; growing narrower towards the top, indented about the edges; the lower ones upon pretty long foot-stalks. The flowers grow in loose small bunches from the axils in whorls, upon single peduncles. They are white, or yellowish, and appear in July.

[The leaves are hairy above, smooth beneath. The whorls are shorter than the leaves; the pedicels simple and unequal. Stipules ovate-lanceolate. Teeth of the calyx broader, awned. Corolla sometimes tinged with red^a.

Baum or Balm is a native of the southern parts of Europe, especially in mountainous situations, in Switzerland, Carniola, Silesia, the South of France, Italy. It was cultivated by Gerard in 1596; and was probably much earlier in our gardens, having been so much celebrated among the Arabian physicians.

Baum in its recent state has a weak roughish aromatic taste, and a pleasant smell, somewhat of the lemon kind, whence its name *Citrugo* in Gesner. Anciently it was generally recommended in hypochondriacal affections, and by Paracelsus the *primum ens Melissæ* promised a complete renovation of man: even Hoffman and Boerhaave, probably biased by the Arabian physicians, deemed it an efficacious remedy. It is now only used as tea, for a grateful diluent in fevers, either alone or acidulated with the juice of lemons. The essential oil probably possesses no qualities different from many other aromatics and cordials^b.

From the fondness of Bees for this plant it has been named *Apiastrum*, *Melissa*, *Melissophyllum* and by contraction *Melissphyllum*, and was directed by the ancients, among other herbs, to be rubbed upon the hive, to render it agreeable to the swarm. It is known by its Greek name of *Melissa* in all the languages of Europe, except the Danish, in which it is *Hiertensfryd*, and in English *Bawme*, *Baum*, *Baulm* or *Balm*.]

Mr. Miller makes a distinct species of the *Roman Baum*, which grows naturally about Rome, and in other parts of Italy. The stalks are slender, the leaves much shorter, the whole plant hairy, and of a strong disagreeable odour. The flowers grow in whorls, sitting pretty close to the branches, and are smaller than those of the common sort.

2. This also has a perennial root, and an annual stalk, rising about a foot high. Leaves in pairs at each joint, an inch and half long, and three quarters of an inch broad, serrate, of a lucid green on their upper side, and whitish on the under. Single peduncles come out from the axils, half an inch long, and dividing into two smaller ones, each sustaining two

flowers upon short separate pedicels. The flowers are large, of a purple colour. It flowers in June, and the seeds ripen in August.

Native of Tuscany, Austria, [Germany and the South of France. Cultivated in 1640, according to Parkinson.—The leaves, when bruised, have the smell of garden Baum. There is a variety of it with white, and another with red flowers, both much inferior to the purple: it also has variegated leaves, as the common garden Baum^c.

3. Root perennial. Stem upright, four-cornered, woolly. Leaves in pairs, petioled, ovate-acuminate, hairy, dotted, very slightly serrate, much larger than those of *M. Nepeta*. Peduncles generally shorter than the leaves, sometimes as long, and near the ends of the branches longer; three-forked, the lateral arms forked. Flowers twice as large as those of *M. Nepeta*. Calyx with thirteen ribs, short hair, and shining globules; segments fringed, and the mouth closed with long hairs; teeth pointing upwards after the corolla falls off, the three upper equal, the two lower longer and more pointed. Tube of the corolla beset within with white club-shaped hairs: upper lip lilac-coloured within; lower lip pale within, but marked with three round dots, and a few short streaks of a deeper hue. Anthers double, purple; pollen whitish. Germs on a glandular receptacle. One segment of the stigma much longer than the other, and hooked^d.

Native of many parts of Europe, Italy, Spain, France, Switzerland, Austria, England, by the sides of roads and corn fields. It flowers in August.

4. Root perennial, somewhat oblique, crooked, round, woody, brown. Stems woody, divided just above the base into branches, which are from one to two feet in length, ascending, obscurely quadrangular, reddish towards the base, beset with soft horizontal hairs. Leaves in pairs, rather remote, scarcely an inch long, on short petioles, spreading, slightly keeled, reflex at the point, broad ovate, subcordate, bluntish, serrate, the margin rolled back, and slightly waved, wrinkled, soft, villose on both sides, pale green, with pellucid dots. Flowers in whorls, very small, pale blue, before they expand yellowish. Whorls halved, much longer than the leaves, few-flowered. Bractes few, small, awl-shaped, one pair at each division. Common peduncles two, dichotomously branched, bearing four or six flowers, the last generally three flowers, the two outer of which have a pair of bractes, but the middle one is naked. Pedicels unequal, upright. Calyx with fifteen streaks or ribs, beset on the outside with short hairs and shining glands, smooth within, but closed at the mouth with long hairs; the three upper teeth equal, the two lower longer, equal, and more pointed; the streaks and teeth of a brown purplish colour. Corolla longer than the calyx, slightly hairy: upper lip deeply emarginate, plaited at the back; lower lip beset at the base with white club-shaped bristles; lateral segments ovate, the middle one kidney-shaped, and marked on the inside with reddish purple spots. Anthers two-celled, violet-coloured; pollen white. Germs ovate, on an orange-coloured receptacle. Style purplish^e.

Native of many parts of Europe, Italy, France, Switzerland, England; with us it chiefly affects dry chalky soils, by road sides and in uncultivated places; flowering in August, or from July to September.

It is sometimes confounded with the preceding species.] Mr. Miller says, the stalks are longer and bend towards the ground; the leaves larger, more indented on their edges, and having a very strong scent like Pennyroyal; the whorls of flowers set closer together. He appears from this not to have distinguished these plants rightly. [The leaves and flowers are certainly smaller in this; the former more hoary; the whole plant is hairy. Krocker remarks, that the pistil extends much more beyond the corolla than in the preceding species.

Both these seem to have been used indifferently in the old practice of medicine under the name of *Calamintba*.

^c Curtis.^d Withering, Woodw. M. S. Relhan.^e Curtis, Withering.^a Krocker.^b Woodville.

M E L

mintba. They have a strong aromatic smell, approaching to that of Pennyroyal, and a moderately pungent taste, somewhat like Spearmint, but warmer. Infusions of the leaves were given as tea in weaknesses of the stomach, flatulent cholics, and uterine obstructions^f.]

5. Stems slender, a little woody. Leaves small, roundish, hoary. Flowers small and white, appearing in June. The seeds ripen in autumn. This species seldom continues more than two or three years.

[It bears some resemblance to *M. Nepeta*. Stem humble, about a hand in height, straight, very dark purple. Leaves ovate, sparingly and bluntly serrate. Whorls many, composed of one-flowered leafless peduncles, terminating the branches like a raceme. Bractes lanceolate. Calyxes brown. Corollas purplish white^g.

Native of the South of Europe. Cultivated by Mr. Miller in 1731^h.]

6. Stems slender, shrubby, about nine inches long, putting out small, opposite side-branches. Leaves small, hoary, ovate-acuminate, having much the same appearance with those of Marum. Flowers in whorled spikes at the end of the stalks: they are small and white; appear in July, and the seeds ripen in autumn. The whole plant has a strong scent of Pennyroyal, and is of a short duration.

[According to D'Affo, the stems are hoary and a foot high: the leaves ovate-rhomboidal, tomentose: flowers small, pale purple.

It was cultivated in 1752, by Mr. Millerⁱ.]

PROPAGATION AND CULTURE.

1. Garden Baum is easily propagated by parting the root in October, time enough for the offsets to be established before the frosts come on. The roots may be divided into small pieces with three or four buds to each, and planted two feet apart in beds of common garden earth. The only culture they require is to keep them clean from weeds, and to cut off the decayed stalks in autumn, then stirring the ground between them.

The other sorts may be increased and treated in the same manner.

5. If the seeds of this be permitted to scatter, there will be a sufficient supply of young plants.

6. This may be increased by seeds, or by cuttings, planted in any of the summer months, and shaded from the sun. On a warm border they will frequently live through the winter; but it is prudent to keep a plant or two in pots, sheltered under a frame, in winter.

[*MELISSA.* See *Ballota*, *Cunila*, *Dracocephalum*, *Horminum*, *Melittis*, *Moluccella*, *Perilla*, *Prasium*, *Salvia*, *Satureia*.

MELISSOPHYLLUM. See *Melittis*.]

MELITTIS. (From *μελιττα*, a Bee: used by Pliny as synonymous with *Melissa*.)

Lin. gen. n. 731. *Reich. n.* 789. *Schreb. n.* 985. *Juss.* 116.

Class. 14. 1. *Didynamia Gymnospermia.*

Nat. order of *Verticillatae. Labiatae*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, bell-shaped, round, straight, with a two-lipped mouth. *Upper lip* higher, emarginate, acute: *lower* shorter, bifid, acute, with the divisions gaping.

COR. one-petalled, ringent: *tube* much narrower than the calyx: *opening* scarcely thicker than the tube: *upper lip* erect, roundish, entire; *lower* spreading, trifid, blunt, middle segment larger, flat, entire.

STAM. *Filaments* four, awl-shaped, under the upper lip, the middle ones shorter than the two outer. *Antbers* converging by pairs in form of a cross, bifid, blunt.

PIST. *Germ* blunt, four-cleft, villose. *Style* filiform, the length and situation of the stamens. *Stigma* bifid, acute.

PER. none. *Calyx* unchanged, containing the seeds at the bottom.

SEEDS four.

Obs. The lower lip of the calyx is sometimes crenated.

^f Lewis. ^g Linn. ^h Hort. kew. ⁱ Ibid.

M E L

ESSENTIAL CHARACTER.

Cal. wider than the tube of the corolla. *Cor.* upper lip flat, lower crenated. *Antbers* cross-wise.

SPECIES.

1. *Melittis Melissophyllum.* *Bastard Baum.*

Lin. spec. 832. *Juss.* 544. *Reich.* 3. 91. *hort. cliff.* 309. *Huds. angl.* 264. *Wither. arr. ed.* 2. 627. *Curt. lond. n.* 68. *Villars dauph.* 2. 394. *Mill. illustr.*

Melissophyllum verum. *Fuchs. hist.* 498. *Ger. emac.* 690. *f.* 3. 3. *Park. theat.* 41. 4. *Lob. obs.* 277. 2. *ic.* 1. 515. 1. *Raii syn.* 242.

Melissa adulterina. *Bauh. hist.* 3. 233. 1, 2.

Lamium montanum Melissæ folio. *Bauh. pin.* 231. *Raii hist.* 561.

[*β.* *Alpine Bastard Baum.*

Jacqu. austr. 1. 18. *t.* 26. *Hall. herb. n.* 244. *Scop. carn. n.* 76. *Krock. files. n.* 960. *Kniph. cent.* 6. *n.* 60. *Riv. mon.* 1. 21. (*Melissophyllum*).

Lamium pannonicum versicolore — & *albo flore.* *Clus. hist.* 2. 37. *f.* 1, 2.

α. *With elliptic leaves.* *β.* *With ovate subcordate leaves.*

2. *Melittis japonica.*

Thunb. in Linn. trans. 2. 338.

Leaves alternate ovate obtuse unequally serrate, calyx villose.]

DESCRIPTIONS, &c.

1. Root perennial, sending up in the spring three, four or more stems, a foot and half high, [or more, upright, with a few branches at the base. The whole plant is hairy. Leaves opposite, petioled, ovate, elliptic, or ovate-lanceolate, somewhat pointed, unevenly and bluntly serrate, the serratures terminating in purplish glands, slightly villose, wrinkled; petioles channelled above, hirsute, united at the base. Flowers large, handsome, growing chiefly on one side, in half whorls about six flowers together. Peduncles round, somewhat hairy, axillary, the length of the petioles. Calyx somewhat inflated, veiny, smooth except the veins which are somewhat hairy: border on the upper side turned outwards like a spout, with a lanceolate segment on each side, the lower lip cut off and finely serrate: but the divisions of the lips are inconstant. Corolla slightly villose, white stained with purple; the middle segment of the lower lip full purple edged with white, and the edge finely notched. Filaments villose, shorter than the corolla. Seeds of a blackish colour^k.

Mr. Curtis remarks, that the cruciform appearance of the anthers ought not to form a part of the essential character, being common to many of the didynamous plants; we may add, that it is a character which is apparent only for a short time.

He remarks farther, that most authors describe the *Melittis* as having an unpleasant smell: the fresh herb when bruised partakes of the scent of Balm, and of stinking Horehound (*Ballote*); but when dried it becomes delightfully fragrant: the flowers when they first open are odoriferous.

Native of several parts of Europe: with us in the western parts of the kingdom only, as in Devonshire, about Totness, Barnstaple, &c. Hampshire, in the New Forest; Pembrokehire, about Haverford West; in woods and shady places. It flowers in May or June.

β. *Clusius* mentions a variety in all respects smaller, the leaves more like those of *Lamium purpureum*, ovate and heart-shaped, or at least more inclining to that figure than our plant; the flowers are not so large as ours; they are usually of a pale red, and sometimes white. It is a native of Switzerland, Austria, &c.

Much honey is secreted from a gland that encircles the base of the germ; hence this is a favourite plant with bees, and it accords well with its name *Melittis*^l.]

2. Stem upright, villose, simple, a span high. Leaves petioled doubly serrate, villose, spreading, a finger's length. Flowers peduncled, solitary in the axils of the leaves. Peduncle rough-haired, an inch long. Calyxes strigose-hirsute, drooping^m.

^k Curtis, Withering.

^l Curtis.

^m Thunberg.

Native

Native of Japan. When Thunberg published his *Flora Japonica* he was not aware that this is different from the European plant.

PROPAGATION AND CULTURE.

1. This is a handsome plant, continuing in flower three weeks or a month, if the season is not very hot. As it rarely produces good seeds in the gardens, it is usually propagated by parting the roots; but where the plants are intended for ornament, the roots should not be disturbed oftener than every third year; nor should they then be divided into small parts, lest thereby they should not flower the first year. The best time to remove and part the roots is the beginning of October, that they may have time to get root before the frost comes on. They should have a loamy soil and an east exposure, where the plants will thrive and produce flowers in plenty.

MELO and MELON. See *Cucumis*.

MELOCACTUS. See *Cactus*.

MELOCHIA.

Lin. gen. n. 829. Reich. n. 894. Schreb. n. 1110.

Gartn. t. 113. Juss. 274. Dill. elth. 176.

Cavan. diff. 6. 318.

Class. 16. 2. Monadelphia Pentandria.

Nat. order of *Columniferae. Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* (often double: outer one-sided, three-leaved: inner) one-leaved, half-five-cleft: segments half-ovate, acute, permanent.

COR. *Petals* five, obcordate, spreading, large.

STAM. *Filaments* five, awl-shaped, united at the base into a pitcher involving the germ. *Anthers* simple.

PIST. *Germ* roundish. *Styles* five, awl-shaped, erect, the length of the stamens, permanent. *Stigmas* simple.

PER. *Capsule* roundish or five-cornered, five-celled, five-valved: valves acute: partitions contrary, doubled.

SEEDS solitary or in pairs, on one side roundish, on the other angular compressed.

OBS. *The calyx in some species is double, in others single.*

ESSENTIAL CHARACTER.

Five-styled. *Caps.* five-celled, one-seeded.

SPECIES.

1. *Melochia pyramidata. Pyramidal Melochia.*

Lin. spec. 943. syst. 611. Reich. 3. 304. hort. cliff.

342. Loeft. itin. 255. Gartn. fruct. 2. 153.

t. 113. Swartz obs. 255. Brown. jam. 276. 3.

Pluk. phyt. t. 131. f. 3. (Althæa).

Abutilon herbaceum procumbens, betonicæ folio, flore purpureo. Sloan. jam. 1. 220.

Flowers umbelled, capsules pyramidal five-cornered, angles mucronate, leaves naked.

2. *Melochia tomentosa. Downy Melochia.*

Lin. spec. 943. syst. 611. Swartz obs. 256. Jacqu.

amer. 193. Brown. jam. 276. 1.

Abutilon arboreum spicatum, betonicæ folio incano, flore minore purpureo. Sloan. jam. 1. 219. t. 138. f. 2, 3.

Flowers umbelled axillary, capsules pyramidal, five-cornered, angles mucronate, leaves tomentose.

[3. *Melochia crenata. Notch-leaved Melochia.*

Vahl symb. 3. 86. t. 68.

Leaves roundish crenate tomentose marked with lines, umbels axillary and terminating peduncled.]

4. *Melochia depressa. Flat-fruited Melochia.*

Lin. spec. 943. syst. 611. Reich. 3. 305. Brown. jam. 276. 2.

Abutilon americanum, ribesii foliis, flore carneo, fructu pentagono aspero. Houst. M. S. Mill. fig. t. 3. f. 2.

Flowers solitary, capsules depressed five-cornered, angles blunt ciliate.

5. *Melochia venosa. Veiny-leaved Melochia.*

Swartz prodr. 97.

Sida pilosa. Mill. dict. n. 17.

Peduncles distinct terminating many-flowered, leaves ovate ferrate veined tomentose underneath, stem hairy.

6. *Melochia concatenata.*

Lin. spec. 944. syst. 611. fl. zeyl. n. 247. Pluk. phyt. t. 9. f. 5. (Althæa).

Racemes clustered terminating, capsule globular sessile.

[7. *Melochia nodiflora.*

Swartz prodr. 97. Vahl symb. 2. 78. Sloan. jam. 1. 219. t. 135. f. 2. (Abutilon).

Flowers conglobate axillary, capsules globular, leaves ovate acuminate smooth.

8. *Melochia lupulina.*

Swartz prodr. 97.

Racemes clustered axillary, calyxes inflated membranaceous, leaves ovate-cordate gasb-ferrate tomentose underneath.

9. *Melochia corchorifolia. Red Melochia.*

Lin. spec. 944. syst. 611. Reich. 3. 305. fl. zeyl.

n. 246. Kuiph. cent. 9. n. 66. Dill. elth. 221.

t. 176. f. 217. Pluk. phyt. t. 44. f. 5. (Althæa).

Rheed. mal. 9. 143. t. 73. (Tsjeru-uren).

Flowers in sessile heads, capsules roundish, leaves subcordate sublobate.]

10. *Melochia lupina. Prostrate Melochia.*

Lin. spec. 944. syst. 611. Reich. 3. 306. Pluk.

phyt. t. 132. f. 4. (Alcea).

Flowers in heads, leaves ovate ferrate, stems procumbent.

11. *Melochia odorata. Sweet-scented Melochia.*

Lin. syst. 611. suppl. 302. Forst. flor. austral.

n. 253.

Panicles peduncled compound, leaves ovate subcordate sublobate biferrate smooth. Suppl.—cymes corymbed axillary, leaves cordate acuminate ferrate. Forst.

DESCRIPTIONS, &c.

There are some shrubby, others herbaceous, flowers axillary and terminating, sometimes glomerate^a.

1. Stem shrubby at the base, branched, a foot high. Branches depressed, diffused, ascending, simple, smooth. Leaves alternate, ovate, acuminate, ferrate, nerved, smooth. Petiole shorter than the leaves, somewhat erect, slender. Flowers peduncled, subumbelled. Peduncles lateral, opposite to the petioles, solitary, the length of the petioles, three-flowered. Corollas small, blood-red, frequently closed. Calyx five-toothed; teeth erect, lanceolate, acute. Claws of the petals yellow at the base; border suberect, entire, blunt^b. Capsule membranaceous, vascular-netted, from a ventricose base rising into a short pyramid, having five narrow wings at the corners produced near the base into a horizontal dagger-point: the valves open along these wings, and are accompanied within by a middle septum. Seeds two, seldom only one, ovate, acuminate downwards, convex on one side, on the other angular with a longitudinal white line, smooth, of a brown rust-colour; fastened by a very short umbilical chord to the central margin of the septa or partitions^c. According to Swartz the seeds are solitary and oblong—according to Miller, solitary, and angular.

Swartz assures us, that *M. dominicensis* of Jacquin certainly differs from this, the stem being four feet high, the leaves two inches long, &c. If so, *M. pyramidata* of Miller is not the same with that of Swartz, for he describes it as four or five feet high, and says that the flowers are of a pale flesh-colour.

Browne describes it as a very elegant little plant, commonly shooting to the height of three feet or more, so slender and weak as generally to require some support. The umbels of flowers are usually placed pretty near, and each has five or six rays, on a common peduncle.

Native of Brazil and Jamaica. Cultivated by Mr. Miller in 1768.

2. This is an upright shrub, little branched, only three feet high in open rocky situations, but seven feet high in woods. Leaves oblong-ovate, tooth-ferrate, acute, tomentose on both sides, alternate, petioled, an inch and half long, with a stipule on each side. Common peduncles solitary, sustaining in an umbel at top about five flowers with rose-coloured corollas. Petals obovate, blunt, a little longer than the calyx, flat, erect, with a spreading border, the claws coalescing with the body of the filaments. Filaments the length of the corolla. Styles shorter than the stamens. Seeds one or two, angular^d.

According to Swartz, it is easily known from the preceding, by its being a shrub often a fathom in

^a Jussieu. ^b Swartz. ^c Gærtner. ^d Jacquin.

height, with rod-like branches having a brown bark: leaves soft crenate, plaited, tomentose: peduncles umbellated, many-flowered: flowers larger, purple. Browne says, that the leaves are whitish, and the flowers of a light flesh-colour.

Native of Jamaica, Martinico, St. Martin's and other islands of the West Indies.

Swartz suspects that *M. domingensis* of Jacquin, which has been generally supposed to be the same with *M. pyramidata* of Linneus, may be a variety of this species.

3. This is a shrub with a purplish bark, and alternate, villose-tomentose, hoary branches. Leaves distant, scarcely an inch long or smaller, the younger ones tomentose on both sides, soft, hoary, plaited, when older smoother above and marked with lines. Petioles short, tomentose, hoary. Stipules ovate, hairy on the outside, smooth within, one-third of the length of the petiole. Peduncles axillary, solitary, the length of the petiole, hirsute. Pedicels umbellated, usually five, one-flowered; seldom single, two-flowered; the length of the peduncle. Bractes bristle-shaped, minute, deciduous, at the base of the pedicels. Calyx simple; segments lanceolate, hirsute, shorter by half than the corolla. Germ hirsute. Capsule oblong, five-cornered, hoary, twice the length of the calyx, terminated by the styles, which are hirsute, and rounded at the angles.

Native of South America, where it was observed by von Rohr^c.]

4. This rises with a shrubby stalk five or six feet high. Leaves angular, resembling those of the Currant bush. Flowers produced singly from the side of the stalk; they are of a flesh colour, and in shape like those of the small-flowering Mallow. Capsules five-cornered, rough, inclosing five Mallow-shaped seeds.

[Browne says, it rises commonly to the height of two or three feet, throwing out a few slender flexile branches on all sides: the leaves spread themselves every day about noon, to receive the heat of the sun more freely, but as the air grows cooler, they generally rise upright, and stand almost parallel to the stem or branches; this mechanism of the leaves is greatly forwarded by the knee in the footstalk of each. It is found in many parts of Jamaica.] According to Miller, it was discovered at the Havannah, by Dr. Houstoun.

5. Stem woody, four feet high, covered with brown hairs, and sending out a few long slender branches, on the lower parts of which are leaves an inch and half long and three quarters of an inch broad, slightly serrate, and having many longitudinal veins: the upper parts have no leaves for more than a foot in length, and from their sides come out peduncles two inches long, sustaining several small yellow flowers in clusters, having hairy calyxes, cut at the top into several acute segments.

Found in South America by Dr. Houstoun: [in Jamaica by Swartz.

6. This is a perennial, upright, smooth plant, with stiff branches. Leaves smooth, ovate-oblong, serrate, sublobate at the base on both sides, petioled. Racemes several in bundles, divaricating^f.

Natives of the East Indies.

7. This is a shrub, with round, alternate, smooth, purple branches, a little flexuose. Leaves two inches long and more, smooth on both sides, nerve-veined above, with the veins purplish underneath, serrate, acute. Petioles pubescent, short. Stipules lanceolate, smooth, the length of the flowers, deciduous. Flowers conglomerate in the axils, sessile, small. Bractes ovate, the length of the flowers. Segments of the calyx ovate-acuminate. Corolla longer than the calyx^g.

Native of Jamaica and other islands of the West Indies.

8. Native of Jamaica, where it was found by Swartz.

9. This is an annual plant, hardish and diffused, with rugged, rod-like branches. Leaves bluntish, naked, plaited, serrate. Flowers terminating: Corollas pale

purple with a yellow bottom^h.—Native of the East Indies. Cultivated in 1732 by James Sherard, M. D.ⁱ from seeds sent over by Jo. Phil. Breynius^k.]

10. This is an annual plant with trailing stalks, and small Betony-shaped leaves. The flowers and fruit are produced in clusters at the ends of the branches.—Native of the East Indies.

[11. This is smooth, but the peduncles are ash-coloured with a very fine down. The leaves very much resemble those of the ninth sort, but are much larger. Panicles on long peduncles and branched. Flowers large^l.

Native of the islands of Tanna and Tongataboo in the South Seas.

Wifenia indica of Gmelin; *Wifenia umbellata* of Houttuyn is the same as this^m.]

PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed, and when the plants come up treat them in the same manner as is directed for *SIDA*. The shrubby sorts may with care be preserved through the winter in a stove, whereby good seeds may be obtained, for they seldom ripen their seeds well the first year, unless the plants are brought forward early in the spring, and the summer proves warm. The other sorts generally ripen their seeds the same year they are sown.

[*MELOCHIA*. See *Waltheria*.

MELODINUS. (So named by Forster, from *μηλον* an apple, and *δινω* to turn round; this plant bearing a round fruit like an apple, and having a twining stem by which it climbs trees.)

Lin. gen. Schreb. n. 425. suppl. 23. Forst. gen. 23. Juss. 148.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Contortæ*. *Apocineæ*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted, permanent: leaflets ovate, lying over each other at the edge.

COR. one-petalled, salver-shaped. Tube cylindrical, three times as long as the calyx. Border five-parted, flat: segments sickle-shaped, crenulate, twisted to the right, shorter than the tube.

Nectary in the mouth of the tube, stellate: segments five, cloven, lacerated.

STAM. *Filaments* five, awl-shaped, very short, in the middle of the tube. *Anthems* ovate.

PIST. Germ globular, superior. Style round, the length of the calyx, bipartite. Stigma conical, acute.

PER. Berry fleshy, globular, many-seeded: with a fleshy partition.

SEEDS numerous, ovate-roundish, flattened a little, nestling.

ESSENTIAL CHARACTER.

Contorted. *Nect.* in the middle of the tube, stellate.

Berry two-celled, many-seeded.

SPECIES.

1. *Melodinus scandens*.

Lin. syst. 256. suppl. 167. Forst. flor. austral. n. 125.

DESCRIPTION, &c.

This is a very smooth shrub with a climbing stem. Leaves oblong-ovate, veined, quite entire, very smooth, opposite. It has a great affinity with *Rauwolfia*.

Native of New Caledoniaⁿ. Found there the 13th of september, 1774.

MELON. See *Cucumis*.

MELONGENA. See *Solanum*.

MELON THISTLE. See *Cactus*.]

MELOPEPO. See *Cucurbita*.

MELOTHRĪA. (Altered from *Melothron* of Pliny, *Μελωθρον* of Theophrastus.)

Lin. gen. n. 50. Reich. n. 55. Schreb. n. 68. Juss. 395.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Cucurbitaceæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, bell-shaped, ventricose, five-toothed, superior, deciduous.

^h Linn. ⁱ Hort. kew. ^k Dillenius. ^l Linn. suppl.
^m Dryander in Linn. trans. 2. 230. ⁿ Linn. suppl.

MEM

COR. one-petalled, wheel-shaped. *Tube* the length of the calyx, and fastened all round to it. *Border* five-parted, flat: segments broader outwards, very blunt.

STAM. *Filaments* three, conical, inserted into the tube of the corolla, and of the same length. *Anthers* twin, roundish, compressed.

PIST. *Germ* ovate-oblong, acuminate, subinferior. *Style* cylindric, the length of the stamens. *Stigmas* three, thickish, oblong.

PER. *Berry* ovate-oblong, internally without the partitions three-parted.

SEEDS several, oblong, compressed.

OBS. *Two male flowers were seen once, besides the hermaphrodites.*

ESSENTIAL CHARACTER.

Cal. five-cleft. *Cor.* bell-shaped, one-petalled. *Berry* three-celled, many-seeded.

SPECIES.

1. *Melothria pendula*.
Lin. spec. 49. *syft.* 82. *Reich.* 1. 94. *Willd.* 189. *hort. cliff.* 490. *upf.* 15. *Gron. virg.* 10. *Kniph. orig. cent.* 4. n. 49. *Swartz obs.* 26. *Brown. jam.* 124. *Pluk. phyt. t.* 85. f. 5. *Sloan. jam.* 1. 227. t. 142. f. 1. (*Cucumis*). *Plum. spec.* 3. ic. 66. f. 2. (*Bryonia*).

DESCRIPTION, &c.

1. This plant grows wild in the woods in Carolina, Virginia, and also in many of the islands in America; it creeps upon the ground with slender Vines, having angular leaves, somewhat resembling those of the Melon, but much smaller. These Vines strike out roots at every joint, which fasten themselves into the ground, and thereby a larger share of nourishment is drawn to the plants, by which means their stalks extend to a great distance each way, and closely cover the ground. The flowers are very small, in shape like those of the Melon, and of a pale sulphur colour.

The fruit, in the West Indies, grows to the size of a Pea, of an oval figure, and changes black when ripe; these are by the inhabitants sometimes pickled when they are green.

In England the fruit are much smaller, and are so hidden by the leaves, as to render it difficult to find them.

[*Peduncles* filiform, lax, one-flowered°. *Swartz* says, that it always appeared to him to be monoecous, inasmuch that it differs from *Cucumis* only in having a berried fruit, which has exactly the same taste with a green Cucumber.

Stem angular, striated, filiform, weak, slender, even, two feet long, annual. *Leaves* flat, rugged, five-lobed, the front lobe divided with deeper sinuses, cordate at the base, the margin very slightly toothletted, on lax petioles, bent in at the base, alternate, remote, the length of the leaf; a very simple solitary long tendril comes out close to the petiole. *Peduncle* axillary, solitary, bristle-shaped, very long, one-flowered. A branch from the same axil, very like the stalk. *Corolla* yellow. *Fruit* the size of a Peony seed, tubercled, pendulous°. *Browne* says it is remarkable for the slender stalk and small black oval berries.

It was cultivated in 1759, by Mr. Miller.¹]

PROPAGATION AND CULTURE.

The plants will not grow in the open air here, but the seeds must be sown upon a hot-bed, and if the plants are permitted, will soon spread over the surface of a large bed; and when the fruit is ripe, if it scatters the seeds, the plants will come up where the earth happens to be used on a hot-bed again, and if they are supplied with water, will require no farther care. This plant is in some gardens preserved for the sake of variety, but is of no use.

[**MEMECYLON** (*of Pliny. Μεμηνυλον of Dioscorides.*)
Lin. gen. n. 481. *Reich. n.* 522. *Schreb. n.* 657. *Juss.* 321. *Gartn. t.* 127. 179.
Class. 8. 1. *Octandria Monogynia.*
Nat. order of Calycifloræ. Onagrace. Juss.

• Linn. syft. P Linn. hort. cliff. 9 Hort. kew.

MEM

GENERIC CHARACTER.

CAL. *Perianth* undivided, superior, bell-shaped, turbinate, quite entire, with a pitcher-shaped striated base, permanent.

COR. *Petals* four, ovate, acute, spreading.

STAM. *Filaments* eight, erect, widened and truncated at top. *Anthers* simple, inserted by their sides into the apex of the filament.

PIST. *Germ* turbinate, inferior. *Style* awl-shaped. *Stigma* simple.

PER. *Berry* crowned with a cylindrical calyx.

SEEDS

ESSENTIAL CHARACTER.

Cal. superior with a striated base and the margin quite entire. *Cor.* one-petalled. *Anth.* inserted into the side of the apex of the filament. *Berry* crowned with a cylindrical calyx.

SPECIES.

1. *Memecylon capitellatum*.
Lin. spec. 497. *syft.* 362. *Reich.* 2. 163. *fl. zeyl.* n. 136. *Burm. zeyl.* 76. t. 30. (*Cornus*).
Leaves ovate bluntish, heads axillary subpeduncled.
2. *Memecylon grande*.
Retz. obs. 4. 26. n. 80.
Leaves ovate acuminate, peduncles axillary with many-flowered pedicels.
3. *Memecylon umbellatum*.
Gartn. fruct. 2. 207.
β. Id. Ib. 483.
4. *Memecylon edule*.
Roxb. corom. 59. t. 82.
Leaves ovate acute, umbellets compound naked.

DESCRIPTIONS, &c.

1. This is a tree with round branchlets. *Leaves* smooth, opposite, quite entire, on very short petioles. *Peduncles* axillary, opposite, solitary, short, terminated by a head of flowers. Allied to *Vaccinium*, but the appearance is different.—Native of Ceylon¹.

2. This is a large tree, with round branches. *Leaves* opposite, quite entire, half a foot long. *Peduncles* alternate, four or five-cleft, with many-flowered pedicels. *Anthers* incumbent, all curved, perhaps in drying.—Native of the East Indies. Communicated by Koenig².

3. *Berry* inferior, globular, crowned with the calyx permanent tubular eight-streaked within and spreading into a repandly quadrangular margin, or not streaked and merely four-toothed, one-celled, rufescent. *Cuticle* coriaceous, thin. *Pulp* watery, fugacious. *Seeds* two or only one, globular, very smooth and even, shining, pale chestnut coloured, with a depressed point at top.

β. *Berry* subglobular, twin, crowned with the bluntly four-toothed calyx, one-celled, two-seeded, smooth, of a pale straw-colour. *Bark* becoming very thin and as it were papery by age. *Tube* of the calyx smooth and even within, without any vestige of streaks. *Seeds* two, hemispherical, very smooth and even, shining, dun-coloured. The berries are much smaller, with a thinner smooth bark, the calyx is not at all striated within, the seeds are commonly in pairs, and the peduncles of the berries are longish and manifestly corymbed³. *Gartner* affirms that this is certainly *Samarra læta* of Linneus; in which he is probably mistaken.

4. *Trunk* very irregular in shape and size, covered with a dark-coloured scabrous bark. *Branches* numerous nearly erect. *Leaves* opposite short-petioled, ovate, smooth, shining, firm, entire, with scarcely any veins; from three to four inches long, and from two to three broad. *Umbellets* many, compound, small; from scabrous elevations, where the leaves stood, over the old woody branches. *Peduncles* common and partial, four-sided. *Pedicels* round, coloured. Seldom more than one seed comes to perfection, though in the germs the rudiments of many are to be seen.

It is a very common small tree or large shrub, in every jungle on the coast of Coromandel. It flowers about the beginning of the hot season. The ripe

• Linn. zeyl.

• Retzius.

• Gartner.

M E N

berries are eaten by the natives; they have much pulp of a bluish-black colour, and of an astringent quality.

MEMECYLUM. See *Epigaea*; *Samara*.

MENAIIS.

Lin. gen. n. 239. Reich. n. 256. Schreb. n. 325.

Loefl. 306. D. Aymen. Juss. 128.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Borraginea*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved: *leaflets* concave, lax; acuminate, small, permanent.

COR. one-petalled, salver-shaped. *Tube* cylindrical, longer than the calyx. *Border* flat, five-parted, with rounded segments.

STAM. *Filaments* five, very short, inserted into the tube. *Anthers* awl-shaped, at the throat of the corolla.

PIST. *Germ* roundish. *Style* filiform, the length of the tube. *Stigmas* two, oblong.

PER. *Berry* globular, four-celled.

SEEDS solitary, subovate, sharp at one end.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. salver shaped: Berry four-celled. Seeds solitary.

SPECIES.

1. *Menais topiaria*.

Lin. spec. 251. Syst. 218. Reich. i. 488. Loefl. it. 306.

DESCRIPTION, &c.

Stems round, somewhat villose. Leaves alternate, ovate, entire, rough.—Native of South America^u.

MENANDRA. See *Lechea*.

MENDONI. See *Gloriosa*.

MENISCIUM. (So named from the fructifications being in the form of a little Crescent.)

Lin. gen. Schreb. n. 1630. Asplenium. Jacqu. collect. 2. t. 3. f. 2.

Class. 24. 2. Cryptogamia Filices, or Ferns.

GENERIC CHARACTER.

Capsules heaped in crescents, interposed between the veins of the frond.

SPECIES.

1. *Meniscium reticulatum*.

Asplenium forbifolium. Jacqu. collect. 2. 106.

Polypodium reticulatum. Lin. spec. ed. Reich. 4. 417.

Filix. Plum. amer. 6. t. 9. fl. 92. t. 110. Pet. fl. 10. t. 6.

DESCRIPTION, &c.

Root fibrous, black. Fronds several, pinnate, four feet long. Stipe black, grooved in front, angular, brown, appearing somewhat villose when magnified. Pinnas very many, alternate with an odd one, on short petioles, from an ovate base long lanceolate, acuminate, crenate, a little sickle-shaped at the end, smooth above, somewhat villose along the nerves underneath, from six to nine inches long, an inch or an inch and half wide. The midrib is prominent at the back, and at a very obtuse angle puts forth on both sides towards the edges numerous parallel nerves, which are also prominent: these are connected by several arched veins; whence the pinnas seen against the light appear like beds in a parterre. On these veins are placed as many arched-oblong, parallel, dark-rufous fructifications, composed of very minute shining globules, those which are next the midrib larger. They are not so close upon the whole as in most of the *Aspleniums*: nay they sometimes exhibit distinct globules thinly placed.—Native of Martinico^{*}, Brazil, &c.]

MENISPERMUM. (From *Mēn* the Moon, and *σπέρμα* a seed. The seed being shaped like a crescent.)

Lin. gen. n. 1131. Reich. n. 1238. Schreb. n. 1544.

Gartn. t. 46 & 70. Tournef. mem. acad. 1705.

Juss. 285. Mill. illustr.

Class. 22. 10. Dioecia Dodecandria.

Nat. order of *Sarmentaceae*. *Menisperma*, Juss.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* two-leaved: *leaflets* linear, short.

COR. *Petals* outer six, ovate, spreading, equal-inner

^u Linn. spec.

^{*} Jacquin.

M E N

eight, obcordate, concave, smaller than the outer, four of them in the inner row wider.

STAM. *Filaments* sixteen, cylindric, a little longer than the corolla. *Anthers* terminating, very short, bluntly four-lobed.

* Female.

CAL. and COR. as in the Male.

STAM. *Filaments* eight, like those of the male. *Anthers* pellucid, barren.

PIST. *Germ*s two or three, ovate, curved inwards, converging, pedicelled. *Styles* solitary, very short, recurved. *Stigmas* bifid, blunt.

PER. *Berries* two or three, roundish-kidney-form; one-celled.

SEEDS solitary, kidney-form, large.

OBS. The above character is from *M. canadense*, and should be compared with the fructifications of the other species: the calyx being six-leaved, the corolla six-petalled, six stamens and three pistils, according to Willich, Miller and others; or, according to Walter (carol. 247.) the calyx three-leaved, petals three, scales of the nectary six, six stamens, six germs without any styles, and six berries. S. Meesia of Gartner, t. 79. seems allied to it.

ESSENTIAL CHARACTER.

MALE. Pet. four outer, eight inner. Stam. sixteen.

FEM. Cor. as in the male. Stam. eight, barren. Berries two, one-seeded:

SPECIES.

1. *Menispermum canadense*. Canadian Moon-seed.

Lin. spec. 1468. Syst. 892. Reich. 4. 272. hort. cliff. 140. upf. 91. Gron. virg. 153. 56. Gmel. sib. 3. 107: n. 86. Willich obs. 14. Du Roi herb. 1. 405. Medic. in obs. soc. econ. Lutr. 1774. 226.

Mill. illust. Tournf. aff. 1705 237. Pluk. phyt. t. 36. f. 2. (Hedera).

Leaves peltate cordate roundish-angular.

2. *Menispermum virginicum*. Virginian Moon-seed.

Lin. spec. 1468. Syst. 892. Reich. 4. 272. Gron. virg. 40. 56. Dill. elth. 223. t. 178. f. 219.

Raii hist. 3. app. 253. n. 40. (Baccifera, &c.)

Upper leaves undivided, lower peltate cordate lobed.

[3. *Menispermum japonicum*. Japanese Moon-seed.

Lin. Syst. 892. Thunb. jap. 193.

Leaves peltate rounded-ovate entire.]

4. *Menispermum carolinum*. Carolina Moon-seed.

Lin. spec. 1468. Syst. 892. Reich. 4. 272.

Leaves cordate villose underneath.

[5. *Menispermum Cocculus*. Jagged Moon-seed.

Lin. spec. 1468. Syst. 892. Reich. 4. 273. mat. med. 216. Gartn. fruct. 1. 219. Gron. orient. 123.

Blackw. t. 389. Pluk. phyt. t. 13. f. 2. Retz. obs. 6. 34. n. 71.

Cocculus officinarum. Bauh. pin. 511. Pluk. mant. t. 545. f. 2.

Tuba baccifera. Rumph. amb. 5. 35. t. 22.

Leaves cordate retuse mucronate, stem jagged.

6. *Menispermum crispum*. Curled Moon-seed.

Lin. spec. 1468. Syst. 892. Reich. 4. 273.

Leaves cordate exquisite, stem quadrangular curled.

7. *Menispermum acutum*. Sharp-leaved Moon-seed.

Lin. Syst. 892. Thunb. jap. 193.

Leaves cordate behind angular acuminate, stem round striated.

8. *Menispermum orbiculatum*. Round-leaved Moon-seed.

Lin. spec. 1468. Syst. 892. Reich. 4. 273. Pluk. amalth. t. 384. f. 6. Burm. ind. 316. Thunb. jap. 194.

Leaves orbicular villose underneath.

9. *Menispermum hirsutum*. Hairy-leaved Moon-seed.

Lin. spec. 1469. Syst. 892. Reich. 4. 273. Pluk. amalth. t. 384. f. 7.

Branch-leaves ovate, stem-leaves cordate villose tomentose underneath.

10. *Menispermum edule*. Eatable Moon-seed.

Vahl symb. 1. 80.

Cebatha edulis. Forsk. descr. 171.

Leaves oblong smooth, flowers six-stamened.

11. *Menispermum myosotoides*.

Lin. spec. 1469. Syst. 892. Reich. 4. 273. Pluk. amalth. t. 384. f. 3.

Leaves linear-lanceolate hirsute.

12. *Menispermum trilobum*.
Lin. syst. 892. *Thunb. jap.* 194.
Leaves three-lobed.
 13. *Menispermum fenestratum*.
Gertn. fruct. 1. 219.

DESCRIPTIONS, &c.

Flowers in spikes or racemes, supraaxillary or terminating, each furnished with its bracte^a.]

1. Root thick, woody. Stems many, climbing, becoming woody, and rising to the height of twelve or fourteen feet, twisting themselves about the neighbouring plants for support. Leaves large smooth, with the footstalk almost in the middle, and a hollow there on the upper side. The flowers come out in loose bunches from the side of the stem; they are of an herbaceous colour, small, and composed of two rows of oblong oval petals. Stamens very short, ten in the male flowers. Germs and berries two, in the female flowers, channelled, each containing one seed.

[The stem twines in a direction contrary to the sun's apparent motion, and is smooth and even. Leaves rounded-cordate, five-angled, smooth and even, acuminate. Peduncle two-racemed, supraaxillary, nodding, shorter than the petiole^b.—Native of Virginia, Canada, and Siberia. Cultivated in 1713 by Bishop Compton. It flowers in June and July^c.]

2. This differs from the preceding in the shape of the leaves, which are angular and sometimes heart-shaped, but not peltate, having the footstalk at the base. The stems become woody, and rise nearly as high as those of the first sort. The flowers and berries do not differ from them.

[Stems round, slender, twining. Leaves alternate, bright green, the form, colour and consistence of Ivy leaves, on the upper part of the stem entire, as on old Ivy; on the middle and lower part not unfrequently angular, as in young Ivy; although they have very slender hairs on them, yet they have the appearance of being smooth and shining, especially the younger leaves, for the older ones are subhirsute and less shining; underneath they are of a paler green. The stems and petioles are villose. Flowers in small naked spikes from the upper axils, composed of six short, blunt, whitish petals. The germ and style appear to consist of five or six horns. Berries three, four or five together, black, small, moderately compressed, wrinkled. Seeds compressed, hard, wrinkled.—Native of Virginia and Carolina^d. Cultivated in the Eltham garden about 1732.

3. Stem herbaceous, twining, striated with several angles, smooth in all parts, simple. Leaves alternate, acuminate, the point blunt and subretuse, glaucous underneath, the nerves running out from the centre, a hand in length. Petioles twining, grooved, scarcely twisted, a finger's length and more. Flowers axillary, decomposedly subumbelled, pedicelled, dioecous. Peduncles striated, an inch long. Pedicels striated-angular, umbelled, scarcely a line in length. Berries two, obovate-subreniform, compressed, most at bottom, united on both sides by a large oblong groove, muricated, one-valved, one-celled. Seed white.—Native of Japan^e.]

4. This differs from the second sort in its branches not becoming woody as in that. The stems are herbaceous, the leaves entire and hairy, and not more than half so large as those of the second, nor is the plant so hardy, so that it does not produce flowers in England, unless the season prove very warm.—Native of Carolina. [Introduced in 1765 by Mr. John Cree^f. Mr. Miller however cultivated this with the first and second sorts in 1759.

5. Drupes one, two or three, ovate-globular, fleshy, scarlet, smooth: shell subglobular, bony, somewhat rugged, gibbous on one side, compressed into an angle on the other, one-celled. Receptacle fungous, suberose, semiglobular, inserted by a thick peduncle into the belly of the shell. Seed solitary, bullate, smoothish, rufescent, with a wide perforation for the receptacle to

pass through it, marked with a ridge within^g. This is not the *Natsjatom* of the Hortus Malabaricus.

The twisting stems are usually the thickness of the human arm or thicker, irregular, and covered with a thick, lacerated, wrinkled bark: the branches terminate in strong simple tendrils. Leaves alternate, firm, a span long, deep green above, very yellow and lanuginose underneath, on long stout petioles, bent in or flexuose near the base. Bunches of flowers a foot and half long, dividing into several lateral ones. Petals six, white, reflex. The flowers have an unpleasant smell. Fruit in bunches like grapes, but smaller; first white, then red, and finally blackish purple; usually two or three, seldom four together, on a thickish, pyramidal, wrinkled peduncle. Pulp soft. Stone round, like that of a Cherry, but a little larger, wrinkled and granulated, having a fissure or aperture on one side, and a white bifid kernel within. These berries are used to intoxicate fish, birds, &c. in order to take them, being made up into a paste^h.—Native of the East Indies.

6. Native of Bengal.

7. Stem twining, simple, all over smooth. Leaves alternate, roundish-ovate, deeply cordate, very long pointed, entire, nerved, somewhat netted, glaucous underneath, smooth, a hand in length and breadth. Petioles loose, round, striated, a little shorter than the leaf.—Native of Japan.

8. The whole of this plant is very finely villose. Stem round, twining, with alternate branches like the stem. Leaves alternate, on very short petioles, the lowest triangular-ovate, the branch-leaves ovate, the uppermost orbiculate, blunt with a point, entire, an inch long, the upper ones gradually smaller. Flowers axillary, panicled, dioecous.—Native of the East Indies and Japan.

9. Native of the East Indies. The heads on Plukenet's figure are galls of some insect.

10. The whole plant is smooth. Leaves petioled, mucronate, the lower ones emarginate. Petioles two lines in length. Peduncles scarcely so long. Calyx six-leaved. Corolla six-petalled. Berries kidney-form, two with the rudiment of a third. Stamens six. Pistils three. In habit so like *M. hirsutum*, that there is scarcely any limit between themⁱ.—Native of Arabia.

11. Native of the East Indies. Perhaps it may be only the female of the ninth species, which varies much in the form of the leaves^k.

12. Stem filiform, twining, little branched. All parts of the plant rough-haired and villose. Leaves alternate, acute with a long point, quite entire, nerved, paler underneath, an inch long. Petioles round, villose, reflex at the base. Flowers axillary, racemed, deciduous, dioecous. Peduncle round, very short. Pedicels smooth, one-flowered, scarcely half a line in length. In the male the perianth is three-leaved, very small, smooth, whitish; the segments round, concave: besides three leaves of the calyx, and often two others, very small like a calycle. Corolla three-petalled, bell-shaped, white. Petals rounded, blunt, entire, concave, half a line in length. Nectary six leaves, within the petals and alternate with them, linear, cloven at the top, white, the length of the corolla. Filaments six, inserted into the leaves of the nectary, bent in at top, whitish, shorter than the nectary. Anthers round, yellow. In the female, the berry is globular, the size of a small pea. Seed single, globular, torulose, filling the berry.

Native of Japan, flowering in August and September^l. Found also in the province of Kianang in China by Sir George Staunton.

13. Drupe berried, obovate, solitary, pubescent, hoary. Rind thin, becoming coriaceous, closely fastened to the shell; which is large, kidney-form or globular flattened, bony, thick, erose on the outside, smooth within. Receptacle fungous-fleshy, from the base of the shell on a thick stalk, spread out into an irregular globe, filling the whole cavity of the seed, and diverging into various very irregular processes

^a Jussieu.^b Linn. spec.^c Hort. kew.^d Dillenius.^e Thunberg.^f Hort. kew.^g Gærtner.^h Rumphius.ⁱ Vahl.^k Dryander, M. S.^l Thunberg.

received within the plaits of the albumen. Seed single, subglobular, flattened a little, smooth on the outside with a transverse line, within hollow, with many turnings and windings, bullate, filled with the substance of the receptacle, having a wide perforation below. Skin single, membranaceous, very thin, pale. Albumen of the same form with the seed, fleshy like an Almond, thin, white, composed of two fleshy laminas, and divided into two leafy-compressed cells, in each of which each cotyledon resides. Embryo almost the size of the albumen, inverted, green or yellowish. Cotyledons leafy, very thin, roundish and concave, but variously flexuose, perforated with many holes and as it were windowed by the impressions of the receptacle; so entirely separated, that one inhabits the right and the other the left side of the seed, and both are opposite to each other. Radicle awl-shaped, very short, superior^m. Native of Ceylon.

Gärtner remarks, that the species of this genus vary much in their number in the flower and fruit; but that they all not only agree in the position of the cotyledons, but differ from all other plants in having a distinct cell for each cotyledon.

Many of the species have only six stamens, and Willich has observed that many have three pistils.]

PROPAGATION AND CULTURE.

1. 2. These are easily propagated by laying down the branches in autumn. They will have made good roots by the following autumn, when they may be separated from the old plant, and transplanted where they are designed to remain. Their branches being slender and weak, they require support. If planted near trees, they will thrive better than in an open situation.

4. This may be propagated by parting the roots, which spread out on the side, so that part of them may be cut off every other year; the best time for doing this is in the spring, a little before the plants begin to shoot; these should be planted in a warm situation and have a light soil, for in strong land, where the wet is detained in winter, the roots are apt to rot; therefore if they are planted close to a wall exposed to the south or west, their stalks may be fastened against the wall, to prevent their trailing upon the ground; and in this situation the plants will frequently flower, and by having a little shelter in severe frost, their stalks may be preserved from injury.

MENTASTRUM. See *Bystropogon*.

MENTHA. (Menta of Pliny. *Μινθῆ* of Theophrastus. From a nymph of that name, daughter of Cocytus, fabled to have been changed into this herb by Proserpine in a fit of jealousy. Some derive it from Mens, the Mind; others from *Μινθεῖν*, or *απο τοῦ Μινθου*, such is the uncertainty of derivation.)

Lin. gen. n. 713. Reich. n. 771. Schreb. n. 967. Tournef. t. 89. Juss. 113.

Nat. order of *Verticillata* or *Labiata*.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, upright, five-toothed, equal, permanent.

COR. one-petalled. Petals upright, tubular, a little longer than the calyx. Border four-parted, almost equal; the upper segment wider, emarginate.

STAM. Filaments four, awl-shaped, upright, distant, the two nearest longer. Anthers roundish.

PIST. Germ four-cleft. Style filiform, upright, longer than the corolla. Stigma bifid, spreading.

PER. none. Calyx upright, with the seeds in the bottom.

SEEDS four, small.

ESSENTIAL CHARACTER.

Cor. almost equal, four-cleft, the broader segment emarginate. Stam. upright, distant.

SPECIES.

[1. *Mentha Auricularia*.

Lin. syst. 532. Reich. 3. 41. mant. 81. mat. med. 147.

M. foetida. Burm. ind. 126.

Alopecuro-Veronica. Lin. zeyl. n. 411.

Veronica hirsuta latifolia zeylanica aquatica. Burm. zeyl. 228.

^m Gærtner.

Majorana foetida. Rumph. amb. 6. 41. t. 16.

Spikes cylindrical, leaves oblong acute serrate hairy subsessile, stem strigose, stamens longer than the corolla.

2. *Mentha niliaca*.

Lin. syst. 532. Jacqu. hort. 3. 46. t. 87. Vahl symb. 3. 75.

M. longifolia. Forsk. cat. n. 289.

Tomentose-hairy, spikes oblong, leaves ovate-lanceolate serrate sessile.

3. *Mentha glabrata*.

Vahl symb. 3. 75.

M. kahirina. Forsk. descr. 213.

Flowers racemed-verticillate, leaves petioled ovate-lanceolate serrate smooth.

4. *Mentha stellata*.

Lour. cochinch. 361.

Spikes beaped terminating, leaves stellate serrate.]

5. *Mentha sylvestris*. Horse Mint.

Lin. spec. 804. syst. 532. Reich. 3. 41. hort. cliff. 306. 2. upf. 168. mat. med. 147. Hudf. angl. 250.

Wither. arr. ed. 2. 596. Relb. cant. n. 422.

Hall. helv. n. 227. Fl. dan. t. 484. Pollich pal.

n. 550. Villars dauph. 2. 357. Krock. files.

n. 910. Kniph. cent. 9. n. 67.

M. sylvestris longiore folio. Bauh. pin. 227. Mor. hist. f. 11. t. 6. f. 6.

Menthastrum. Fuchs. 292. Trag. 20. 1. Riv. mon. 51. Blackw. t. 292.

M. spicatum folio longiore candicante. Bauh. hist. 3. 221. Raii hist. 532. syn. 234. Petiv. brit. t. 31.

f. 11.

β. *Menthastrum aquaticum* genus hirsutum, spica latiore. Bauh. hist. 3. 222. Ger. emac. 685. 5. Raii syn. 234.

Spikes oblong, leaves oblong serrate tomentose sessile, stamens longer than the corolla.

6. *Mentha viridis*. Spear Mint.

Lin. spec. 804. Reich. 3. 42. hort. cliff. 306. 1.

Hudf. angl. 250. Wither. arr. ed. 2. 597. Woodw.

med. bot. 463. t. 170. Hall. helv. n. 229. Villars

dauph. 2. 357. Krock. files. n. 911. Gron. virg.

167. 89.

Mentha. Camer. epit. 477. Dod. pempt. 95. 3; 4.

M. romana. Lob. obs. 271. 3, 4. ic. 1. 507. 2. & 508. 1.

Ger. emac. 680. 3.—*angustifolia* f. *Cardiaca*. Park. theat. 31.

M. angustifolia spicata. Bauh. pin. 227. Raii hist. 532.

M. spic. fol. longiore acuto glabro nigriori. Bauh. hist. 3. 220.

Spikes oblong, leaves lanceolate naked serrate sessile, stamens longer than the corolla.

7. *Mentha rotundifolia*. Round-leaved Mint.

Lin. spec. 805. Reich. 3. 42. Hudf. angl. 251.

Wither. arr. ed. 2. 598. Engl. bot. 446. Relb.

cant. n. 423. Hall. helv. n. 226. Pollich pal.

n. 551. Villars dauph. 2. 358. Krock. files.

n. 912.

M. sylvestris rotundiore folio. Bauh. pin. 227.

Menthastrum anglicum. Riv. mon. 51.

M. fol. rugoso rotundiore spontaneum, flore spicato odore gravi. Bauh. hist. 3. 219. 2. Raii hist. 532.

syn. 234. Petiv. brit. 31. 12.

Spikes oblong, leaves roundish rugged shaggy sharply crenate sessile, bractes lanceolate, stamens longer than the corolla.

8. *Mentha crispa*. Curled Mint.

Lin. spec. 805. Reich. 3. 42. hort. cliff. 306. 3.

upf. 168. mat. med. 147. Hall. helv. n. 230.

Krock. files. n. 913. Kniph. cent. 11. n. 75. Riv.

mon. t. 50. Lour. cochinch. 360.

M. crispa rotundifolia spicata. Bauh. pin. 227. hist. 3. 217. Raii hist. 531. 4.

M. cruciata. Park. theat. 31. 2. t. 32. f. 2.—f. *crispa*. Ger. emac. 680. 2.

Flowers in heads, leaves cordate toothed waved sessile, stamens equalling the corolla.

9. *Mentha hirsuta*. Round-headed Mint, or Hairy Water Mint.

Lin. syst. 532. Reich. 3. 43. mant. 81. Hudf.

angl. 252. Wither. arr. ed. 2. 598. Engl. bot.

447. Leers herb. n. 436. Krock. files. n. 914.

Lour. cochinch. 361.

- M. aquatica* f. *Sisymbrium hirsutius*. *Baub. hist.* 3. 224.
Sisymbria Mentha. *Ger. emac.* 555. 2.
Sisymbrium hirsutum. *Raii syn.* 233. t. 10. f. 1.
 β. *Mentha Sisymbrium dicta hirsuta*, glomerulis ac foliis minoribus ac rotundioribus. *Raii syn.* 233.
Flowers in dense compound terminating heads, leaves ovate serrate sessile pubescent, stamens longer than the corolla.
10. *Mentha aquatica*. *Water Mint*.
Lin. spec. 805. *syft.* 532. *Reich.* 3. 43. *hort. cliff.* 306. 4. *fl. suec.* n. 517. *Huds. angl.* 252. *Wither. arr. ed.* 2. 598. *Lightf. scot.* 305. *Relb. cant.* n. 425. *Hall. belv.* n. 225. *Scop. carn.* n. 748. *Pollich pal.* n. 552. *Neck. gallob.* 250. *Villars dauph.* 2. 359. *Krock. files.* n. 915. *Kniph. cent.* 11. n. 74.
M. palustris. *Mill. dict.* n. 11.
M. pal. spicata. *Riv. mon.* t. 49. *Blackw. t.* 32.
M. rotundifolia palustris f. *aquatica major*. *Baub. pin.* 227. *Mor. hist.* f. 11. t. 7. f. 6.
M. aquat. f. *Sisymbrium*. *Baub. hist.* 3. 223. *Ger. emac.* 684. 1. *Raii hist.* 533. *syn.* 233. *Petiv. brit.* t. 31. f. 6.
M. aquat. rubra. *Park. theat.* 1243.
Sisymbrium. *Fuchs.* 722. *Dod. pempt.* 97.
S. sylvestre. *Dalech. hist.* 677.
Aquatica f. *Sisymbria Mentha rubro folio & flore nigrae Menthae, & Balsamine Officinarum*. *Lob. obs.* 272. 2. ic. 1. 509. 1.
Flowers in heads, leaves ovate serrate petioled, stamens longer than the corolla.
11. *Mentha piperita*. *Pepper Mint*.
Lin. spec. 805. *syft.* 294. *Reich.* 3. 44. *mat. med.* 148. *Woodv. med. bot.* 461. t. 169. *Huds. angl.* 251. *Wither. arr. ed.* 2. 599. *Krock. files.* n. 916. *Zorn. ic.* t. 56.
M. spicis brevioribus & habitioribus, foliis Menthae fulcae, sapore fervido Piperis. *Raii syn.* 234. t. 10. f. 2. *Petiv. brit.* t. 31. f. 10.
Flowers in heads, leaves ovate petioled, stamens shorter than the corolla.
12. *Mentha fativa*. *Marsh Whorled Mint*.
Lin. spec. 805. *syft.* 532. *Reich.* 3. 44. *Huds. angl.* 253. *Wither. arr. ed.* 2. 600. *Engl. bot.* 448. *Fl. dan.* t. 794.
M. verticillata. *Lin. syft. ed.* 10. 1099. *Huds. angl. ed.* 1. 222. *Krock. files.* n. 921. *Riv. mon.* t. 48. 1. *Raii syn.* 232. *Petiv. brit.* t. 31. f. 8.
M. crispa verticillata. *Baub. pin.* 227. *Mor. hist.* f. 11. t. 7. f. 2. *Raii hist.* 531.—fol. rotundiore. *Baub. hist.* 3. 215. f. 216.
M. prima. *Dod. pempt.* 95. 1.
Cruciata Mentha. *Lob. obs.* 271. 1. ic. 1. 507. 1.
M. fativa rubra. *Ger. emac.* 680. 1.
M. crispa. *Park. theat.* 32. 4.
Menta. *Fuchs.* 288.
Flowers in whorls, leaves ovate sharpish serrate, stamens longer than the corolla.—Stem upright, leaves on winged footstalks, ovate serrate pubescent, peduncles and calyx hairy. E. B.
13. *Mentha gentilis*. *Red Mint*.
Lin. spec. 805. *syft.* 533. *Reich.* 3. 44. *Wither. arr. ed.* 2. 600. *Engl. bot.* 449. *Fl. dan.* t. 736. *Villars dauph.* 2. 359. *Krock. files.* n. 918. *Sabb. hort.* 3. t. 50.
M. rubra. *Huds. angl.* 252.
M. hortensis quarta. *Fuchs.* 291.
M. verticillata minor acuta non crispa, odore Ocymi. *Baub. hist.* 3. 216. t. 217. f. 1. *Raii hist.* 530.
M. hortensis verticillata, Ocymi odore. *Baub. pin.* 227.
M. fusca f. *vulgaris*. *Park. Raii syn.* 232.
Flowers in whorls, leaves ovate-lanceolate acute nearly sessile scarcely hairy, peduncles perfectly smooth, teeth of the calyx hairy.
14. *Mentha arvensis*. *Corn Mint*.
Lin. spec. 806. *syft.* 533. *Reich.* 3. 44. *hort. cliff.* 307. 5. *Fl. suec.* n. 516. *Huds. angl.* 253. *Wither. arr. ed.* 2. 601. *Lightf. scot.* 306. *Relb. cant.* n. 427. *Hall. belv.* n. 223. *Scop. carn.* n. 746. *Pollich pal.* n. 553. *Fl. dan.* t. 512. *Villars dauph.* 2. 360. *Krock. files.* n. 917.

- Calamintha arv. verticillata*. *Baub. pin.* 229.—*M. arv. verticillata hirsuta*. *Baub. hist.* 3. 217. 2.—*procumbens*. *Mor. hist.* f. 11. t. 7. f. 5.
M. arv. vert. f. aquatica. *Lob. obs.* 270. 1. ic. 1. 505. 2. *Park. theat.* 37. 5.
Calamintha aquatica. *Ger. emac.* 684. 2. *Raii hist.* 530. *syn.* 232. *Petiv. brit.* t. 31. f. 5.
Calaminthæ secundum genus. *Fuchs.* 435.
Flowers in whorls, leaves ovate acute serrate, stamens equalling the corolla.
- [15. *Mentha austriaca*. *Austrian Mint*.
Lin. syft. 533. *Jacqu. austr.* 5. t. 430. *Allion. pedem.* n. 73. t. 75. f. 2.
Flowers in whorls, all the segments of the corolla blunt, leaves subovate villose, stamens shorter than the corolla.
16. *Mentha canadensis*. *Canadian Mint*.
Lin. spec. 806. *Reich.* 3. 45.
Flowers in whorls, leaves lanceolate serrate petioled hairy, stamens equalling the corolla.
17. *Mentha Pulegium*. *Pennyroyal*.
Lin. spec. 807. *Reich.* 3. 45. *hort. cliff.* 307. 6. *mat. med.* 148. *Woodv. med. bot.* 466. t. 171. *Huds. angl.* 254. *Wither. arr. ed.* 2. 602. *Lightf. scot.* 306. *Relb. cant.* n. 428. *Hall. belv.* n. 221. *Scop. carn.* n. 747. *Villars dauph.* 2. 361. *Krock. files.* n. 920. *Ludw. ed.* t. 195. *Sabb. hort.* 3. t. 49. *Regn. bot.* *Lour. cochinch.* 361.
Pulegium. *Fuchs.* t. 198. *Baub. hist.* 3. 256. 2. *Dod. pempt.* 282. *Camer. epit.* 471. *Raii hist.* 533. *syn.* 235. *Riv. mon.* t. 23. f. 1. *Blackw.* 302. *Petiv. brit.* t. 32. f. 2.
P. mas Plinii. *Lob. obs.* 266. ic. 1. 500. 1.
P. regium. *Ger. emac.* 671. 1.
P. vulgare. *Park. theat.* 29. *Mill. dict.* n. 1.
P. latifolium. *Baub. pin.* 222.—*regium*. *Mor. hist.* 3. f. 11. t. 7. f. 1, 2. *row.* 2.
 β. *P. erectum*. *Spanish Pennyroyal*.
Mill. dict. n. 2.
Flowers in whorls, leaves ovate blunt subcrenate, stems roundish creeping, stamens longer than the corolla.
18. *Mentha cervina*. *Hyssop-leaved Mint*.
Lin. spec. 807. *Reich.* 3. 46. *hort. cliff.* 307. 7. *upf.* 168. *Hall. belv.* n. 222. *Villars dauph.* 2. 361.
Pulegium cervinum. *Mill. dict.* n. 3.
P. angustifolium. *Baub. pin.* 222. *Mor. hist.* 3. f. 11. t. 7. f. 7. *Riv. mon.* t. 23. f. 2. *Blackw. t.* 304.
Flowers in whorls, bractes palmate, leaves linear, stamens longer than the corolla.
- [19. *Mentha perilloides*.
Lin. syft. 533. *Reich.* 3. 47.
Ocimum frutescens. *Lin. spec.* 832. *hort. cliff.* 315. *fl. zeyl.* n. 225.
Cottam. Rheed. mal. 10. 153. t. 77.
Racemes lateral directed the same way.

DESCRIPTIONS, &c.

Root perennial, commonly creeping. Herb generally smelling very strong. Flowers either in axillary whorls, or in whorls forming a spike at the top^a.

1. Stem upright, four-cornered with the sides excavated, simple, a foot high, hispid with stiffish hairs. Spike very thick and close. Branches shorter from the lower axils^b. Calyx five-cleft. Corolla four-cleft. Filaments hairy^c.

Native of the East Indies.

2. Stems villose, branched, weak, a foot high, ascending. Leaves ovate, the smaller ones lanceolate, villose and green on both sides, acute, sharply serrate, veined. Spikes very close, about an inch in length, almost cylindric, on the branchlets usually solitary, on the top of the stem several, one upright, the next below horizontal. Flowers small. Calyx villose, with the border divided into five almost equal lanceolate-acuminate toothlets. Corolla pale, funnel-form, almost twice as long as the calyx; upper lip cordate or half five-lobed, lower divided into three ovate or oblong blunt segments; all violet-coloured in the middle. Filaments and style twice as long as the corolla. Anthers twin, violet^d.

^a Jussieu.^b Linn. zeyl.^c Linn. mant.^d Jacquin.

The wild plant is hoary all over, with very soft leaves, spikes two inches long formed of crowded whorls^c.

Native of Egypt.

3. The whole of this plant is smooth and herbaceous. Leaves an inch and half long, nerved, appearing dotted underneath when viewed with a magnifier. Peduncle terminating. Whorls eighteen-flowered, nine on each opposite peduncle, umbelled. Bractes linear, the length of the whorl. Stamens shorter than the corolla. Style longer^f.

Native of Egypt.

4. Stem herbaceous, upright, four-grooved, one foot high. Leaves in fours, oblong, blunt, smooth. Flowers very small, in oblong, heaped, terminating spikes. Calyx five-cleft, acute. Corolla twice as long as the calyx, dilated at the base, pale violet almost white; border spreading, segments blunt, short. Filaments longer than the corolla, surrounded with long hairs in the middle. Anthers very small. Style equal to the stamens. Seeds roundish.

Native of CochinChina^g.

5. Stem upright, four-grooved, branched at top, smooth at bottom, but hoary with down towards the top, almost wholly covered with leaves, a foot and half or two feet in height, sometimes three feet, and according to Pollich even six feet. Leaves smooth above, whitish and tomentose underneath, or white-tomentose on both sides, with slender sharp serratures. Spikes terminating the stem and branches, opposite, the lower on longer, the upper on shorter peduncles, all hoary with cottony down, thick and close with approximating whorls, an inch or an inch and half in length. Calyx hardly a line long, hoary. Corolla twice as long, pale purple. Filaments twice or thrice as long as the corolla^b. It varies with filaments equal only to the corollaⁱ. This circumstance appears to me a very uncertain mark of specific distinction.

Native of many parts of Europe, Denmark, Germany, Switzerland, France, England, in hedges, ditches, marshy and watery places. With us in Lincolnshire, Cambridgeshire, Essex, Suffolk, Kent, &c.

β. Horse-Mint or Water-Mint with a grosser spike was found by Dale near Bocking in Essex.

6. This is very nearly allied to the preceding, but it is smaller and smoother; the leaves are not white, are narrower and more pointed; the spikes are thinner, and the corolla is purplish red^k.

Native of Germany, Switzerland, France, and England, in watery places and on the banks of rivers, as on the Thames, and near Exmouth in Devonshire.

Mr. Miller has a variety, which he calls *M. glabra* (n. 2.) with smoother narrower leaves, very slightly serrated towards the points, which is cultivated in gardens with the other, and not distinguished from it.

He has also another which he calls *M. candicans*, with shorter broader leaves, the serratures more acute, and the under sides white. The stem divides more, and is therefore terminated by more spikes, the lower of which is interrupted. The scent of this is very like that of Garden Mint (*M. viridis*). This may perhaps be a variety of *M. sylvestris*.

This species not being so hot to the taste as Peppermint, and having a more agreeable flavour than most of the others is generally preferred for culinary and some medicinal purposes. The leaves or tops are used in spring salads, and eaten dried as sauce with lamb and in soups.

The preparations of Spear Mint are more pleasant than those of Pepper Mint, but perhaps less efficacious. This herb, as do the other sorts, contains much essential oil, but of an odour less agreeable than that of Lavender or Marjoram. It is therefore less employed as a cephalic; but it acts very powerfully on parts to which it is immediately applied, and therefore considerably on the stomach. It acts especially as an antispasmodic, and therefore relieves pains and cholic arising from spasm. It will also stop vomiting dependent on the same cause; but if it arise from an inflam-

matory irritation in the stomach itself, or in other parts of the body, it aggravates the disease. The infusion of Mint in warm water agrees better with the stomach than the distilled water. The officinal preparations are an essential oil, a conserve, a simple water, and a spirit. The conserve is very grateful, and the distilled waters, both simple and spirituous, are generally thought pleasant.

Lewis observes, that Mint is said to prevent the coagulation of milk; and hence it has been recommended to be used with milk diets, and even in cataplasms and fomentations for resolving coagulated milk in the breasts: upon experiment, the curd of milk, digested in a strong infusion of Mint, could not be perceived to be any otherwise affected than by common water; but milk, in which Mint leaves were set to macerate, did not coagulate near so soon as an equal quantity of the same milk kept by itself.

Lewis says that dry Mint digested in rectified spirits of wine, gives out a tincture which appears by daylight of a fine dark green, but by candle-light of a bright red colour. The fact is, that a small quantity of this tincture is green, either by day-light or candle-light, but a large quantity seems impervious to common day-light; however when held between the eye and a candle, or between the eye and the sun, it appears red: so that if put into a flat bottle it appears green, but when viewed edgewise red^l.

7. Stems from two to three feet high, erect, hairy or shaggy, the hairs pointing more or less downwards. Leaves somewhat cordate, rugged, strongly and sharply crenate or rather serrate, the teeth and points of the small upper ones being often very taper: the under side is shaggy not hoary, and all the veins are fringed as it were with close hairs. Spikes several, terminating, erect, sharpish, not very densely whorled: the bractes lanceolate, hairy, sharp and projecting. Flowers reddish. Calycine teeth broad at the base. Stamens always much longer than the corolla.

Our plant is very near, if not the same, to what Linneus intended for *crispa*, in the first edition of *Species Plantarum*; but it is not that of the second edition and all other authors, which has never yet been found in Britain. Ours is also *M. spicata* γ of that first edition.

Native of several parts of Europe. With us it is rather rare; growing in waste ground, generally where there is a moisture; and flowering in august and september. Shingham, Norfolk^m; near Faulkburn Hall, &c. Essex; Cambridgeshire; Hornsey and Harefield church-yards, Middlesex; near Ross, Herefordshire. Like several other species, it is found in the gardens variegated.]

8. Stems hairy, about the same height with common Spear Mint. Leaves deeply indented on their edges, waved and curled, light green. Flowers purple, growing in thick interrupted spikes at the top of the stalks. Calyx cut almost to the bottom. Style standing out beyond the corolla.

[Stem branched very much, upright, eighteen inches and more in height. Leaves hirsute, ovate-lanceolate, sessile or on a very short petiole, sharply toothletted, wrinkled, nerves prominent. Calyxes hirsute. Spikes short, formed of interrupted whorls with small leaves under eachⁿ.]

Mr. Miller says that it was brought originally from Denmark, but that Linneus fixes it as a native of Siberia. [It appears in some of the European Floras, but it is only or chiefly found there in gardens, as it is also in China and CochinChina, where it is used in medicine.—It was cultivated in 1658 in the Oxford garden^o.

9. Roots long, branched, creeping under water. Stem branched, very generally purplish, rough with deflex hairs scattered all over it; there is however a dense tuft of similar hairs, between the insertions of the foot-stalks, which are erect, and the hairs on the foot-stalks and leaves also point upwards or forwards. The degree of hairiness throughout the whole plant

^c Vahl. ^f Idem. ^g Loureiro. ^h Krock. ⁱ Hudson. ^k Krock. Villars, Linn.

^l Woodville and Withering. ^m English Botany. ⁿ Haller. ^o Hort. kew.

varies extremely. Leaves on shortish foot-stalks, sometimes almost sessile, spreading, ovate frequently approaching to elliptical, pointed, serrate from a little above the base to near the tip, paler and most hairy beneath, especially about the nerves. Flowers lilac-coloured, numerous, in a large round terminating head, which, when accurately observed, is found to be divided into three parts, and is accompanied, at a greater or less distance below it, by a pair, rarely more, of smaller axillary heads. Peduncles and calyx very hairy. Stamens generally longer than the corolla.

When out of the water it grows much smaller, more purple, with a simple head of flowers; which seems to be Hudson's variety γ , though not very well drawn by Dillenius in Ray's synopsis.

Hudson has considered this, perhaps rightly, as the same with *M. aquatica* f. *Sisymbrium* of John Bauhin, and Ray's Synopsis, which Dr. Smith believes to be *M. piperita* of Linneus, and which is described in Sir Joseph Banks's manuscripts by the name of *M. Sisymbrium*. *M. aquatica* of Linneus seems different from both.

M. hirsuta is very common in clear ditches, rivulets, and other watery places, growing sometimes among large grasses and reeds, sometimes by itself. It flowers in August ^p.

10. This is not a rough-haired plant. Whorls terminating, clustered, forming a head or blunt spike. Stamens longer than the corolla. In the preceding species the leaves are more sessile and hirsute. The pistil is longer than the corolla, which is deeply four-cleft, and almost regular. Calyxes ciliate. They agree in the length of the stamens, and the general appearance ^q.

Stem reddish towards the top, and set with a few bristly hairs pointing downwards. Leaves ovate-lanceolate, a little hairy on both sides, sometimes woolly. Branches generally shorter than the leaves. Calyx coloured, ribbed, hairy without, scored within; teeth not quite equal; glands semitransparent. Corolla hairy without, pale red. Filaments half as long again as the corolla, nearly equal ^r.

I have kept these descriptions separate, because Linneus's *M. aquatica* and ours may probably be different plants. Mr. Miller has two species, *M. aquatica*, n. 5. and *M. palustris*, n. 11.]

11. Our true English Pepper Mint has smooth purple stalks. The leaves are smaller than those of Spear Mint; they are lanceolate, serrate, very dark green, with purple midrib and veins, and they are a little hairy on their under side. The spikes of flowers are shorter and thicker than those of Spear Mint, and are broken or interrupted at bottom. The corolla is of a dark purple colour, and the stamens are longer than the corolla.

[Spikes terminating the stem and upper branches, consisting of from nine to twelve whorls. The lower whorls peduncled, distant. In external appearance it corresponds with *M. viridis*, for which it may easily be mistaken; but in that the stem is taller, the leaves have scarcely any petioles and are narrower in proportion to their length, the spikes are longer and composed of more whorls. It seems to be distinct from *M. piperita* of Linneus ^s.

Peppermint is found in watery places and by the sides of rivulets in Hertfordshire and Essex, between Newington and Hornsey.] Mr. Miller found it by the side of the river between Mitcham and Croydon in Surrey. It flowers in August.

[The stem and leaves are beset with many very minute glands, containing the essential oil, which rises plentifully in distillation ^t. Peppermint has a more penetrating smell than any of the other species, and a much stronger taste, pungent and glowing like Pepper, sinking as it were into the tongue, and followed by a sensation of coldness.

Its stomachic, antispasmodic and carminative qualities render it useful in flatulent colics, hysterical affections, retchings, and other dyspeptic symptoms, act-

ing as a cordial, and often producing immediate relief. The officinal preparations are an essential oil, a simple water, and a spirit. The Essence of Peppermint is an elegant medicine, and seems to be the rectified oil dissolved in spirits of wine ^u.

12. Root throwing out long creeping horizontal shoots, and one erect hairy stem, furnished all the way up to the flowering part with shortish axillary leafy branches. Leaves sharply serrate from near the base, veiny, clothed on both sides with short scattered hairs, and paler beneath: the base of the leaf runs down the foot-stalk. Flowers in axillary clusters from many of the uppermost leaves, forming whorls, and each cluster is more or less peduncled. General and partial peduncles thickly covered, especially the summit of the latter just under the calyx, with white hairs pointing downwards like those on the stem, but the calyx itself is clothed all over with hairs which point upwards, just as in *M. hirsuta*; by which it may be easily known from every variety of *M. gentilis*, the peduncles of which are always smooth, and the calyx hairy about the top only. Stamens shorter than the corolla; in Linneus's specimens they are longer.

It is presumed by Mr. Edward Forster, jun. to be the *M. verticillata* of Ray's synopsis, having been found by him in the spot where it was marked to grow by Dillenius. Dr. Smith has determined the same plant to be *M. fativa* of Linneus from his herbarium. He suspects after all that this is no more than a whorled variety of *M. hirsuta*. It flowers in August and September ^x.

13. Stems several, erect, growing in tufts, about eighteen inches high, with harsh somewhat hairy angles, more or less reddish in the upper part, branched, leafy. Leaves most crowded towards the upper part, sharply serrate, veiny, punctuated with shining dots, having a few short hairs scattered over them, especially about the margin, and along the nerves on the back. Their usual scent is much like that of *M. viridis* or garden mackarel Mint; but nothing is more variable than the smell of Mints: (and we may add, than the judgment of different persons on the same smell.) Mr. Sole has a variety of this, with the delightful scent of Basil, to which Caspar and John Bauhin's name allude.—Bractes lanceolate, ciliate. Peduncles round, red, and always perfectly smooth, as is the lower part of the calyx; the upper part only, on or about the teeth, being fringed or clothed with hairs which point upwards. The pellucid globules on the calyx are very conspicuous. Stamens shorter, style much longer than the corolla ^y; which is pale red, and has white hairs on the outside and within the tube. Germs on a yellowish green fleshy receptacle ^z.

There is a Mint which agrees with this in the calyx and peduncle, but grows much taller, and has large ovate leaves. This many have taken for the true *M. gentilis*, but Dillenius seems to have confounded it with the *fativa*, by his description of the latter in Ray's synopsis.

Native of several parts of Europe in watery places and by the sides of rivulets. Found by Mr. B. M. Forster near Walthamstow, and by Mr. Crowe and Dr. Smith on a small common at Saham in Norfolk ^a.

14. The whole plant is covered with soft white hairs, of a paler green than in *M. gentilis*. Stem not tinged with red; hairs pointing downwards. Leaves towards the top ovate-lanceolate; towards the bottom roundish. Whorls composed of two opposite sessile umbels. Calyx pale green, beset with soft white hairs, interspersed with very minute semi-transparent glands. Corolla hairy within and without. Stamens in some plants longer than the corolla.

Native of many parts of Europe in watery places and moist corn fields.

It prevents the coagulation of milk, and when cows have eaten it, as they will do largely at the end of summer, when pastures are bare, their milk can hardly be made to yield cheese; a circumstance which sometimes puzzles the dairy-maids ^b.

^p English Botany.

^q Linn.

^r Withering.

^s Stokes in Withering.

^t Withering.

^u Woodville.

^x English Botany.

^y Idem.

^z Withering.

^a Engl. bot.

^b Withering.

15. This resembles *M. arvensis* very much, but differs from it in being of a lower stature, in its smell, the shortness of the stamens, its greater hairiness, &c. Stems half a foot high and more, upright, almost simple. These, the leaves on both sides, and the calyxes are covered with a very short villose down. Leaves on short petioles, the lowest ovate, the rest lanceolate, acute, ferrulate, the midrib hairy underneath. Flowers small, in very close whorls. Calycine toothlets equal. Corolla pale violet, with the upper lip emarginate or semibifid, and thrice as wide as the three segments of the lower lip: the throat is closed with white hairs. Filaments very short, concealed with the anthers in the lower part of the tube. It flowers in July and August.

Native of Austria, in the isles of the Danube^c; and in Piedmont, according to Allione.

16. Linneus compares this with his *exigua*, and says that the stem is higher, not branched, very hairy. Leaves narrower by half, sharper, more deeply serrate, of a darker colour, with hairs scattered over them and the calyxes; the teeth of which are almost equal. Corolla four-cleft; the upper segment oblong, longer, entire, the rest equal. Stamens within the tube. Style longer than the corolla.

Native of Canada, where it was found by Kalm^d.

Dr. Smith has discovered, after much investigation, that no such Mint exists as *M. exigua*, and that it is neither more nor less than *Cunila pulegioides*, a plant of North America^e.]

17. Pennyroyal has a fibrous perennial root. Stems smooth, and putting out roots at every joint. Leaves for the most part entire. Flowers towards the upper part of the branches, just above the leaves at each joint, in whorls. Corolla small, pale purple; upper lip entire. Stamens of the same length with the corolla, but the style somewhat longer. It varies with a white flower.

[Stems hairy, branched, with blunt corners. Leaves obovate, thick, slightly toothed, set underneath with deep semi-transparent dots. Corolla twice as long as the calyx, hairy without. Filaments equal. Pistil as long as the stamens^f.

Native of many parts of Europe, on moist heaths and pastures: flowering in August and September.]

β. Stems erect, near a foot high. Leaves longer and narrower. Whorls of flowers much larger. Stamens longer than the corolla. This has almost superseded our wild one in the markets: the stems being more erect, it is easier to tie in bunches; it comes earlier to flower, and has a brighter appearance. It was sent to Mr. Miller from Gibraltar.

[Pennyroyal has a warm pungent flavour somewhat similar to Mint, but more acrid, and less agreeable. Its active principle is an essential oil, of a more volatile nature than that of Mint, coming over hastily with water at the beginning of the distillation, and rising also in great part with highly rectified spirit; in taste very pungent, and of a strong smell; when newly drawn of a yellowish colour with a cast of green, by age turning brownish.

Pennyroyal certainly possesses the general properties of Mint: it is supposed however to be of less efficacy as a stomachic, but more useful as a carminative and emmenagogue, and is more commonly employed in hysterical affections. We are told by Boyle and others, that it has been successfully used in the whooping-cough; but the chief purpose to which it has long been administered is promoting the uterine evacuation. With this intention Haller recommends an infusion of the herb with steel in white wine. However in the opinion of Dr. Cullen, Mint is in every respect more effectual than Pennyroyal, and nothing but the neglect of establishing principles could have made physicians regard this as a peculiar medicine distinct from the Mints; and accordingly this plant is less frequently used now than formerly. The officinal preparations are a simple water, a spirit, and an essential oil^g.]

18. Stems erect, near two feet high, sending out side

branches all their length. Leaves very narrow, and of a thicker substance than those of common Pennyroyal. The whorls of flowers are rather larger, and the stalks are frequently terminated by them. The scent is not quite so strong as that of Pennyroyal. It flowers about the same time. There is a variety with white flowers, which grows taller than the common one with purple flowers. It is by some preferred to Pennyroyal for medicinal use. It is called Hart's Pennyroyal.

Native of the South of France and Italy. [Cultivated in the botanic garden at Oxford in 1648^h.

19. This resembles *Perilla ocymoides*, and is the only instance of a Mint that is annual. The stamens are shorter than the corollaⁱ.

Native of the East Indies.]

Miller has some other species, as *M. chalepensis*, or Aleppo Mint, n. 10. with oblong, toothed leaves, tomentose on both sides and sessile, with very narrow spikes.—*M. nigricans*, or broad-leaved black Pepper Mint; a larger variety of his *M. piperita* (n. 6.) not of Linneus: his *M. piperita* not being our true one.—*M. rubra*, or Orange Mint, n. 9. with oblong-ovate, acuminate, toothed, sessile leaves, and interrupted clustered spikes, probably a variety of the *viridis* or common Spearmint. There is also a Mint of his in the Banksian herbarium, which he names *M. hispanica candidissima*, fol. serratis, spicis florum longissimis, which seems to be a variety of *M. sylvestris*.

PROPAGATION AND CULTURE.

Mr. Miller has enumerated seventeen species, which (in the year 1759) he affirms that he had cultivated near thirty years, without observing any change in them.

All the sorts of Mint are easily propagated by parting the roots in the spring, or by planting cuttings during any of the summer months, but they should have a moist soil; and after the cuttings are planted, if the season should prove dry, they must be often watered until they have taken root; after which, they will require no farther care but to keep them clear from weeds: they should be planted in beds about four feet wide, allowing a path about two feet broad between the beds, to water, weed, and cut the plants.

The distance they should be set is four or five inches, or more, because they spread very much at their roots; for which reason, the beds should not stand longer than three years before you plant again, for by that time the roots will be matted so closely, as to rot and decay each other, if permitted to stand longer. Some persons are very fond of Mint salad in winter and spring; in order to obtain which, they take up the roots before Christmas, and plant them upon a moderate hot-bed pretty close, covering them with fine earth about an inch thick, and cover the bed either with mats or frames of glass. In these beds the Mint will come up in a month's time, and be soon fit to cut for that purpose.

When the herb is cut for medicinal use, it should be done in a very dry season, just when it is in flower; for if it stand longer, it will not be so well tasted; and if it be cut when it is wet, it will change black and be little worth; this should be hung up to dry in a shady place, where it may remain until it be used.

If the soil be good in which these plants are set, they will afford three crops every year, but after July they seldom prove good; therefore what shoots are produced after that time should be permitted to remain till Michaelmas, when they must be cut down close; and after having cleared the beds from weeds, you should spread a little fine rich earth all over them, which will greatly encourage the roots against the succeeding spring.

17, 18. Penny-royal and Hyssop-leaved Mint propagate very fast by their creeping stems, which may be cut off and planted in fresh beds, allowing them at least a foot distance every way. Or the young shoots planted in the spring, will take root like Mint.

The best time for this work is in September, that the plants may be rooted before winter. The young

^c Jacquin. ^d Linn. spec. ^e Linn. trans. 3. 18.

^f Withering.

^g Woodville, Lewis.

^h Hort. kew.

ⁱ Linn. syst.

plants also will be much stronger and produce a larger crop, than if they were removed in the spring. And if the roots remain so close as they generally grow, they are subject to rot in winter. They love a moist strong soil.

[MENTHA. See *Clinopodium*, *Ocimum*, *Satureia*, *Tanacetum Balsamita*.

———— canariensis. See *Bystropogon*.]

———— cataria. See *Nepeta*.

[———— plumosa. See *Bystropogon*.

MENTHASTRUM. See *Mentha*, *Nepeta*.]

MENTZELIA. (So named by Plumier from Christian Mentzelius, physician to the Elector of Brandenburg. He published *Centuria Plantarum circa Gedanum*, 1650, 4°: and *Index nominum plantarum multilinguis*, 1682. fol. 1696 & 1715—in which are a few scarce plants with figures, and an index of some Brazilian plants.)

Lin. gen. n. 670. Reich. n. 723. Schreb. n. 907.

Plum. 6. Jacqu. amer. 164. Juss. 321.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Calycanthemæ*. *Onagræ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved, spreading, superior, deciduous: leaflets lanceolate, concave, acuminate.

COR. Petals five, obovate, acuminate, a little longer than the calyx, spreading.

STAM. Filaments many (thirty), the length of the calyx, erect, bristle-shaped, the ten outer membranaceous at top. Anthers roundish.

PIST. Germ cylindric, very long, inferior. Style filiform, the length of the stamens. Stigma simple, blunt.

PER. Capsule cylindric, long, one-celled, three-valved at top.

SEEDS about six, oblong, angular.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled. Caps. inferior, cylindric, many-seeded.

SPECIES.

1. *Mentzelia aspera*.

Lin. spec. 735. Juss. 494. Reich. 2. 587. hort. cliff.

492. amoen. 5. 498. Loeft. it. 223. Jacqu.

amer. 164. pict. 80. Cavan. ic. 51. t. 70. Brown.

jam. 249.

DESCRIPTION, &c.

This plant is annual; it rises with a slender smooth stalk, which is stiff, and becomes a little woody, rising more than three feet high, branching out alternately at distances; the branches are distorted, and run into one another; these are garnished with leaves shaped like the point of an halbert, standing alternately on the branches, upon short foot-stalks; they are covered with short hooded prickles, which fasten themselves into the clothes of those who rub against them; and those parts of the branches easily separate from the plants, and adhere to the clothes in like manner as the seeds of Clivers. The flowers come out singly from the joints of the stalk, resting upon a cylindrical germen, which is near an inch in length, narrow at the base, but widening upwards towards the top. Upon the top of it comes out the calyx, which is spread open after the same manner as that of *Onagra*; then the petals of the flower spread open upon the calyx; they are of a pale yellow colour.

[Stems numerous, covered with short bowed bristles, three or four feet high, round, yellowish green, the lower branches alternate, axillary, the upper in pairs, forking again and again. Leaves alternate, ovate-lanceolate, doubly serrate, gashed at bottom, dark green above, whitish underneath, on short petioles; on the branchlets they are sessile. Flowers solitary, sessile in the forks of the branches. Calyx hispid. Corolla large, deep sulphur-coloured; petals inserted into the top of the calyx, somewhat fringed towards the tip, and ending in a dagger-point. Filaments yellow, inserted into the calyx in two rows, the ten or twelve outer ones longer, wider at the base, and bowing towards the centre of the flower, the rest upright: anthers ovate, upright. Germ inversely conical, very hispid, almost an inch long: style bristle-shaped, longer than the stamens. Capsule rough, inversely conical, succulent before it is ripe, but then dry, with three

longitudinal grooves, and wrinkled. Seeds flattened-ovate, narrower at top, roughened with little prominent points^{*}.

Native of America—of La Vera Cruz, according to Miller—of Mexico, according to Cavanilles—of Curacao, according to Jacquin—of Jamaica, according to Browne. He says it is very common in all the dry savannahs about Kingston: that it seems to be an annual plant, and seldom rises above three or four feet in height. He describes the fruit as a succulent cylindric capsule, well furnished with short rough uncinated bristles, like the rest of the plant, and containing only three or four rugged seeds, compressed on one side, and disposed at some distance from each other, in the pulp.

Jacquin describes it as an annual upright plant; and observes, as Cavanilles does, that the ripe capsule is not at all succulent. Plumier's plant, referred to this, seems to be a different species; the leaves being crenate, all the flowers axillary and not in the forks of the branches, the petals orbiculate and crenulate.]

Cultivated by Mr. Miller, from seeds sent over by Dr. Houftoun.

PROPAGATION AND CULTURE.

As this is an annual plant, which perishes soon after the seeds are ripe, therefore the seeds must be sown on a hot-bed early in the spring, that the plants may be brought forward early in the season, otherwise they will not produce ripe seed in this country. When the plants are come up about an inch high, they should be each transplanted into a separate halfpenny pot filled with light rich earth, and plunged into a hot-bed of tanners bark, being careful to shade them from the sun until they have taken new root; after which time they must be constantly watered every other day in warm weather, and should have fresh air every day admitted to them, in proportion to the warmth of the season, and the heat of the bed in which they are plunged. In about six weeks or two months after transplanting, if the plants have made a good progress, they will have filled the pots with their roots, when they should be shifted into larger pots, which must be filled with light rich earth, and then plunged into the bark-bed in the stove, that they may have room to grow in height, observing as before to water them duly, as also to admit fresh air to them every day in warm weather. With this management they will grow three feet high, and produce ripe seeds at the end of august or beginning of september.

MENYANTHES. (*Μένανθος* is reckoned by Theophrastus and Dioscorides, and *Minyanthes* by Pliny, among coronary trefoils.—Linneus derives it from *μην* a month, and *ανθος* a flower: because the flower continues open about that time.)

Lin. gen. n. 202. Reich. n. 215. Schreb. n. 263.

Gartn. 1. 114. Tournef. 1. 15. Juss. 98.

Nymphoides. Tournef. 1. 67.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Preciæ*. *Lyfimachia*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, erect, permanent.

COR. one-petalled, funnel-form: tube cylindric-funnel-form, short: border five-cleft beyond the middle; clefts reflex-spreading, blunt, conspicuously shaggy.

STAM. Filaments five, awl-shaped, short. Anthers acute, bifid at the base, erect.

PIST. Germ conical. Style cylindric, almost the length of the corolla. Stigma bifid, compressed.

PER. Capsule ovate, surrounded by the calyx, one-celled.

SEEDS many, ovate, small.

OBS. *Nymphoides* T. was distinguished by the petals being ciliate not shaggy.

ESSENTIAL CHARACTER.

Cor. shaggy. Stigma bifid. Caps. one-celled.

SPECIES.

1. *Menyanthes Nymphoides*. Fringed Buck-bean, or Water-Lily.

Lin. spec. 207. Juss. 194. Reich. 1. 415. hort. cliff.

53. Gartn. fruct. 2. 157. Hudf. angl. 85.

Wither. arr. ed. 2. 206. Relb. cant. n. 159.

^{*} Cavanilles.

- Engl. bot.* 217. *Fl. dan.* t. 339. *Gmel. fib.* 4. 97.
Neck. gallob. 105. *Pollich pal.* n. 196. *Allion.*
pedem. n. 320. *Sabb. hort.* 2. t. 67. *Thunb. jap.* 82.
Limnanthemum peltatum. *Gmel. in act. petrop.* 1769.
 14. 527. t. 17. f. 2.
Waldschmidia Nymphoides. *Wigg. holf.* 20.
Nymphæa lutea minor. *Dalech. hist.* 1010. f. 1.—
 flore fimbriato. *Baub. pin.* 194. *Baub. hist.* 3. 772. 1.
Raii hist. 1320. *syn.* 368. *Petiv. brit.* t. 71. f. 4.
Leaves cordate quite entire, corollas ciliate.
 2. *Menyanthes indica.* *Indian Buck-bean.*
Lin. spec. 207. *syft.* 194. *Reich.* 1. 416. *fl. zeyl.*
 n. 72. *Swartz obs.* 58. *Brown. jam.* 151. *Thunb.*
prodr. 34.
Nymphæa ceramica. *Rumph. amb.* 6. 173. t. 72. f. 3.
Nymphæa minoris affinis indica, flore albo piloso.
Sloan. jam. t. 252. *Raii hist.* 3. 631.
Nedel-Ambel. *Rheed. mal.* 11. 55. t. 28.
Leaves cordate subcrenate, petioles floriferous, corollas
hairy within.
 3. *Menyanthes ovata.* *Cape Buck-bean.*
Lin. syft. 194. *suppl.* 133.
M. capensis. *Thunb. prodr.* 34.
Leaves ovate petioled, stem panicled.
 4. *Menyanthes trifoliata.* *Common Buck-bean or Marsh*
Trefoil.
Lin. spec. 208. *syft.* 194. *Reich.* 1. 416. *fl. lapp.*
 n. 80. *suec. n.* 173. *hort. cliff.* 52. *mat. med.* 58.
Woodv. med. bot. 5. t. 2. *Huds. angl.* 85. *Wither.*
arr. ed. 2. 206. *Curt. lond.* 4. 17. *Lightf. scot.*
 137. *Relh. cant. n.* 160. *Gertn. fruct.* 2. 158.
Hall. belv. n. 633. *Fl. dan.* t. 541. *Gmel. fib.* 4.
 t. 97. *Neck. gallob.* 105. *Scop. carn. n.* 212.
Pollich pal. n. 197. *Villars dauph.* 2. 483. *Krock.*
filef. n. 299. *Bulliard, f.* 131. *Sabb. hort.* 1.
 t. 88. *Zorn. ic.* 13. *Regn. bot.*
M. palustre latifolium & triphyllum. *Tournef. inst.* 117.
Raii syn. 285.
Trifolium majus. *Tabern. ic.* t. 520. f. 2.
T. palustre. *Baub. pin.* 327. *Baub. hist.* 2. 389.
Cor. hist. 96. *Dod. pempt.* 580. *Lob. obs.* 496. 2.
Raii hist. 1099. *Blackw. t.* 474.
T. paludosum. *Ger.* 1024. 1, 2. *emac.* 1194. *Park.*
theat. 1212.
Acopa Dioscoridis. *Mor. hist.* 3. 604. f. 15. t. 2.
 row. 2.
Leaves ternate.
 5. *Menyanthes Hydrophyllum.* *Water-leaf Buck-bean.*
Lour. cochinch. 105.
Leaves cordate quite entire, flowers axillary heaped nec-
tariferous.

DESCRIPTIONS, &c.

These are herbaceous aquatics. Leaves on a sheathing petiole, ternate in the fourth species, in the rest simply cordate. The flowers of the first are umbelled or in axillary whorls; in the fourth they are in a spike on a scape^a.

1. Root perennial, long and stringy, as are also the stems; these are smooth, round and jointed. They produce a few pairs of opposite, floating leaves, thick, repand-toothed, or rather waved than toothed, shining above, dotted beneath, on foot-stalks various in length according to the depth of the water. These leaves, like those of *Nymphæa*, to which this is allied in habit, perspire so much as to become dry in a few hours, though at first very succulent. The flowers grow from the axils in a kind of sessile umbel, four or five together, on long round peduncles, shorter than the petioles, and when expanded in the sun have a brilliant appearance. Stipules ovate, without the peduncles but within the petioles. Calyx five-leaved; leaflets linear or lanceolate. Corolla twice as large as the calyx, yellow; segments inversely ovate, the middle of each veined, and the part so veined bordered by two stronger veins, which, converging towards each end, give the appearance of a narrow lanceolate petal being laid upon it; they are finely toothed at the edge^b. Capsule ovate-lanceolate, compressed a little, thickened and rounded at the edge, at first fleshy then co-

riaceous, thin, one-celled, two-valved. Seeds numerous; bracted or leafy, surrounded by a white membranaceous ciliated margin, ovate or obovate, of a pale bay colour in the middle, fixed to the edges of the valves on each side in a double row^c. The corolla being ciliated or only fringed about the edge, not all over the surface like *M. trifoliata*, Tournefort, Gmelin, Wiggers, Gartner, and Dr. Stokes, would make it a separate genus, nay Wiggers asserts, but without telling us why, that it even belongs to a different natural order. Mons. de Jussieu doubts whether they ought to be separated or not, but as he has left them together, and *M. indica* seems to connect them, I readily agree with Dr. Smith that they may safely remain as they are^d.

Native of Denmark, Holland, Germany, Piedmont, Siberia, England; in large ditches and slow streams. In the Thames, chiefly in little recesses of the shores, as near Walton-bridge, near Botley-bridge, Godstow-bridge, and Hinkley-ferry in Oxfordshire. In the river Cam, Streatham-ferry, and in the fens near Ely, frequent. It flowers from June to August.

2. Sloane describes it as having a leaf like Colt's-foot, roundish and about two inches diameter, thick, yellowish green, smooth without any apparent nerves. Petioles about a foot long, more or less according to the depth of the water, on the surface of which they float; they are round and brownish, and out of them come several white flowers, just under the leaf, on peduncles an inch long, or shorter.

Native of both Indies.

Rheede describes the flowers as having ten stamens. Sir William Jones, in his select Indian plants describes another species, or perhaps variety, with the same number of stamens, five of which are sterile. It is figured in t. 29. vol. 11. of *Hortus Malabaricus*. He calls it *Cumuda* or delight of the water, which seems to be a general name for beautiful aquatic flowers.

The leaves are cordate, peltate, bright green on one side, dark russet on the other. Flowers umbel-fascicled, placed on the stem just below the leaf. Glands and tube of the corolla yellow, border white, both of the most exquisite texture. The divisions of the corolla may be called three-winged: they look as if covered with silver frost^e.

3. This has the appearance of *Alisma*, with the flower of *Menyanthes*^f.

Found at the Cape of Good Hope by Thunberg and Masson, by the latter of whom it was introduced in 1786^g.

4. Root perennial, creeping, long, jointed and fibrous. Stem procumbent, various in length according to situation, covered by the sheaths of the leaves, which are on round striated petioles. Leaflets ovate, obtuse, smooth on both sides, veiny, with a waved or serpentine edge. Flowers on a simple, upright, round, smooth scape, longer than the leaves, in a naked and somewhat pyramidal terminating thyrsus. Bractes ovate, somewhat concave, pointed. Calyx wrinkled at bottom; the segments coloured on the edge. Corolla outwardly of a rose colour, inwardly white; tube thick, longer than the calyx, five-grooved; segments of the border narrow and pointed, bearded on the inside except at the tips: beard the length of the calyx, thready and white. Filaments fastened to the tube of the corolla. Anthers purplish, sagittate, with the tips curved inwards. Germ ovate, green, shining; style a little thickening above, twice the length of the stamens: stigma two-lipped, green, villose^h. Capsule the size of a Pea, with a groove on each side contrary to the sutures of the valves. Seeds many, but only six or eight ripening, very smooth, shining, lemon or straw-colouredⁱ.

Formerly named Marsh Trefoil, and Marsh-Claver or Clover. Now generally called *Buck-bean*, I once thought corruptedly for *Bog-bean*, from its place of growth, and the form of the leaves. But one of its German names is *Bockbohne*, and in Danish it is *Bukke-blade*. *Buck-bean* (*Faba hircina*) therefore, whatever

^a Jussieu.

^b Engl. bot. Lyon's M. S. in Relh. cant. and Stokes in Withering.

^c Gartner.

^d Engl. bot.

^e Asiatic Researches, 4: 255.

^f Linn. suppl.

^g Hort. kew.

^h Curtis.

ⁱ Gartner.

it means, is probably right. It flowers from May to July, and is found in wet boggy meadows, ditches, and the sides of ponds and lake. In Battersea meadows, about the island of St. Helena near Rotherhithe, about Staines, on Bromley-common, between Farnborough and Causton-mark, Cæsar's-camp near Bromley, Hayes-common, Hampstead-heath, Harefield-moor, several places in Cambridgeshire, &c. but it is frequently rooted out by the simplers.

An infusion of the leaves is extremely bitter, and of late years has been in common use as an alterative and aperient in impurities of the humours and some hydropic and rheumatic cases. A dram in powder purges and vomits. It is sometimes given to destroy worms. As an active and eccophrotic bitter, it seems not ill adapted to supply the want of bile in the *primæ viæ*; and thus may be of use in protracted jaundice and other biliary obstructions. Cullen mentions several instances of its good effects in some cutaneous diseases of the herpetic and seemingly cancerous kind. With delicate stomachs it may be necessary to join some grateful aromatic with the infusion.

In a scarcity of hops this plant is used in the north of Europe to give a bitter to beer; two ounces will supply the place of a pound of hops. The powdered roots are sometimes used in Lapland instead of bread, but they are unpalatable. Some say that sheep will eat it, and that it cures them of the rot^k.

5. This is a marsh plant like the rest, with a filiform creeping stem. Leaves smooth, petioled, scattered, few. Flowers white, on long peduncles. Corolla hirsute, with a crenated border, and five branched nectaries of a different colour adhering to the base of the segments. This plant forms the connecting link between this genus and *Hydrophyllum*.

Native of Cochinchina^l.

PROPAGATION AND CULTURE.

Mr. Miller informs us that the common Buck-bean was never cultivated in gardens. It deserves cultivation however, and both that and the first species may be kept in pots or tubs of water.

To such as wish to have the Buck-bean flower in perfection, Mr. Curtis recommends to collect the roots in spring or autumn, to put them in a large pot having a hole in the bottom, and filled with bog-earth, and to immerse the pot about two-thirds of its depth in water. The foreign species must be kept in pots or tubs of water in the stove.

MERCURIALIS (of Pliny; so called from Mercury, who is said to have first discovered it.)

Lin. gen. n. 1125. Reich. n. 1230. Schreb. n. 1534.

Gærtn. t. 107. Tournef. t. 308. Juss. 385.

Class. 22. 8. Dioecia Enneandria.

Nat. order of Triocœ. Euphorbiæ, Juss.

GENERIC CHARACTER.

* *Male.*

CAL. *Perianth* three-parted: *parts* ovate-lanceolate, concave, spreading.

COR. none, unless the calyx be so esteemed.

STAM. *Filaments* nine or twelve, capillary, straight, the length of the calyx. *Anthers* globular, twin.

* *Female.*

CAL. *Perianth* as in the male.

COR. none.

Nectaries, two awl-shaped points, one on each side of the germ, impressed on the groove of the germ.

PIST. *Germ* roundish, compressed, scored on each side, hispid. *Styles* two, reflex, horned, hispid. *Stigmas* acute, reflex.

PER. *Capsule* roundish, shaped like the scrotum, twin, two-celled.

SEEDS solitary, roundish.

OBS. *M. ambigua* & *afra* are *monoecous*.

ESSENTIAL CHARACTER.

MALE. *Cal.* three-parted. *Cor.* none. *Stam.* nine or twelve. *Anthers* globular, twin.

FEM. *Cal.* three-parted. *Cor.* none. *Styles* two. *Caps.* dicoccous, two-celled, one-seeded.

^k Woodville, Withering, Linn. lap.

^l Loureiro,

SPECIES.

1. *Mercurialis perennis.* Dog's Mercury.

Lin. spec. 1465. syst. 890. Reich. 4. 265. hort. cliff. 461. fl. suec. n. 913. Hudf. angl. 435. Wither. arr. ed. 2. 1125. Curt. lond. 2. 65. Lightf. scot. 620. Relb. cant. n. 730. Hall. belv. n. 1601. Neck. gallob. 510. Pollich pal. n. 931. Fl. dan. t. 400. Villars dauph. 3. 527. Kniph. cent. n. 1. 57. (male). Mill. illustr. Bulliard fr. 303.

M. Cynocrambe. Scop. carn. n. 1225.

M. montana testiculata & spicata. Baub. pin. 122. Mor. hist. f. 5. t. 34. f. 3, 4.

M. sylvestris Cynocrambe dicta vulgaris mas et foemina. Park. theat. 295. 2. t. 296. 2.

M. perennis Cynocrambe dicta. Raii syn. 138. Pet. brit. t. 1. f. 5, 6.

Cynocrambe. Matth. 1299. Camer. epit. 998, 999. Fuchf. hist. 444. Dod. pempt. 659. 1. (monoecous).

Lob. obs. 132. 1. ic. 1. 260. 1. Baub. hist. 2. 979. 1.

Trag. 191. Lon. 1. 136. 3. Raii hist. 163. Ger. emac. 333. 1. (monoecous).

Stem quite simple, leaves rugged.

[2. *Mercurialis ambigua.* Doubtful Mercury.

Lin. syst. 890. Reich. 4. 265. dec. 1. 15. t. 8.

Stem brachiate, leaves smoothish, flowers in whorls, female and males.]

3. *Mercurialis annua.* Annual Mercury.

Lin. spec. 1465. syst. 890. Reich. 4. 265. hort. cliff. 461. upf. 298. mat. med. 216. Gærtn. fruct. 2. 114. Hudf. angl. 435. Wither. arr. ed. 2. 1126. Curt. lond. 5. 54. Lightf. scot. 621.

Relb. cant. n. 731. Hall. belv. n. 1600. Scop. carn. n. 1226. Neck. gallob. 410. Pollich pal. n. 932. Villars dauph. 3. 528.

M. testiculata f. mas & spicata f. femina. Baub. pin. 121. Mor. hist. f. 5. t. 34. f. 1, 2.

M. mas & foemina. Camer. epit. 996, 997. Fuchf. hist. 475, 476. Dod. pempt. 658. 1, 2. Lob. obs. 131. 1, 2. ic. 1. 259. 1, 2. Lon. 1. 136. 2. Matth. 1297, 1298. Ger. 262. 1, 2. emac. 332. 1, 2.

Park. theat. 295. Baub. hist. 2. 977. 2, 3. Raii hist. 163. Blackw. 162. 2, 3. & 164. 4.

M. annua glabra vulgaris. Raii syn. 139. Pet. brit. t. 1. f. 7, 8.

Stem brachiate, leaves smooth, flowers in spikes.

4. *Mercurialis tomentosa.* Woolly Mercury.

Lin. spec. 1465. syst. 890. Reich. 4. 266. hort. cliff. 461. Sauv. monsp. 128. Gouan hort. 507. D'Affo arrag. n. 963.

M. fruticosa incana spicata & testiculata. Tournef. inst. 534.

Phyllon testiculatum & spicatum. Baub. pin. 122.

P. marificum & feminificum. Clus. 2. 48. Park. theat. 296. 4. Raii hist. 164.

P. arrhenogonon & thelygonon fol. incano Monspessul. Baub. hist. 2. 981. 1.

P. arrh. f. marificum & thelygonon f. feminificum. Ger. emac. 333. 2, 3. Mor. hist. f. 5. t. 34. f. 5, 6.

Stem suffruticose, leaves tomentose.

[5. *Mercurialis afra.* Cape Mercury.

Lin. syst. Reich. 4. 266. mant. 298. Herm. par. app. 10.

Ricinocarpos afra. Boerb. lugdb. 1. 254.

Stem prostrate herbaceous, leaves ovate subtomentose, flowers androgynous.

6. *Mercurialis indica.* Indian Mercury.

Lour. cochinch. 628.

Stem shrubby branched, leaves lanceolate even, flowers three-styled.

DESCRIPTIONS, &c.

1. Root perennial, creeping, white, very fibrous. Stem upright, simple, a foot high, leafy, naked below, round, thickest at the joints, with two projecting ridges, not running down from the leaf-stalks, but from the joint between them, and terminating in the bosom of the pair below. Leaves in opposite pairs alternately from each side of the stem, ovate-lanceolate, wrinkled, ferrate, pale green; the teeth bluntish, and terminated by a whitish gland, visible only with a magnifier. Petioles short, furrowed, slightly hairy and rough to the touch. Peduncles axillary, near the top of the plant, opposite, hairy; in the male longer than the leaves, in

in the female concealed among them. Flowers in the female few; in the male numerous, sessile, growing in a sort of whorl, and half surrounding the stem.

The male flowers have nine stamens for the most part: anthers first yellow, afterwards becoming blueish. The female flowers have the styles rough on the inner side with semi-transparent tubercles. Dr. Withering asks whether the nectaries are not rather rudiments of imperfect stamens. Capsule hairy, somewhat warty. Seed of a brownish purple colour^a.

The male and female plants are rarely found intermixed, each sort usually growing in large patches; whence it is probable that this plant, which increases much by the root, rarely produces perfect seeds^b.

It is common in woods and under hedges, flowering from the end of march to the middle of may.

In the third edition of Ray's synopsis there is a very circumstantial relation from Sir Hans Sloane, of a man with his wife and three children experiencing highly deleterious effects from eating this plant fried with bacon.]

Mr. Miller affirms that there have been many late instances of its poisonous quality, from persons in the spring, during a scarcity of greens, having boiled and eaten the leaves. [But he gives us no authority, and there are no instances on record except the single one mentioned above. It would however be well to ascertain the fact, because it is a common plant, and the third species, which is not unlike it, is considered as a pot-herb, and is sometimes used as an emollient.

Linneus says, that *M. perennis* is noxious to sheep. With us, no quadruped seems to eat it.

In drying, it turns blue, and steeped in water, it affords a fine deep blue colour, but which, says Dr. Stokes, is unhappily destructible both by acids and alkalies, and recoverable by no means that he has been able to discover.

2. Root fibrous, annual. Stem a span high, upright, four-cornered, very smooth, very simply branched next the root. Branches very few, opposite, short, spreading. Leaves opposite, horizontal, cordate-ovate, equally ferrate; ferratures fewer, remote: they are bluntish, ciliate, smooth on both sides, veined, flat. Branch-leaves lanceolate, on shorter petioles. Petioles channelled, almost erect, very smooth, one-third of the length of the leaves. Stipules in pairs, lateral, deciduous, lanceolate, erect, very small. Glands four, at the base of the leaves, two on each side, one larger than the other, pear-shaped, smooth, very small. Flowers axillary, several, clustered, each on its proper pedicel: female single, opening first; males several (three or four), lateral, in the same axil with the female. Calyx of the male pale, segments acute, entire, smooth, scarcely concave. Filaments nine or eleven. In the female flower the calyx is smaller. Style none. Stigmas two, reflex, hispid. Capsule compressed, truncated at top, very smooth at the sides and grooved, the angles hispid.

It resembles the next species very much, but all the flowers are peduncled, each on its peculiar pedicel, and not disposed in a raceme. The whole plant is more shining; the leaves broader, with the ferratures more acute and ciliated; the capsules more hispid, not rounded but truncated at the top.

Native of Spain, on the walls of Cadiz and Gibraltar^c.

3. Root annual, fibrous, white. Stem a foot or eighteen inches high, upright, smooth, frequently tinged with purple, branched quite to the bottom, swelled at the joints, somewhat flattened; a prominent line runs on each side of the stem, from one joint to another, alternately. Branches alternately opposite, leafy, resembling the stem. Leaves opposite, ovate, bluntish, spreading, having two glands at the base, bluntly and distantly ferrate, when magnified appearing edged with hairs, light green, somewhat glossy and veined: they are sometimes ovate-lanceolate, lanceolate, and even cordate. Petioles much shorter than the leaves, smooth, channelled above. Stipules four at

each joint; two on each side, very minute. Peduncles axillary, opposite, upright, naked; in the male longer than the leaves, obscurely four-cornered, producing towards the top several round, sessile, small clusters of flowers, having a strong virose smell, somewhat like that of Elder: in the female the peduncle is shorter than the leaves and generally sustains two flowers: the calyx in both flowers is permanent; in the female the leaflets are a little smaller. Nectaries two, one on each side of the germ. According to Lightfoot these nectaries, or barren filaments, as he calls them, are wanting. Stigmas on the upper side hispid lengthwise^d. Capsule dicoccous, small; the upper parts ovate, turgid, hispid with white bristles on the back, which near the future unite in two very narrow crests; towards the axis they are smooth, subcompressed, papery, two-valved, opening elastically. Seeds one in each part, globular, rough with tubercles, rufescent or ash-coloured, terminated at top by a fungose, fistular, whitish umbilicus^e.

This may be distinguished from petennial or Dog's Mercury, by its annual root, its branched stem, its more numerous flowers, its want of nectaries or barren stamens, and its smaller hairy seed-vessels. It also flowers late in the summer, whereas Dog's Mercury flowers only in the spring.

Native of many parts of Europe, with us in waste places and dunghills about towns and villages,] seldom, as Miller observes found at a distance from habitations, hence he conjectures that it might originally have come from France, as its common name of French Mercury implies. [It is only mentioned by Gerard to grow under the dropping of the bishop's house at Rochester, and by Parkinson in Romney-marsh. It seems to be much more common now than formerly, which countenances its not having been originally indigenous.

This plant is mucilaginous, and was formerly much employed as an emollient. Tournefort informs us, that the French made a syrup of it, two ounces of which was given as a purge; and that they used it in clysters and pessaries, mixing one part of honey with one and a half of juice. In England it is now disregarded. The seeds taste like those of Hemp^f.

Two hybrid varieties of this species, one with linear or capillary leaves, and another with lacinated leaves, are described and figured by Marchant in the Paris Memoirs for 1719.]

4. This rises with a shrubby branching stem a foot and half high. Leaves opposite, elliptic, sharpish, involuted, covered with a white down on both sides. The male flowers grow in short spikes from the side of the stem and branches. Capsules hoary.

Native of the South of France, Spain and Italy. [Cultivated by Mr. Miller in 1731^g.

5. Stem branched, diffused, pubescent, often creeping. Leaves heaped at the joints of the stem, blunt, three-nerved, petioled. Peduncles axillary, lateral, bristle-shaped, one-flowered, the length of the leaves. Male flowers many; females fewer on the same plant. Fruit oval, truncated, compressed, grooved with two styles, fissile into two seeds.—Found at the Cape of Good Hope by Koenig^h.

6. Stem upright, six feet high, with round, ascending branches. Leaves ferrate, shining, alternate. Number of stamens inconstant, frequently about fifteen, and sometimes almost fifty. Capsule three-lobed, three-celled.—Native of Cochinchina.

The fresh leaves boiled in soup purge gentlyⁱ.

PROPAGATION AND CULTURE.

The first species is easily propagated by the roots: the third by the seed, which it scatters so abundantly in gardens as to be a common weed.] If the seeds of the fourth be permitted to scatter, they will come up the following spring; and if sown, it should be in the autumn.

This plant should have a warm situation, and a dry rubbishy soil, in which it will live three or four years, but in hard frosts it is frequently killed.

^a Curtis, Woodw. M. S. Withering.

^b Woodward.

^c Linn. dec.

^d Curtis.

^e Gærtner.

^f Lightfoot and Withering.

^g Hort. kew.

^h Linn. mant.

ⁱ Loureiro.

[MERCURIALIS. See *Acalypha*, *Chenopodium*, *Croton*, *Hydrocotyle*, *Impatiens*, *Tragia*.

MERCURY. See *Mercurialis*.

English. See *Chenopodium*.

MERIANA and MERIANELLA. See *Antholyza*.

MERULIUS. See *Agaricus*.

MESEMBRYANTHEMUM. (Named first *Mesembrianthemum* by Breynius, from the flowers opening about noon. Changed by Dillenius to *Mesembryanthemum* from three Greek words, μέσος middle, ἐμβρύον an embryo, and ἄνθος, a flower.)

Lin. gen. n. 628. Reich. n. 684. Schreb. n. 860.

Gärtn. t. 126. Dill. gen. 9. elth. 179, &c.

Juss. 317. Ficoides. Tourn. mem. acad. par. 1705.

Class. 12. 4. Icosandria Pentagynia.

Nat. order of Succulentæ. Ficoides, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-cleft, superior, acute, spreading, permanent.

COR. one-petalled: petals lanceolate-linear, very numerous, in several rows, a little longer than the calyx, slightly united at the claws into one.

STAM. Filaments numerous, capillary, the length of the calyx. Anthers incumbent.

PIST. Germ inferior, with five blunt angles. Styles commonly five, awl-shaped, upright and then bent back. Stigmas simple.

PER. Capsule fleshy, roundish, the navel marked with rays, the cells corresponding with the styles in number.

SEEDS very many, roundish.

OBS. *M. geniculiflorum*, *noctiflorum*, *tortuosum* are four-styled.

M. linguiforme, *pomeridianum*, *pugioniforme*, *barbatum*, *acinaciforme*, *loreum* are ten-styled.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. numerous, linear. Caps. fleshy, inferior, many-seeded.

SPECIES.

* With white corollas.

1. *Mesembryanthemum nodiflorum*. Egyptian Fig Marigold.

Lin. spec. 687. Reich. 2. 504. hort. ups. 129. Forfk. ægypt. 98.

Kali crassulæ minoris foliis. Baub. pin. 289. Mor. hist. 2. 610. f. 5. t. 33. f. 4.

K. neapolitanum aizoides repens. Col. eccl. 2. 72. t. 73. Raii hist. 213. Park. theat. 1284. t. 1285. f. 2.

K. 2. Alp. ægypt. ed. 2. 125. t. 127. ed. 1. 50. vers. ed. 3. t. 46.

Leaves alternate roundish blunt ciliate at the base.

2. *Mesembryanthemum ciliatum*. Ciliated Fig Marigold.

Ait. hort. kew. 2. 179. Haworth monogr. 363.

Leaves opposite connate half-round, stipules membranaceous reflex jagged ciliary.

3. *Mesembryanthemum caducum*. Small-flowered Fig Marigold.

Ait. hort. kew. 2. 179.

Leaves filiform half-round distinct, teats ovate, lateral flowers sessile, terminating flowers surrounded by a pair of leaves.]

4. *Mesembryanthemum crystallinum*. Diamond Fig Marigold or Ice Plant.

Lin. spec. 688. syst. 468. Reich. 2. 505. hort. cliff. 216. 1. ups. 127. suppl. 259. Dill. elth. 231.

t. 180. f. 221. Gärtn. fruct. 2. 201. Haworth monogr. 113. Plenck, ic. 397.

Ficoides africana folio plantaginis undulato micis argenteis adsperso. Braddl. succ. 5. t. 15. f. 48.

Leaves alternate ovate papulose, flowers sessile, calyxes broad ovate acute retuse.

5. *Mesembryanthemum humifusum*. Narrow-leaved Icy Fig Marigold.

Ait. hort. kew. 2. 179.

Leaves embracing spatulate keeled, teats conical rugged, petals very minute.

6. *Mesembryanthemum copticum*. Coptic Fig Marigold.

Lin. spec. 688. Reich. 2. 505. Haworth monogr. 120. Plenck, ic. t. 398.

Kali ægyptiacum foliis valde longis hirsutis. Baub. pin. 289. Raii hist. 1915.

K. 3. Alp. ægypt. ed. 1. f. 49. t. 51. ed. 2. 125. t. 128. ed. 3. 59. t. 47.

K. longissimis fol. ægyptiacum. Park. theat. 1284. t. 1285. f. 3.

Leaves half round papulose distinct, flowers sessile axillary, calyxes five-cleft.

7. *Mesembryanthemum apetalum*. Dwarf Spreading Fig Marigold.

Ait. hort. kew. 2. 180. Lin. suppl. 258.

M. copticum. Jacqu. hort. 3. 7. t. 6.

Leaves embracing distinct linear flat above, longer than the internodes, papulose; papulæ oblong; flowers penduncled, calyxes five-cleft.]

8. *Mesembryanthemum geniculiflorum*. Jointed Fig Marigold.

Lin. spec. 688. Reich. 2. 505. hort. cliff. 218. 22.

Dill. elth. 271. t. 205. f. 261. Haworth monogr. 214.

Ficoides neapolitana flore candido. Bradl. succ. 5. 17. t. 34.

F. capense folio tereti flore albedo. Pet. gaz. t. 78. f. 3. Leaves half round papulose distinct, flowers sessile axillary, calyxes four-cleft.

9. *Mesembryanthemum noctiflorum*. Night-flowering Fig Marigold.

Lin. spec. 689. syst. 468. Reich. 2. 506. hort. cliff. 220. 28. Knorr. del. 1. t. G. 8. Dill. elth. 273.

t. 206. f. 262. Haworth monogr. 251.

α. *purpureum*. Purple-flowering.

β. *stramineum*. Straw-coloured.

Haw. mon. 252. Dill. elth. 274. t. 206. f. 263.

Leaves semicylindric undotted distinct, flowers peduncled, calyxes four-cleft.

10. *Mesembryanthemum splendens*. Shining Fig Marigold.

Lin. spec. 689. syst. 468. Reich. 2. 506. Dill. elth. 270. t. 204. f. 260. Haworth monogr. 209.

Ficoides capensis frutescens, fol. teretibus confertis glaucis, flore albo. Bradl. succ. 1. 7. t. 6.

Leaves roundish undotted recurved distinct heaped, calyxes finger-shaped terminating.

11. *Mesembryanthemum umbellatum*. Umbelled Fig Marigold.

Lin. spec. 689. Reich. 2. 506. Kniph. cent. 3. n. 63. Dill. elth. 277. t. 208. f. 266. Haworth monogr. 336.

Ficoides africana erecta teretifolia, floribus albis umbellatis. Herm. par. t. 166. Bradl. succ. 4. 12. t. 44. Pluk. phyt. t. 117. f. 1.

Leaves awl-shaped rugged-dotted connate with a patulous tip, stem upright, corymb trichotomous.

12. *Mesembryanthemum expansum*. Houseleek-leaved Fig Marigold.

Lin. spec. 697. Reich. 2. 507. Knorr. del. 2. t. M. 3. Dill. elth. 234. t. 182. f. 223. Haworth monogr. 195. Pet. gaz. t. 78. f. 10. Bradl. succ. 3. 7. t. 16. (Ficoides).

Leaves flattish lanceolate undotted spreading distinct opposite and alternate remote.

13. *Mesembryanthemum testiculare*. Short white-leaved Fig Marigold.

Ait. hort. kew. 2. 181. Haworth monogr. 133.

Leaves four decussated flat above.

14. *Mesembryanthemum criniflorum*. Hair-flowered Fig Marigold.

Lin. suppl. 259. Haworth monogr. 425.

Leaves ovate, scapes one-flowered.]

15. *Mesembryanthemum Tripolium*. Plane-leaved Fig Marigold.

Lin. spec. 690. Reich. 2. 507. hort. cliff. 217. 11. ups. 128. Kniph. cent. 8. n. 70. Dill. elth. 230.

t. 179. f. 220. Haworth monogr. 122. Bradl. succ. 5. 14. t. 47. Pluk. mant. t. 329. f. 4. (Ficoides).

Leaves alternate lanceolate flat undotted, stems loose simple, calyxes five-cornered.

16. *Mesembryanthemum calamiforme*. Quill-leaved Fig Marigold.

Lin. spec. 690. Reich. 2. 507. Dill. elth. 239. t. 186. f. 228. Mill. fig. t. 176. f. 1. Haworth monogr. 140. Bradl. succ. 2. 10. f. 19. (Ficoides).

Stemless

- Stemless, leaves roundish ascending undotted connate, flowers eight-styled.*
- [17. *Mesembryanthemum digitatum*. *Blunt-leaved Fig Marigold*.
Ait. hort. kew. 2. 181. Haworth monogr. 139.
Almost stemless, leaves alternate round blunt, flowers axillary sessile.
18. *Mesembryanthemum pallens*. *Pale or channel-leaved Fig Marigold*.
Ait. hort. kew. 2. 182. Haworth monogr. 197.
Leaves opposite embracing distinct oblong-lanceolate acute bluntly keeled, teats minute.
- ** With red corollas.
19. *Mesembryanthemum papulosum*. *Angular-stalked Fig Marigold*.
Lin. syst. 470. suppl. 259. Haworth monogr. 121.
M. Aitonis. Jacqu. hort. 3. 8. t. 7.
Leaves opposite distinct ovate-spatulate, teats subglobular, calyxes angular five-cleft, branches angular.
20. *Mesembryanthemum cordifolium*. *Heart-leaved Fig Marigold*.
Lin. suppl. 260. Gloxin obs. bot. 22. t. 1. f. a.
Jacqu. collect. 2. 294. it. vol. 2. 487. Smith spicil. t. 6. Haworth monogr. 192.
Leaves opposite petioled cordate, calyxes four-cleft, stem round.
21. *Mesembryanthemum limpidum*. *Transparent Fig Marigold*.
Ait. hort. kew. 2. 183. Haworth monogr. 116.
M. cuneifolium. Jacqu. ic. 2. 488. collect. 2. 319.
Leaves opposite spatulate blunt rugged, teats oblong, calyxine leaflets oblong blunt contracted in the middle.]
22. *Mesembryanthemum bellidiflorum*. *Daisy-flowered Fig Marigold*.
Lin. spec. 690. Reich. 2. 507. hort. cliff. 218. 13.
Knorr. del. 1. t. G. 5. a. n. 1. Dill. elth. 244. t. 189. f. 233. Haworth monogr. 143. Bradl. succ. 2. 9. f. 18. (Ficoides).
Stemless, leaves three-sided linear undotted toothed in three rows at the tip.
23. *Mesembryanthemum deltoides*. *Delta-leaved Fig Marigold*.
Lin. spec. 690. Reich. 2. 508. hort. cliff. 218. 14.
Knorr. del. 1. t. G. 5. b. n. 1. Haworth monogr. 364.
α. Dill. elth. 255. t. 195. f. 246.
β. M. delt. majus. *Great Delta-leaved Fig Marigold*.
Haw. mon. 366. Dill. elth. 254. t. 196. f. 247.
γ. M. caulescens. *Small Delta-leaved Fig Marigold*.
Haw. mon. 367. Dill. elth. 253. t. 195. f. 243, 244.
Leaves deltoid three-sided toothed undotted distinct.
24. *Mesembryanthemum barbatum*. *Bearded Fig Marigold*.
Lin. spec. 691. Reich. 2. 508. hort. cliff. 216. 5.
ups. 127. Kniph. cent. 10. n. 60. Curt. magaz. 70. Haworth monogr. 293.
M. stellatum. Mill. dict.
α. *Shrubby bearded Fig Marigold*.
Dill. elth. 245. t. 190. f. 234.
β. *Small dwarf bearded Fig Marigold*.
Dill. elth. 246. t. 190. f. 235.
M. hirsutum. Haworth monogr. 297.
γ. *Great dwarf bearded F. M.*
Dill. elth. 248. t. 190. f. 236.
M. densum. Haworth monogr. 302.
Leaves subovate papulose distinct bearded at the tip.
25. *Mesembryanthemum hispidum*. *Bristly Fig Marigold*.
Lin. spec. 691. Reich. 2. 509. hort. cliff. 217. 7.
Haworth monogr. 277. Mill. fig. t. 176. f. 3.
α. *Purple-flowered*. Dill. elth. 289. t. 214. f. 277, 278.
β. *Pale-flowered*. Dill. elth. 290. t. 214. f. 279, 280.
M. hisp. pallidum. Haw. mon. 279.
γ. *Striped-flowered*. Dill. elth. 291. t. 215. f. 281.
M. striatum. Haw. mon. 280.
Leaves cylindric papulose distinct, stem hispid.
26. *Mesembryanthemum villosum*. *Hairy-stalked Fig Marigold*.
Lin. spec. 692. Reich. 2. 509. hort. cliff. 217. 6.
Haworth monogr. 222.
Leaves pubescent connate undotted, stem hairy.
- [27. *Mesembryanthemum bracteatum*. *Bracteated Fig Marigold*.
Ait. hort. kew. 2. 185. Dill. elth. 258. t. 197. f. 249. Haworth monogr. 19.
Leaves somewhat sabre-shaped dotted recurved at the tip, bractes embracing broad-ovate keeled.]
28. *Mesembryanthemum scabrum*. *Rugged Fig Marigold*.
Lin. spec. 692. Reich. 2. 509. hort. cliff. 219. 20.
ups. 129. Dill. elth. 260. t. 197. f. 251. Haworth monogr. 345.
Leaves awl-shaped distinct muricate-dotted all round underneath, calyxes awnless.
- [29. *Mesembryanthemum reptans*. *Creeping Fig Marigold*.
Ait. hort. kew. 2. 185. Haworth monogr. 348.
Leaves three-sided acute rugged, stem creeping.
30. *Mesembryanthemum emarginatum*. *Notch-flowered Fig Marigold*.
Lin. spec. 692. Reich. 2. 510. Dill. elth. 259. t. 197. f. 250. Haworth monogr. 340. Pet. gaz. t. 77. f. 3. (Ficoides).
Leaves awl-shaped beaped somewhat rugged, calyxes spiny, petals emarginate.]
31. *Mesembryanthemum uncinatum*. *Hook-leaved Fig Marigold*.
Lin. spec. 692. Reich. 2. 510. hort. cliff. 218. 16.
α. M. perfoliatum fol. minoribus diacanthis. Dill. elth. 250. t. 193. f. 239.
M. uncinatum. Haworth mon. 309.
Ficoides afra, fol. triangulari glauco perfoliato brevissimo apice spinoso. Bradl. succ. 3. 8. t. 26, 27. Burm. afr. t. 26. f. 3.
β. M. perfol. fol. majoribus triacanthis. Dill. elth. 251. t. 193. f. 240.
M. perfoliatum. Mill. dict. n. 19. Haw. mon. 307.
F. afr. frutescens perfoliata, fol. triang. glauco punctato. Bradl. succ. 5. 13. t. 46.
Joints of the stem terminated by connate acuminate dotted leaves toothed underneath.
32. *Mesembryanthemum spinosum*. *Thorny Fig Marigold*.
Lin. spec. 693. Reich. 2. 510. hort. cliff. 216. 3.
Dill. elth. 276. t. 208. f. 265. Haworth monogr. 338.
Ficoides africana, aculeis longissimis & foliolis nascentibus ex foliorum alis. Tournef. in act. par. 1705. p. 241. Bradl. succ. 41. t. 39.
Leaves from round three-sided dotted distinct, thorns branched.
33. *Mesembryanthemum tuberosum*. *Tuberous-rooted Fig Marigold*.
Lin. spec. 693. Reich. 2. 510. hort. cliff. 216. 4.
Dill. elth. 275. t. 207. f. 264. Haworth monogr. 271.
Leaves awl-shaped papulose distinct patulous at the tip, root beaded.
34. *Mesembryanthemum tenuifolium*. *Slender-leaved Fig Marigold*.
Lin. spec. 693. syst. 469. Reich. 2. 510. hort. cliff. 220. n. 26. ups. 128. Dill. elth. 264. t. 201. f. 256. Haworth monogr. 23. Bradl. succ. 1. 13. t. 9. Mor. hist. 3. 507. f. 12. t. 8. f. 6. Pluk. mant. 77. spec. 1. (Ficoides).
Leaves subfiliform smooth distinct longer than the internode, stems procumbent.
35. *Mesembryanthemum stipulaceum*. *Upright shrubby Fig Marigold*.
Lin. spec. 693. Reich. 2. 511. hort. cliff. 220. 29.
Dill. elth. 279. t. 209. f. 267, 268. Haworth monogr. 255.
Leaves subtriangular compressed curved inwards dotted distinct beaped margined at the base.
- [36. *Mesembryanthemum laeve*. *Upright white-wooded Fig Marigold*.
Ait. hort. kew. 2. 187. Haworth monogr. 254.
Leaves cylindric blunt embracing even, calyxes five-cleft, segments oblong blunt.
37. *Mesembryanthemum deflexum*. *Bending Fig Marigold*.
Ait. hort. kew. 2. 187. Haworth monogr. 347.
Leaves three-sided acute glaucous, dots obsolete somewhat rugged, interior calyxine segments membranaceous.
38. *Mesem-*

38. *Mesembryanthemum australe*. *New Zealand Fig Marigold*.
Ait. hort. kew. 2. 187.
Leaves subtriquetrous small-dotted connate bluntish, stem round creeping, peduncles bluntly ancipital solitary.]
39. *Mesembryanthemum crassifolium*. *Thick-leaved Fig Marigold*.
Lin. spec. 693. Reich. 2. 518. hort. cliff. 217. 9.
Dill. elth. 266. t. 201. f. 257. Haworth monogr. 350. Bradl. succ. 4. 16. t. 38. (Ficoides).
Leaves semicylindric undotted connate three-sided at top, stem creeping semicylindric.
40. *Mesembryanthemum falcatum*. *Sickle-leaved Fig Marigold*.
Lin. spec. 694. Reich. 2. 511. hort. cliff. 219. 19.
Dill. elth. 288. t. 213. f. 275, 276. Haworth monogr. 360. Bradl. succ. 5. 9. t. 42. (Ficoides).
Leaves somewhat sabre-shaped curved inwards dotted distinct, branches round.
41. *Mesembryanthemum glomeratum*. *Clustered Fig Marigold*.
Lin. spec. 694. Reich. 2. 512. Dill. elth. 287.
t. 213. f. 274. Haworth monogr. 356.
Leaves roundish compressed dotted distinct, stem panicled many-flowered.
- [42. *Mesembryanthemum brevifolium*. *Short-leaved Fig Marigold*.
Ait. hort. kew. 2. 188. Haworth monogr. 274.
Leaves cylindric very blunt papulose spreading, branches diffused.]
43. *Mesembryanthemum loreum*. *Leathery-stalked Fig Marigold*.
Lin. spec. 694. Reich. 2. 512. hort. upf. 128. Dill.
elth. 264. t. 200. f. 255. Haworth monogr. 232.
Leaves semicylindric recurved heaped gibbous at the inner base and connate, stem pendulous.
- [44. *Mesembryanthemum filamentosum*. *Thready Fig Marigold*.
Lin. spec. 694. Reich. 2. 512. Dill. elth. 285.
t. 212. f. 273. Haworth monogr. 380.
Leaves equilaterally triangular acute somewhat dotted and connate, angles rugged, branches hexangular.]
45. *Mesembryanthemum acinaciforme*. *Cimeter-leaved Fig Marigold*.
Lin. spec. 695. Reich. 2. 513. hort. cliff. 219. 18.
Kniph. cent. 10. n. 59. Dill. elth. 282. t. 211.
f. 270. & t. 212. f. 271. Haworth monogr. 397.
M. falcatum. Lin. syst. ed. 14. 469. n. 30.
Leaves cimeter-shaped undotted connate rugged at the angle of the keel, petals lanceolate.
- [46. *Mesembryanthemum forficatum*. *Forked Fig Marigold*.
Lin. spec. 695. syst. 469. Reich. 2. 513. Jacqu.
hort. 1. 9. t. 26. Haworth monogr. 394.
Leaves cimeter-shaped blunt undotted connate thorny at the tip, stem ancipital.
47. *Mesembryanthemum spectabile*. *Showy or Great purple-flowered Fig Marigold*.
Haworth monogr. 385. Curt. magaz. t. 396.
Leaves perfoliate very long glaucous dotted quite entire three-sided awl-shaped at the tip, stem woody ascending.]
- *** *With yellow corollas.*
48. *Mesembryanthemum edule*. *Eatable Fig Marigold*.
Lin. spec. 695. syst. 469. Reich. 2. 513. Dill. elth.
283. t. 212. f. 272. Haworth monogr. 392.
Herm. lugdb. t. 245. Mor. hist. 3. 506. f. 12.
t. 7. f. 1. (Ficoides).
Leaves equilaterally triangular acute striat undotted connate subserrate at the keel, stem ancipital.
49. *Mesembryanthemum bicolorum*. *Two-coloured Fig Marigold*.
Lin. spec. 695. syst. 470. Reich. 2. 513. Dill.
elth. 267. t. 202. f. 258. Mill. fig. t. 177. f. 1.
Curt. magaz. t. 59. Haworth monogr. 241. & coccineum 247. Herm. lugdb. t. 249. Mor.
hist. f. 12. t. 6. f. 4. Bradl. succ. 1. 8. t. 7. (Ficoides).
Leaves awl-shaped even dotted distinct, stem frutescent, corollas two-coloured.

- [50. *Mesembryanthemum aureum*. *Golden Fig Marigold*.
Lin. syst. ed. 10. 1060. Ait. hort. kew. 2. 190.
Curt. magaz. t. 262. Haworth monogr. 333.
Leaves cylindric-three-sided dotted distinct, pistils black-purple.]
51. *Mesembryanthemum ferratum*. *Serrate-leaved Fig Marigold*.
Lin. spec. 696. Reich. 2. 514. hort. cliff. 218. 15.
Dill. elth. 249. t. 192. f. 238. Haworth monogr. 381. Pet. gaz. t. 78. f. 2.
Leaves awl-shaped three-sided dotted distinct serrate backwards at the angle of the keel.
52. *Mesembryanthemum micans*. *Glittering Fig Marigold*.
Lin. spec. 696. Reich. 2. 514. hort. cliff. 220. 30.
Kniph. cent. 7. n. 58. Knorr. del. 1. t. G. 5.
Dill. elth. 292. t. 215. f. 282. Haworth monogr. 268. Pet. gaz. t. 78. f. 9. Bradl. succ. 1. 9.
t. 8. Raii hist. 3. 366. n. 21. (Ficoides).
Leaves subcylindric papulose distinct, stem rugged.
- [53. *Mesembryanthemum grossum*. *Gouty Fig Marigold*.
Ait. hort. kew. 2. 191.
Leaves subcylindric clustered papulose, trunk thickened at the base, branches diffused smooth.
54. *Mesembryanthemum brachiatum*. *Three-forked Fig Marigold*.
Ait. hort. kew. 2. 191. Haworth monogr. 254.
Stem and leaves cylindric papulose, branches trichotomous.]
55. *Mesembryanthemum rostratum*. *Heron-beaked Fig Marigold*.
Lin. spec. 696. Reich. 2. 516. hort. cliff. 219. n. 23.
Kniph. cent. 10. n. 61. Dill. elth. 240. t. 186.
f. 229. Haworth monogr. 152.
Stemless, leaves semicylindric connate externally tubercled.
- [56. *Mesembryanthemum compactum*. *Dotted thick-leaved Fig Marigold*.
Ait. hort. kew. 2. 191. Haworth monogr. 155.
Stemless, leaves connate dotted half-round three-sided at the tip somewhat reflex sharp, flowers sessile, calyx subcylindric six-cleft.]
57. *Mesembryanthemum veruculatum*. *Spit-leaved Fig Marigold*.
Lin. spec. 696. Reich. 2. 516. hort. cliff. 220. 24.
upf. 128. Kniph. cent. 10. n. 62. Dill. elth. 268.
t. 203. f. 259. Haworth monogr. 260.
Leaves three-sided-cylindric acute connate bowed undotted distinct.
- [58. *Mesembryanthemum molle*. *Soft Fig Marigold*.
Ait. hort. kew. 2. 192. Haworth monogr. 261.
Leaves three-sided connate erect glaucous undotted, branches half round, peduncles axillary compressed.]
59. *Mesembryanthemum glaucum*. *Glaucous-leaved Fig Marigold*.
Lin. spec. 696. Reich. 2. 514. hort. cliff. 220. 27.
Dill. elth. 256. t. 196. f. 248. Haworth monogr. 329.
Leaves three-sided acute dotted distinct, calycine leaflets ovate-cordate.
60. *Mesembryanthemum corniculatum*. *Horned Fig Marigold*.
Lin. spec. 697. Reich. 2. 515.
a. Dill. elth. 262. t. 199. f. 253, 254. Haworth monogr. 226. Pet. gaz. t. 77. f. 10. (Ficoides).
Long-leaved horned Fig Marigold.
β. M. diversiphyllum. Haw. mon. 228. Dill. elth. 261. t. 198. f. 252. Bradl. succ. 4. 18. t. 40. (Ficoides).
Short-leaved horned Fig Marigold.
Leaves three-sided-semicylindric rugged-dotted with a raised line above the base and connate.
- [61. *Mesembryanthemum pinnatifidum*. *Pinnated Fig Marigold*.
Lin. syst. 470. suppl. 260. Curt. magaz. 67.
Haworth monogr. 112.
Leaves flat oblong pinnatifid.
62. *Mesembryanthemum sessiliflorum*. *Sessile-flowered Fig Marigold*.
Ait. hort. kew. 2. 193.
Leaves flat spatulate, both these and the stems papulose, branches divaricate, flowers sessile.]

63. *Mesembryanthemum tortuosum*. *Twisted-leaved Fig Marigold*.
Lin. spec. 697. *Reich.* 2. 515. *hort. cliff.* 217. 10.
Kniph. cent. 8. n. 69. *Dill. elth.* 233. t. 181.
f. 222. *Haworth monogr.* 196. *Bradl. succ.* 2. 7.
t. 16. (Ficoides).
Leaves flattish oblong-ovate subpapillose clustered connate, calyxes three-leaved two-borned.
- [64. *Mesembryanthemum glabrum*. *Smooth-leaved Fig Marigold*.
Ait. hort. kew. 2. 193.
Leaves embracing distinct spatulate very smooth, peduncles the length of the leaves, calyxes hemispherical.
65. *Mesembryanthemum Helianthoides*. *Spatula-leaved Fig Marigold*.
Ait. hort. kew. 2. 193.
Leaves spatulate flat even, peduncles very long, calyxes flat at the base angular.
66. *Mesembryanthemum pomeridianum*. *Great yellow-flowered Fig Marigold*.
Lin. spec. 698. *syft.* 470. *Reich.* 2. 515. *dec.* 25.
t. 13. *Jacqu. ic. vol.* 2. 489. *Herm. lugdb.* 259.
Seba mus. 1. 29. t. 19. *f.* 5. (Ficoides).
Leaves flattish broad-lanceolate even subciliate distinct, stem peduncles and germs rough-haired.
67. *Mesembryanthemum echinatum*. *Echinated Fig Marigold*.
Ait. hort. kew. 2. 194.
a. *M. echinatum luteum*. *Yellow echinated Fig Mar.*
Haworth monogr. 292.
β. *M. echin. album*. *White echinated Fig Mar.*
Haw. mon. 288.
Leaves oblong-ovate subtriquetrous gibbous ramentaceous-bispid, calycine segments leaf-shaped.]
68. *Mesembryanthemum ringens*. *Ringent Fig Marigold*.
Lin. spec. 698. *Reich.* 2. 516. *hort. cliff.* 218. 12.
a. *M. caninum*. *Dog's-chap Fig Marigold*.
Haworth mon. 159. *Dill. elth.* 241. t. 188. *f.* 231.
Mill. fig. t. 177. *f.* 2. *Bradl. succ.* 2. 8. t. 17.
β. *M. felinum*. *Cat's-chap Fig Marigold*.
Haw. mon. 161. *Dill. elth.* 240. t. 187. *f.* 230.
Knorr. del. 1. t. G. b. n. 1. *Mart. cent. t.* 30.
(Ficoides).
M. rostratum. *Mill. dict. n.* 40.
Almost stemless, leaves ciliate toothed dotted.
69. *Mesembryanthemum dolabrilforme*. *Hatchet-leaved Fig Marigold*.
Lin. spec. 699. *Reich.* 2. 517. *hort. cliff.* 219. 19.
Kniph. cent. 1. n. 51. *Curt. magaz. t.* 32. *Dill. elth.* 248. t. 191. *f.* 237. *Haworth monogr.* 166.
Bradl. succ. 1. 11. t. 10. (Ficoides).
Stemless, leaves hatchet-shaped dotted.
70. *Mesembryanthemum difforme*. *Various-leaved Fig Marigold*.
Lin. spec. 699. *Reich.* 2. 517. *Mill. fig. t.* 176.
f. 2. *Dill. elth.* 252. t. 194. *f.* 241, 242.
Haworth monogr. 169. *Pluk. phyt. t.* 325. *f.* 4.
Stemless, leaves difform dotted connate.
71. *Mesembryanthemum albidum*. *White Fig Marigold*.
Lin. spec. 699. *Reich.* 2. 517. *Dill. elth.* 243.
t. 189. *f.* 232. *Haworth monogr.* 156. *Bradl. succ.* 5. 10. t. 43.
Stemless, leaves three-sided quite entire.
72. *Mesembryanthemum linguiforme*. *Tongue-leaved Fig Marigold*.
Lin. spec. 699. *Reich.* 2. 517. *hort. cliff.* 219. 8.
upf. 128. *Knorr. del.* 1. t. 5. t. G. 6. n. 2.
a. *M. scalpratum*. *Broad tongue-leaved Fig Mar.*
Dill. elth. 235. t. 183. *f.* 224. *Haworth monogr.* 187.
β. *Narrow tongue-leaved Fig Mar.*
Dill. elth. 237. t. 184. *f.* 226. *Haw. mon.* 182.
γ. *Long tongue-leaved Fig Mar.*
Dill. elth. 238. t. 185. *f.* 227.
M. longum. *Haw. mon.* 177.
Stemless, leaves tongue-shaped thicker at one edge undotted.
73. *Mesembryanthemum pugioniforme*. *Dagger-leaved Fig Marigold*.
Lin. spec. 699. *syft.* 470. *Reich.* 2. 518. *mant.* 398.
hort. cliff. 216. 2. *upf.* 129. *Dill. elth.* 280.

t. 210. *f.* 269. *Haworth monogr.* 387. *Bradl. succ.* 2. 5. t. 14. (Ficoides).
Leaves alternate clustered awl-shaped three-sided very long undotted.

**** *With green corollas.*

- [74. *Mesembryanthemum viridiflorum*. *Green-flowered Fig Marigold*.
Ait. hort. kew. 2. 196. *Curt. magaz. t.* 326. *Haworth monogr.* 199.
Leaves semicylindric papulose-hairy, calyxes five-cleft hirsute.
75. *Mesembryanthemum capillare*.
Lin. syft. 470. *suppl.* 260.
Leaves connate round papulose, stem upright, branchlets one-flowered filiform smooth.

DESCRIPTIONS, &c.

Of this very numerous and splendid genus very few are annual, fewer biennial, many are perennial, but most are shrubby, especially towards the base. Leaves mostly opposite, seldom alternate, thick or succulent, of various forms. Flowers solitary, axillary or extra-axillary, but more frequently terminating. The fruit is sometimes shaped like a fig^a.

The annual sorts are, *nodiflorum*, *crystallinum*, *copiticum*, *apetalum*, *limpidum*, *pinnatifidum*, *sessiliflorum*, *glabrum*, *Helianthoides*, *pomeridianum*. The biennials, *caducum*, *Tripolium*, *papuliflorum*.

Linneus has ranged the species from the colour of the flowers, which is obvious, and sufficiently constant, with few exceptions. Mr. Haworth has changed the order, and arranged the perennial sorts chiefly from the leaves, thus—1. *Subaphylla* or almost leafless. 2. *Subacaulia foliosa*, almost stemless and leafy. 3. *Caulescent* with flat leaves. 4. *Suffrutescent* with the leaves rounded underneath. 5. *Suffrutescent* with three-sided leaves.

They are chiefly natives of the Cape of Good Hope. Three or four of the species keep their flowers closed all day, and open in the evening; hence some have called these *Nycteranthemum*, but as they agree with the rest in other circumstances, particularly in the fructification and habit, the distinction is absurd.]

1. This is a native of Egypt, where they cut up the plants and burn them for pot-ash; it is esteemed the best sort for making hard soap and the finer glass. It is an annual plant. In the stove the stalks grow long and slender, and are not productive of flowers. Raised in a hot-bed, and afterwards exposed to the open air, it flowers freely. [It also grows wild in Italy, about Naples, on high sea banks exposed to the spray.

Stems decumbent and diffused; the whole plant papulose. Calyxes thick, five-toothed, two of the teeth larger, leaf-shaped. Petals very narrow, but flat, connate at the base. Stigmas generally five, seldom four^b.

It was cultivated in 1748, by Mr. Miller, and flowers in august^c.

2. This is a charming little shrub, with a perennial fibrous root, and slender, but firm, nearly upright, straight branches, which are thickly adorned with green, dotted, very small, short, triquetrous leaves. The ciliæ are not always observable^d.—Found at the Cape by Masson. Introduced in 1774^e.

3. This is another species found at the Cape by Masson. It was introduced in 1774, flowers in july and august, and is biennial^f. We have not any description of it.]

4. This is an annual plant, distinguished by its leaves and stalks being closely covered with pellucid pimples full of moisture, which, when the sun shines on them, reflect the light, and appear like small bubbles of ice, whence it is called the *Ice-plant*; others name it the *Diamond Plant* or *Diamond Ficoides*.

[The stem has opposite and alternate cylindrical branches, which when luxuriant trail upon the ground, and are from one to two feet long. The first four or

^a Jussieu.

^b Forsk.

^c Hort. kew.

^d Haworth.

^e Hort. kew.

^f Idem.

six leaves are opposite, each pair crossing the other, very lax and succulent, waved, blunt, attenuated or wedge-shaped at the base, and connate, rather keeled underneath, especially at the base, with a slight corresponding channel along the centre of the upper surface, which is covered with less and duller pimples than any other part of the plant: margin regularly edged, with globular papulae or pimples, which are less than those on the stems: the upper leaves are alternate, growing less and less, nearly sessile, small. Peduncles extremely short or none, alternate, from the axils of the upper leaves. Segments of the calyx unequal, three of them large and leafy, beset with piliferous pimples, and acutely pointed, the two inner much smaller, frequently coloured with a purplish tinge, acute at the points. Petals very narrow, bluish-coloured without, whitish within, sometimes entirely white, making a poor appearance. Germ smooth, with a navel at the top. Styles five, longish, not straight^s. Capsule inferior, or united with the belly of the calyx beyond the middle, smooth, obscurely five-cornered, five-celled, frequently purplish, opening at top by five clefts which are thickened about the margin: cells narrow clothed with a cartilaginous lamina: partitions spongy, thick, narrowing like a wedge towards the axis. Seeds as many as twenty-five in a cell, small, flattened a little, kidney-form triangular, somewhat wrinkled^h.

Native of Greece, near Athens, where it was found by the late John Sibthorp, M. D. Professor of Botany at Oxford. It was cultivated here in 1727, as appears from Bradley. It flowers in July and Augustⁱ.

5. This is a native of the Cape, where it was found by Masson. Introduced here in 1774. It flowers in July and August. It is one of the shrubby sorts^k, but we have no description of it.

6. This is of the same stature and size with *M. nodiflorum*. Stem trichotomous, herbaceous. Leaves opposite, terminating the branchlets, the length of the internodes. Flowers sessile, solitary, in the forks of the branches. Calyx longer than the corolla. Capsule turbinate, retuse, five-angled, the angles ciliate, compressed. Seeds roundish, somewhat screw-shaped, striated. This is an annual, and a native of Egypt.

7. This is also an annual. Stems herbaceous, round, red. These and the whole plant are covered with obsolete, papulose, shining dots. Leaves opposite, channelled above, semicylindric underneath, somewhat mucronated, blunt. Peduncles short, one-flowered. Leaflets of the calyx unequal, subulate-cylindric. Petals twenty-four, white, distant, bristle-shaped, very short, resembling filaments without anthers, incumbent on the germ. Filaments very like the petals, but shorter. Anthers brownish. Germ orbiculate, large, convex, smooth and even above. Styles five, approximating, short. Stigmas recurved^l.

M. copticum of Jacquin is supposed to be this species and not the *copticum* of Linneus. He observes, that the stems are very short, divided into branches that appear to be stems; that the flowers are about fourteen only; the filaments of the same length with the petals, with red anthers; the styles thick, hirsute and reflected. In other respects his description agrees with that given above from the supplement of the younger Linneus.

Native of the Cape. Introduced in 1774, by Mr. Francis Masson. It flowers in July and August^m.

8. Plant, whilst young, herbaceous, but becoming shrubby by age. Trunk then woody, a finger or more in thickness, covered with a brownish ash-coloured bark. Branches decumbent, divaricating whilst young, cylindric, tender, covered with minute pimples, dark green, thick, fleshy, the bark, when old, becoming somewhat woody, and assuming various flexuose contorted directions: all the branches are nearly of the same thickness, but the upper ones are shorter, and more woody next the stem. Leaves mostly opposite, but not always so, especially on the flowering branches, smooth, cylindric, convex beneath, slightly channelled

above, minutely pimpled. Flowers small, making a poor appearance. Peduncles very short and thick, solitary, remote, one-flowered; usually axillary, but sometimes terminating. Calyx studded with larger papillae than any other part of the plant; quadrifid, segments unequal; two large, leafy, channelled above; two less, subcylindric with the edges somewhat membranaceous. Petals dull yellowish white or pale straw-colour, linear, entire or emarginate, reflex, the inner ones gradually smaller. Anthers subdidymous, large for the size of the flower; pollen yellow. Styles four, short. Capsule fleshy, finally semitransparent, quadrangular, four-celled. Seeds few, nestling in the pulpⁿ.

Native of the Cape. Cultivated in 1727, according to Bradley. It flowers from June to August^o.

9. The trunk, which attains the thickness of the little finger, is smooth and even, covered with a bay-coloured bark, and has frequent joints where branches have fallen. Branches opposite, spreading irregularly, and decumbent from the weight of the leaves. Leaves pale green and slightly glaucous, obtusely triangular, smooth and even, opaque, minutely and thickly dotted so as to make a very fine net: the lower ones longer; the upper ones, whence the peduncles arise, shorter and thicker. Calyx four-cleft. Petals narrow, the inner ones gradually shorter, inwardly white, outwardly purple. The flowers are closed during the day, open in the evening and continue open during the night, at which time they are very sweet. Styles four. Capsule four-celled. Two segments of the calyx become smaller and almost membranaceous as the flower opens, and disappear as the fruit ripens.

β. This differs no otherwise from the purple one than in the flowers being somewhat larger, and of a different colour, namely of a very pale yellow on the outside^p.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort. It flowers from June to August^q.

10. Stems woody, a foot and more in length, with many short branches and clustered leaves, with which they are so loaded that they cannot support themselves. Leaves short, bluntly three-sided, thick, smooth and shining, pale green scarcely if at all glaucous, with a few thick green dots. Flowers solitary at the ends of the branchlets, on very short peduncles, large, whitish or very pale yellow within, reddish on the outside and at the tips. Petals very narrow, the inner ones gradually smaller. They appear in July and August, and open before and after noon, when the sun shines, opening and closing several times, and finally closing about the fruit, which is ovate, with five lines or angles, five-celled. The five segments of the calyx are nearly equal^r.

According to Mr. Haworth, the segments of the calyx are blunt, large and long, three with large membranaceous edges, two nearly cylindrical, rather longer, without membranes, very blunt, and resembling the leaves of the plant. The flowers whitish, not showy or large.

Native of the Cape. Cultivated in 1716, as appears from Bradley^s.

11. Stems woody; forming a regularly branched handsome shrub, standing without support with a stout stem, from two to three feet high and even more. Branches many, spreading every way, having four lines running along them, which give them the appearance of being quadrangular. Leaves subtriquetrous, wrinkled, bending this way and that, somewhat resembling bull's horns, glaucous except the younger ones, which are green and less wrinkled, when held up to the light they appear to have innumerable pores. From one axil of each pair of leaves, sometimes from both, one pair of leaves usually springs, which becomes a shoot, with several pairs of leaves on it. Flowers terminating, white, opening when the sun shines from seven or eight in the morning to two or three in the afternoon, and smelling like those of May or White-thorn. Capsules small, roundish, somewhat angular with five

^s Haworth.

^h Gærtner.

ⁱ Hort. kew.

^k Idem.

^l Linn. suppl.

^m Hort. kew.

ⁿ Haworth.

^o Hort. kew.

^p Dillenius.

^q Hort. kew.

^r Dillenius.

^s Hort. kew.

blunt ribs and five-celled. Seeds small, subruvous^a. Native of the Cape. Cultivated in 1727, as appears from Bradley. It flowers from june to september^a.

12. Stems and branches irregular and distorted, as in *tortuosum*, from which however it differs in being somewhat higher and more branched; the branches interwoven, less woody, but softer and more fleshy, with the bark smoother and of a paler yellow; the leaves greener, something wider and thinner, with the ridge on the outer and the groove on the inner part more conspicuous, though less concave; the dots rather oblong than round, shining like silver in the sunshine; they are not produced in bundles, as in *tortuosum*, but more loosely, and decussated. Flowers somewhat larger and paler; the petals rather wider, and becoming yellowish with age. Calyx and capsules larger and more swelling.

The inner petals are yellowish, the outer larger and whitish with a very slight tinge of yellow, shining in the sun. Three of the calycine segments are larger and two shorter; sometimes three smaller and two larger. Capsule globular, with five grooves, and as many rays at the top, five-celled^a.

Native of the Cape. Cultivated in 1705, by Dr Uvedale. It flowers in july and august^a.

13. Stemless, very white and short. Rarely more than four living leaves on a plant at once, and of these the oldest pair often less plump than the other. All the leaves are connate below, extremely short and thick, but much thicker at the base than towards their blunt points, rounded on the outside, flat within^a.

Native of the Cape, where it was found by Masson. Introduced in 1774^a.

14. Plant the size of the common Daisy. Leaves ovate-oblong, petioled, with crystalline dots. Scape an inch long, one-flowered. Calyx deeply five-cleft; segments oblong, very blunt. Petals five, oblong, pedicelled, longer than the calyx, white. Stamens bristle-shaped, white, very long.—Found at the Cape of Good Hope by Montin^b.

15. Root biennial. Stems prostrate, smooth, finally terminating in flowers. Lower leaves many, almost as long as the stems, resembling those of *Aster Tripolium*, but thicker and more succulent. Among these spring three or four stems, sometimes more round and having two or three joints, at each of which are two smaller leaves at the lower, and three or four at the upper joints. Surface in all smooth and even, and very minute white teeth about the edge, more perceptible in the smaller leaves, and the lower part of the others. Flowers usually solitary, silvery white, opening in the middle of the day, and of short duration. Peduncles short, round or subquincangular. Calyx large, acutely and deeply pentagonal, five-cleft; segments shortish, unequal, the two outer leafy, plane and large; the three inner less, with awl-shaped points, beneath which is a projecting ridge-like membrane. Petals extremely narrow, so as to be almost capillary, and not quite so long as the calyx; the inner ones shorter and more slender than the outer. Capsule very large, deeply five-angled, five-celled, very fleshy, flesh extremely hard and firm; cells very small, filled with a few large seeds, which are kidney-form, wrinkled, and of a shining dark brown colour^c.

Native of the Cape. Cultivated in the botanic garden at Chelsea in 1700. It flowers from june to september^d.

16. Leaves numerous, either upright or bending upwards, rigid, thick and fleshy, about a finger's length, appearing to be round, but slightly flattened on the inside, especially near the base; they are deep green and glaucous, thickly set with small green dots and some transverse lines, pointed at the end, the point purple or green. Flowers solitary, on a short scape from the centre of the plant, large. Calycine segments unequal. Petals very narrow, white, shining like silver in the sun, void of scent, opening about noon in july, august and september. Style eight-cleft. Capsule eight-celled^e.

Native of the Cape. Cultivated in 1717, as appears from Bradley^f.

17. Found at the Cape by Masson. Introduced in 1775.

18. This also was found at the Cape by Masson, and was introduced in 1774^g.

19. Root biennial. Stem short, nearly the thickness of the little finger. Branches opposite, spreading very much, obscurely angular or round, herbaceous, green, the lower ones procumbent and a foot and half long. Leaves thick, narrowing into a short petiole or subsessile, entire, flat, somewhat waved, opposite on the branches, at the flowers single, that is the flowers come out singly on a peduncle opposite to a leaf. These, the stems, peduncles, calyxes and germs are covered with very minute shining dots, which when examined with a magnifier appear to be clear drops like ice. Calyx green and deeply five-cornered, three or two only of the leaflets run out into a spatulate blunt flat bracte the length of the corolla: the others are small and sharp. Petals numerous, linear, sharp, pale beneath, within flesh-coloured, on the outside red. The flowers have no scent, and are open from three to six in the afternoon^h.

Native of the Cape. Introduced in 1774 by Mr. Francis Masson. It flowers from april to octoberⁱ.

20. Root perennial. Stem rather shrubby, fleshy, upright, much branched, roundish, smooth, covered, as well as the leaves and calyx, with depressed dots. Branches opposite or alternate, axillary, spreading, round, often very slender at their base, leafy. Leaves spreading, ovate-cordate, acute, entire, bright green on both sides, and marked with a central nerve. Footstalks half the length of the leaves, channelled, fleshy. Stipules none. Flowers solitary, peduncled, erect, at first terminating, but afterwards becoming axillary from the protrusion of new branches. Calyx turbinate, fleshy, four-cleft; segments acute, two opposite larger and broader. Petals scarcely so long as the calyx, very numerous, reddish purple, white at the base, and united; placed in three or four ranks, the inner ones gradually smaller. Stamens very numerous, short, attached to the corolla. Germ half-inferior, ovate, marked with four or five furrows. Styles four or five, short, recurved. Stigmas acute. Cells and valves of the fruit agree in number with the styles^k.

Native of the Cape, where it was found by Masson, and others. Introduced in 1774. It flowers from may to september^l.

21. Root annual. Stems round, branching, purple, half a foot long or more, procumbent, the whole covered with icy blebs like *M. crystallinum*. Leaves lanceolate-wedge-form, bluntish, quite entire, flat, sessile but drawn out into a long narrow tail at the base, the longest four inches in length. Peduncles axillary, solitary, round, one-flowered, three or four inches long. Flowers elegant, an inch and half in diameter, void of scent. Calyx five-cleft, with very unequal, fleshy, spreading segments; two of them, almost opposite, inclose the corolla before it expands, when expanded they are only half its length, and end in a cowed sharp tip: the three others are bluntish, somewhat spatulate, and about the same length with the corolla. Petals about forty, linear, sharpish, flat, pale purple on both sides with a deep red line along the middle. Filaments very deep red, short, converging into a cone. Capsule depressed, five-celled^m.

Native of the Cape, where it was found by Masson. Introduced 1774. It flowers in julyⁿ. Jacquin says in may.

22. Leaves clustered, decussated, from an inch to two inches in length, deeply glaucous, flat above, but below produced into a sharpish back, towards the end, both above and below, or on all the sides armed with stiffish sharp toothlets; they are smooth, and do not appear to be dotted unless they are held up to the light, but they have a few transverse wrinkles. Peduncles from an inch to an inch and half and two inches in height, tender, round, usually leafless, but sometimes

^a Dillenius. ^b Hort. kew. ^c Dillenius. ^d Hort. kew. ^e Haworth. ^f Hort. kew. ^g Linn. suppl. ^h Dillenius, Haworth. ⁱ Hort. kew. ^j Dillenius.

^k Hort. kew. ^l Idem. ^m Jacquin. ⁿ Hort. kew. ^o Smith. ^p Hort. kew. ^q Jacquin. ^r Hort. kew.

having a pair of leaves. Flowers solitary, terminating, the form and size of a Daisy, whitish with a tinge of purple, and streaked with a purple line along the middle of each petal both within and without; they spread out regularly in two or three rows, and are sometimes entire, sometimes cut a little at the end. They open about noon. Calyx divided into five equal glaucous segments. Capsule depressed, five-celled, terminated by five prominent starry points^o.

Native of the Cape. Cultivated in 1717, as appears from Bradley. It flowers from June to August^p.

23. Peduncles one-flowered, two-leaved. Corollas pale purple, sweet-smelling, not longer than the calyx. Stamens white, upright and forming a cone. Anthers yellow^q.

α . This grows to two feet and more in length, with a round stem, the thickness of a finger, twisted at bottom: from this at about two inches distance arise opposite branches, the bark of which on the lower part is brownish, on the upper yellowish, on younger plants and branchlets purple. They are almost covered with short thick leaves, the angles of which are almost equal; they have usually three, but sometimes only two tubercled teeth at the edge, ending in a purplish spinule; they are green with a glaucous bloom on them. From each pair of leaves bundles of three or four pairs spring out, which gradually become new branches. Flowers in a sort of umbel at the ends of the branches, smelling like May or White-thorn, pale purple, with only one row of petals, which are commonly entire and blunt, but sometimes slightly cut at the end. In warm weather the flowers continue open day and night.

β . This has larger and paler leaves, with toothlets of the same colour with the leaves themselves. Flowers somewhat larger and paler, rather more inclining to violet, and appearing three or four weeks later.

γ . Leaves somewhat longer, with an even or untoothed back, and the sides not so flat, but the inner part more bent in and somewhat more hollowed: the toothlets also, two of which there are on each side, stand out less, and are less spiny; they generally terminate in a purplish spinule. Flowers of a deeper colour more inclining to violet, more scattered: some of the petals more slender like threads. The stamens, when they have shed their pollen, diverge. The bark on the stem is more rough and fuller of chinks. It has the same smell with the others, like the flowers of Hawthorn: and it flowers in May and June^r.

Mr. Haworth remarks, that the plant is taller, more upright, more spreading, and every way larger than the other varieties. The leaves larger, whiter, longer in proportion, perfectly entire on the back or keel-angle, and scarcely to be called even slightly denticulate on the edges. Flowers larger, of a pale rosy-purple colour, numerous, open in a morning as soon as the sun shines strongly upon them.

These varieties all agree in having triquetrous leaves, shaped like the Greek *delta*, of a smooth and even surface, appearing porous when held up to the light. The capsules are turbinate and five-celled^s.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort^t.

24. The leaflets of the calyx being bearded at the tip, as well as the leaves of the plant, shows the origin of the perianth. The least interior petals, which surround the stamens, are white^u.

α . Stems somewhat woody, slender. Branches procumbent, frequent, soft and brittle when green, but becoming tough and flexible when dry, round, somewhat cinereous, having a pair of leaves at short intervals at each joint, ending bluntly, tubercled, netted like a serpent's skin, appearing dotted when held to the light, having five, six, or seven radiating spinules at the end, at first greenish, then brownish, and at length black, with a black dot in the middle of them: the leaves are not properly round or cylindric, but have the upper part somewhat flat, and the lower convex: their colour is deep green and glaucous. Flowers

few, commonly solitary, middle-sized: petals in a single row, commonly entire, but sometimes slightly cut at the end, of a fine purple inclining to a vivid violet and shining: they are nearly of the same size, except a few in the middle, which are much narrower and paler. The flowers open, when the sun shines from seven or eight in the morning till noon, but shut soon after noon although the sun shine. They open several days successively, and have a scarcely perceptible Hawthorn smell^x.

Mr. Haworth remarks, that the leaves are very remote, in comparison with the other varieties, nearly cylindrical, with a just perceptible attenuation towards the points, and very slightly plane above near the base; they are also smaller than the next variety, and beautifully studded with largish regular tubercles or polished papulæ, which are roundish-ovate, smooth, and when closely examined, bear no small resemblance to fine shagreen. Peduncles an inch or more in length, entirely destitute of hairs, thickening near the calyx, covered with minute shining papulæ. Calyx smooth and papulose; two of the segments much longer and stouter than the rest, leafy; the third segment larger than the remaining two, but much less than the former; the two remaining segments are much shorter and less, with membranaceous edges, but rarely any radiating hairs or spinules. Petals fine bright purple within, paler without, not very numerous; inner ones paler and extremely narrow. Filaments white, stout, shortish; some, though rarely, with white papulose ascending hairs at the base. Anthers largish, yellow, oblong, furrowed. Styles five, greenish, broad at the base, but sharply awl-shaped and short. Capsule five-angled, small, five-celled, not fleshy.

β . The plant is sessile or stemless the first and second year, but afterwards acquires a low stem and resupine branches, dividing into many short branchlets, on which the leaves grow very close: these are swelling, on the inner or upper part rising a little, on the lower or outer rounded; they are subhirsute, being very closely set with short hairs disposed in form of a lengthened net, and have whitish spinules at the top radiating from a yellowish centre; their colour is cinereous glaucous. The flowers come out later, namely in September and October; they are somewhat smaller and pale, purple tending to pale violet and shining; petals narrow, entire, almost all of the same size. Styles eight, very short, greenish yellow. Capsules eight-celled. Calyxes five-cleft; three segments longer, thicker, round, resembling the leaves, two shorter, more slender, concave; the former hairy at the tip, the latter below. Sometimes the calyx is six-cleft. Peduncles an inch long, yellowish green, hairy especially towards the capsules, which abound so in longer hairs as to be lanuginose^y.

Linneus suspects it to be a mule, and says that it differs in having the calyx six-leaved, with six styles and cells; the peduncles hispid; and the leaves imbricate.

Mr. Haworth is at a loss to conceive how Linneus could unite this plant with his *barbatum*; since they agree in nothing but their radiating points and purple flowers; and even in the first circumstance they differ as to number, α having three or five radiating hairs, and β often above a score, at the end of the leaves: α has also cylindric leaves, smooth papulæ, short hirsute branches, smooth peduncles, a five-leaved smooth calyx, five styles, and a five-celled capsule; β has semicylindric leaves, rough bristle-pointed papulæ, trailing elongated smooth branches, hairy peduncles, calyx six or seven-leaved, hirsute, six styles, and a six-celled capsule^z. There must be a mistake in one circumstance, for β has short hirsute branches, and α smooth elongated ones.

γ . This resembles the preceding so much, that the difference is scarcely apparent, unless they are observed very carefully. It might be taken for a younger plant of the other; however the cuttings never protrude such thick and long leaves: the spinules of this are longer, thicker, more rigid, and more hoary, and old

^o Dillenius. ^p Hort. kew. ^q Linn. ^r Dillenius.
^s Idem. ^t Hort. kew. ^u Linn.

^x Dillenius. ^y Idem. ^z Haworth.

plants grow less to stalk, and throw out fewer and shorter branches. The colour of the leaves is the same, unless perhaps they may be in this somewhat more intensely glaucous^a.

Mr. Haworth, who erects these and other varieties into species, conceives this to differ from α , in having semicylindrical, densely imbricated, larger leaves, with hispid peduncles and calyxes; and from β , in being nearly stemless, having larger leaves, densely imbricated, and almost smoothly papulose, covering every part of the stem, and six-leaved calyxes nearly equal.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort. It flowers from June to August^b.

25. Peduncle very rugged downwards rather to the sight than the touch. Calyx awnless. Flower sweet-smelling, very like that of the preceding, from which perhaps it originally sprung, losing the beard of the leaves, and having it scattered over the stem.

α . Stems and branches from a foot to a foot and half and two feet in length, numerous, spreading every way, slender, the lower joints swelling out into knots, an inch or somewhat more distant. Leaves dark green and generally glaucous, but shining with innumerable icy globules closely heaped together, and putting out from the axils, one, two, or three smaller pairs; they are straight, thickish, and being very blunt at the end they frequently hang down by their weight. Stem and branches smooth at bottom, but towards the middle and on the upper branches very hairy. Flowers terminating and axillary on longish peduncles, rather large, composed of loose entire petals in a single row, of a deep bright purple colour. Capsules small, five-cornered, exhibiting when ripe a pentagon star. Older plants have shorter leaves and peduncles. The icy globules are less protuberant in this than in γ , and more confluent, so that the leaves appear wrinkled with them^c.

It is a low divaricating shrub, covered with white scattered short hairs, pointing different ways. Confined in a pot, it never takes root at the joints; but in the full ground the branches trail and sometimes strike root. Leaves of equal thickness to the very points, and sometimes flattish above, covered with roughish crystalline papulæ, and looking like shagreen. Flowers opening in a morning, pretty numerous, making a fine appearance. Peduncles slender, thickened above, covered with divaricating white hairs, which gradually disappear near the calyx, by becoming extremely short pilefcent papulæ. Calyx smooth, covered with spangling papulæ; segments nearly equal, blunt, concavo-convex. Petals fewer than in some species, linear-lanceolate, entire or with one or two indentures at the points. Filaments purple, of different lengths. Anthers and pollen buff-coloured. Styles small, greenish. Capsule deeply five-angled, five-celled^d.

β . This is lower, more branched and less upright than the preceding. Leaves paler, with smaller icy globules, somewhat longer and narrower, not straight but curved inwards, less thick at the ends. Stems and peduncles less hispid. Flowers pale purple, somewhat smaller, with the petals nearer together; stamens shorter, not all incumbent on the petals, but many collected into the form of a bottle in the centre. The flowers are numerous, axillary, on one side only, or on both sides, on shorter and less leafy peduncles. By age this plant becomes much branched and twisted, not exceeding a foot in height.

γ . Flower the same size as in α , but of a paler colour. Leaves shorter and narrower. Stems with shorter hairs on them, like β , which it resembles in the narrowness of the leaves, but they are shorter and have larger icy globules; the flowers also are larger and of a deeper purple. It differs from both in having the calyx and base of the fruit very hairy, in having the petals marked along the middle with a streak of a deeper purple, and the stamens collected into a ball, and never scattered; they are of a pale green with a red circle in the umbilicus^e.

Mr. Haworth regards this as specifically distinct from Linneus's hispidum, from which, he says, it is very readily to be distinguished by the peduncles and calyxes being very densely covered with woolly hairs, and by the face of the plant itself. The uppermost parts of the peduncles of α , and every part of the calyx are not only destitute of hairs, but adorned with large spangling crystalline papulæ. The leaves are covered with much rougher papulæ. The stems and branches are usually covered with much longer and much thicker set hairs. This is a more robust plant, with stouter branches, and bolder flowers, with broader denser petals.

M. striatum opens its gay striated flowers in the forenoon, is very often in bloom, and the flowers being numerous, they make a fine appearance when expanded, but are handsomest the first time of opening, for they lose their gayest colours long before they fade quite away^f.

Native of the Cape. Cultivated in 1705, by Charles Du Bois, Esq. It flowers the greater part of the year^g.

26. Leaves linear, semicylindric, channelled-flat, opaque, with villose hairs scattered over them, especially at the base. Stem pubescent, with villose hairs scarcely standing out^h.

Plant hairy, prostrate, finally shrubby. Branches in distant pairs, crossing each other, axillary, cylindrical, covered with the permanent, cylindrical, hairy sheaths of the connate leaves; whose hairs are not very thick set, but short, white, and rather pressed to the stem; some of them expanding, but pointed upwards. Leaves less succulent than those of any other species, connate but appearing distinct, unless attentively examined; they are linear, scarcely pimpled, or if so, the pimples are extremely minute, shining in the sun, and of a dark green colour; they are channelled above, with a convex or rounded keel, slightly attenuated both ways, rather dilating again at the very base, and embracing the stem, where they are quite destitute of succulency, and slightly membranaceous at the edges, with a white midrib: the membrane at the base is ciliate; the rest of the leaf nearly smooth, or having distant small white hairs scattered over both sides. Flowers solitary, terminating, rarely seen, opening to a very warm sun only, in the forenoonⁱ.

Native of the Cape. Cultivated in 1759, by Mr. Miller^k.

27. Height from a foot and half to two feet. Stem not very shrubby, nor very thick. Branches woody, the thickness of a straw, procumbent, round, covered with an ash-coloured bark; the upper shoots of a yellowish bay colour, becoming pale herbaceous; they are broadish immediately under the flowers, thence gradually more slender, slightly compressed, and winged on each side with a process from the back of the leaves. Leaves difform; those which are fastened to the peduncles (bractes) short and thick, the others longer and not so thick, with other smaller leaves from the axils; all uncinat, subglaucous, rugged with frequent tubercles of the same colour, which held up to the light appear to be so many porous dots. Flowers on peduncles from an inch to two inches in length, alternately axillary, small, pale purple, petals twisted about, narrower towards the base, broader towards the end, entire, in a single row, smelling like those of Hawthorn, open both day and night, for a long time and in great abundance, there being a succession of them from July to October^l.

Mr. Haworth thus describes the two bractes. They invest the peduncles just beneath the calyx, which they partly embrace; they are broad, ovate, sharply keeled, dotted, membranaceous towards the edges, and terminating in a small recurved point, similar to the little cartilaginous hooks which terminate the leaves on the branches. Calyx five-cornered upwards, taking its angles from the keels of the segments, which are dotted, nearly equal, or two plane and somewhat less than the other three, which are rather longer and membranaceous

^a Dillenius. ^b Hort. kew. ^c Dillenius. ^d Haworth.
^e Dillenius.

^f Haworth. ^g Hort. kew. ^h Linn. ⁱ Haworth.
^k Hort. kew. ^l Dillenius.

towards the edges; all the segments are much broader at the base, or subulate keeled, or triquetrous, resembling the leaves, and ending in similar recurved cartilaginous points. Petals numerous, the outer ones very long and narrow, unequal, bright purple; the next row much shorter and narrower, unequal, purple above, whitish-yellow at the base; the third or innermost very short, unequal, still narrower, converging, all yellow, resembling filaments in structure, shining in the microscope with beautiful spangling crystalline minute papillæ, tapering to a very slender hair-like point, and quite covering the real filaments from the sight. These are very few, short, and slender or almost capillary; with very small, whitish buff anthers. Germ small, smooth. Styles very short, green. Capsule five-angled^m.

Native of the Cape. Cultivated in 1732, at Eltham, by James Sherard, M. D.ⁿ

28. Stems woody, at bottom bay, the branches yellowish brown, procumbent, round at bottom, but somewhat angular above, the peduncles however are round. Leaves acutely triquetrous, glaucous, somewhat shorter and thicker, rougher and more rigid, with frequent tubercles larger and whiter, especially on the back, than in emarginatum. Flowers solitary, few (two or three), violet purple and shining, but becoming paler, opening two or three times, before and after noon. Petals mostly of the same size, entire or slightly cloven at the end, firmly connected at the base; they end suddenly in filaments, which are not scattered, but collected into a head about the stamens, like a crown. Capsules thicker, rounder, and less angular than in emarginatum^o.

Mr. Haworth describes it as a shrubby upright plant, with the branches crowded, opposite and alternate, covered with a dark-coloured bark. Leaves more crowded, much greener, and covered, especially on the keel-angles, with rougher, more projecting and more crystalline papulæ than those of emarginatum. Peduncles smooth below, roughening upwards towards the calyx, with two leafy bractes about the middle. Calycine segments equal, three of them edged with dark-coloured membranes. Petals palish purple, numerous, linear, with from one to five irregular minute teeth. Filaments buff-coloured and short, with large buff-coloured anthers, and pale pollen. Germ six or seven-angled, smooth. Styles six or seven. Capsule six or seven-celled.

Native of the Cape. Cultivated in the Eltham garden in 1732^p.

29. Leaves between papulose and tubercled; much rougher, more glaucous, and more acutely pointed, than in any other reptant species. The branches are angular, and finally somewhat woody. In its triquetrous leaves and reptant stems it is allied to australe and crassifolium. In the open air, it will extend the branches above a foot and half every way, and they will be fixed firmly to the ground at every joint by strong fibres^q.

Native of the Cape, where it was found by Masson. Introduced in 1774. It flowers in July and August^r.

30. Shrubby but procumbent; even when tied up, its irregular twisted branches will hang down; they are round towards the top and of a yellowish bay colour, but quadrangular at bottom. Leaves tender, mucronate, curved inwards, in bundles, acutely triangular, deep green and glaucous, having small dots and tubercles. Flowers several, terminating, middle-sized, with scarcely any odour, on slender oblong peduncles. Calycine segments sometimes hooked, sometimes not. Petals very many, lying one over the other; the outer larger, bifid or trifid at the end; the inner ones gradually smaller, entire, but not filamentose: they are of a most vivid violet purple colour, but the flowers expand only about noon, when the sun is very hot. Stamens not numerous, short, neither very much scattered, nor collected, but spreading. The flowers continue long, and open several times if the sun shines hot^s.

^m Haworth. ⁿ Hort. kew. ^o Dillenius. ^p Hort. kew.
^q Haworth. ^r Hort. kew. ^s Dillenius.

It differs from scabrum, which it otherwise resembles, in the frequency and twisting of the branches, in having narrower leaves, less rough, of a deeper green, the flowers smaller, composed of more numerous petals of a deeper shining colour; but the chief difference is in the stamens, which in that are collected in a head, which is not the case in this^t.

Native of the Cape. Cultivated in the Eltham garden in 1732. It flowers from June to August^u.

31. α . Stems slender, round; branches more frequent than in variety β , more reclining, with much smaller and more recurved leaves, having only one short spinule at the back; they end in a spinule as that does, but it is shorter and whitish, whereas in β it is purplish. Stems and branches, though rigid, yet are procumbent. The leaves, and internodes, which are elongations of the leaves investing the stems, are dotted with smaller dots than in β ; they are both of a fuller glaucous green colour, and not so white; the bark also of the stem is not so white, but rather of a yellow and brown dusky whitish colour. The internodes are thickened above, and narrower beneath. Flowers axillary on leafy peduncles, smaller than those of β . Calycine segments equal, glaucous.

β . Stems slender, not much bigger than a straw, somewhat woody, rigid, round at bottom, covered with a thin white cuticle, higher up compressed, below upright and not much branched, but where there are more branches and leaves, they hang down. A palm or a foot from the bottom the stem and branches become glaucous and have herbaceous internodes, compressed and thicker above, covered with a thick fleshy bark. Leaves perforated, three-sided, with unequal angles, the back being more produced and sharp, the upper part narrower and slightly elevated, the lateral angles blunter than the lower. There are prickles at the end and on the back of the leaf: in young plants only one on the back, in older ones two or three, of a dusky purple colour. Leaves and internodes permanently glaucous, and dotted with green dots. Calycine segments two larger, spiny; three smaller, not so. Petals pale purple, narrow, the inner ones gradually smaller and filamentose. Capsules terminated by five sharp purple tubercles. The flowers expand only in hot seasons^v.

Mr. Haworth is convinced that this is distinct from α ; the leaves and branches being not only larger and almost white, but the former having usually three sometimes four teeth or spines under their points, when full grown: whereas the leaves and branches of α are not much above half the size, nearly of a green colour, with never more than two teeth or spines below the points. Flowers purple, of a good size, but not showy, axillary and sessile from the uppermost leaves, and opening in a morning.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort. It flowers from June to August^w.

32. This is an upright thorny shrub, from two to three feet high, much branched. Branches opposite, axillary, ascending, roundish-compressed, with a smooth cinereous bark, throwing out in various places branching spines. Leaves in pairs, at an interval of an inch or an inch and half, glaucous, with frequent green dots, pellucid when held up to the light; all the angles blunt, slightly swelled at the inner bases, very firm to the touch, terminating in a very small white cartilaginous point or harmless bristle. The upper leaves are much shorter. Spines appear as if terminating, but soon cease to be so, from the protrusion of young shoots; they are branched, nearly horizontal, divaricating and trichotomous, each from half an inch to an inch in length, awl-shaped, very sharp, resembling those of our common Hawthorn, but not so strong or pungent, covered with a grayish bark, and beset with a pair of distinct, opposite, chiefly barren leaves, like those of the branches, but only a third of the size. Flowers small, pale violet purple, on slender, leafless, green peduncles: petals blunt, equal in size. Calycine segments equal^x.

^t Haworth. ^u Hort. kew. ^v Dillenius.
^w Hort. kew. ^x Haworth, Dillenius.

Native of the Cape. Cultivated in 1714 by the Dutchess of Beaufort^a. The long winter of 1729 destroyed it in the Eltham garden. It flowers late, at the end of august and in september^b: or, according to the Kew catalogue, from june to august.

33. This forms a low, much branched, spreading shrub; and when old, has a very large tuberous root, sometimes as big as a man's head, partly protruded above the surface^c. Stem woody, very thick at bottom, covered with a bay-coloured bark. Branches bending entwined. Leaves short, bluntly triquetrous, with the back convex, the inner or upper surface somewhat swelling, subglaucous, with silver dots, so small as not to be visible except when the sun shines. Flowers at the ends of the branches, on slender, cinereous or reddish peduncles; they are small, of a pale red or vinous colour; petals not numerous, broadish, blunt, equal in size. Stamens collected into a bottle in the middle. Calycine segments short, equal. Capsules roundish, remarkably small when ripe. It flowers about noon^d.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort. It flowers from june to september^e.

In old plants the extreme branches sometimes become thorny; these thorns are the peduncles of the preceding year. Thorns also come out from the forkings of the branches sometimes instead of flowers^f.

34. Stems woody, procumbent, slender, round, with a yellowish bark. Branches from each of the upper axils. Leaves on the inner surface flat, on the outer convex, bright green inclining to gray, from their slenderness often hanging down, appearing dotted when held up to the light. Flowers at the ends of the branches, solitary, on long slender peduncles; they are large, especially on young plants, pale scarlet, shining and appearing powdered with gold dust in full sunshine: petals very numerous, the inner ones gradually smaller, entire or cuspidate at the end, sometimes slightly bifid, cohering at bottom. Flowers abundant, and opening several days successively about noon, especially in june. Stamens very numerous, lanuginose at the base. Style villose. Capsule large, fleshy, from round bluntly five-angled^g.

Mr. Haworth remarks, that in many stages of its growth this is very liable to be taken for bicolorum and his spiniforme: and that this frequently emits roots from the joints of its stems, and thereby becomes creeping.

Native of the Cape. Cultivated in the botanic garden at Chelsea in 1700. It flowers from june to september^h.

35. Plant upright, woody, firm, growing to a larger size than most of the species. The flowering stem is rigid and somewhat gray. Branches axillary, opposite, from erect spreading, crossing each other in pairs, and beset thickly with young leaves on their first outset, whitish or glaucous but finally brownish, gradually shorter upwards, forming a beautiful pyramidal glaucous plant, well covered with fine leaves. These, when full grown, are from two to three inches long, slightly curved upwards or falcate, very glaucous, crossing each other in pairs; very much compressed at the sides, having pellucid dots scattered over them, flattish above, mucronate. Flowers terminating in a sort of corymb, large, showy, purpleⁱ.

Native of the Cape. Cultivated in the Eltham garden in 1723.

36. Native of the Cape, where it was found by Masson. Introduced in 1774. It flowers from july to september^k.

37. This is a small very low spreading or trailing shrub. Branches crowded, opposite or alternate, axillary, at first ascending, but finally deflected. Leaves opposite, distinct, awl-shaped, of different lengths, dotted, scarcely to be called smooth, but not so rough as those of emarginatum. Flowers paler, on long, compressed, smooth peduncles. Calycine segments nearly equal, three with membranaceous edges. Pe-

tals numerous, pale purple, very narrow. Germ smooth, green, shining, truncate at top with a hollow or navel. Filaments numerous, converging into a conical or cylindrical figure in the centre, buff-coloured and slender. Styles stout, awl-shaped, long, spreading, rough above. Capsule five-angled, five-celled. Flowers from july to october^l.

Native of the Cape, where it was found by Masson. Introduced in 1774^m.

38. Native of New Zealand, where it was found by Sir Joseph Banks. Introduced in 1773. It flowers in july and augustⁿ.

39. Stems a palm or long span in length, creeping, when young herbaceous and soft, three-sided, green, frequently purple next the sun; when old, more round, still not woody but soft; tough and fungose, covered with a cinereous bark. Leaves usually in the same plane, or not decussated, divaricating, or not approximating like many of the other species, thick, succulent, bluntly three-sided, smooth and somewhat shining, green. Flowers on short peduncles, sometimes naked, but more frequently with a pair of leaves on them; they are solitary, small, violet purple; petals not very numerous. Stamens many short, not very much scattered, but not collected into a head or upright. Anthers pale yellow. Calycine segments two longer. Capsules small, terminated by blunt angles at top. This plant creeps so much that it seldom flowers, and when it does the flowers do not continue long^o.

Mr. Haworth remarks, that the leaves, which are far from succulent or thick, when compared with many others, are generally more triquetrous than semicylindrical; that it is a handsome plant, thickly furnished with leaves; and that the branches, which sometimes hang full a yard from the pot, are naturally prostrate and reptant, angular and slender.

Native of the Cape. Cultivated in 1727, by Richard Bradley, the first professor of Botany at Cambridge^p.

40. This is a very low, bushy, divaricating almost decumbent shrub, rarely more than six or eight inches high. Branches opposite, slightly angular, axillary, divaricating and densely crowded. Leaves very minute and much crowded, glaucous, having smooth pellucid dots, attenuated at the base, very gibbous on the keel, sharply incurved or falcate, near a quarter of an inch long, and ending in an acute white just perceptible bristly point, in the direction of the leaves. Flowers purple, large, solitary, opening in the morning, on short terminating peduncles. Calycine segments nearly equal, two leafy and three membranaceous at the edge, all acute. Petals linear, numerous, emarginate. Filaments numerous, slender, pale purple, converging. Styles yellowish-green, awl-shaped, long. The leaves sometimes are so much incurved as to form half a circle, and they are remarkably small^q.

Dillenius compares this with the next species, and remarks that it is much smaller in all its parts, with short woody stems, which produce many short bending branches, much interwoven in old plants. Leaves very short, narrow, smooth, glaucous with a purple tip, appearing dotted when held up to the light: in young plants they are longer and not so much crowded. It flowers abundantly during great part of the summer, and the same flowers open several times. They are smaller than those of the next species, of a deeper purple colour, and smell like bruised Peach kernels. Capsule much smaller, brown purple.

Native of the Cape. Cultivated in 1727, as appears from Bradley.

This species is omitted in Systema Vegetabilium, and the trivial name of *falcatum* is put to the specific difference of *M. acinaciforme*^r.

41. This is a small, very bushy, rather glaucous shrub, from six inches to a foot or more in height. Branches almost upright or often diffuse and panicled, round whilst young, slightly angular when old, covered with a brown bark, for the most part opposite and crowded. Leaves also opposite and crowded, rather glaucous, having pellucid spots, usually distinct but

^a Hort. kew. ^b Dillenius. ^c Haworth. ^d Dillenius.
^e Hort. kew. ^f Dillenius. ^g Idem. ^h Hort. kew.
ⁱ Linn. Haworth. ^k Hort. kew.

^l Haworth. ^m Hort. kew. ⁿ Idem. ^o Dillenius.
^p Hort. kew. ^q Haworth. ^r Hort. kew.

sometimes confluent; they are subtrigonal with blunt angles, awl-shaped, attenuated at the base, slightly incurved, sometimes almost sabre-shaped, from three quarters of an inch to an inch and half in length. Flowers very numerous, reddish purple, like those of *M. deltoides*, but more handsome, expanding in the fore part of the day in such profusion as often to cover the surface of the plant. Peduncles solitary, longish, thickening upwards, forming a kind of divaricating panicle. Calycine segments nearly equal; sometimes two less, and membranaceous all round, with sharp leafy points beneath the membranes. Petals linear, numerous.

It is a very variable little plant, but not in the least liable to be taken for any other species; it assumes different appearances, according to its treatment, and the different stages of growth. The very numerous beautiful purple flowers, covering the whole plant, and produced every season, make this a valuable species^a.

Native of the Cape. Cultivated in 1732 by James Sherard, M. D. It flowers from June to August^b.

42. This is a slender branched woody shrub, two feet high or more. Branches divaricating, cylindric, when young greenish and covered with crystalline papulæ; when old smooth, wiry and slender, covered with a brownish bark. Leaves in old plants very short and numerous, distinct; whilst young slightly incurved, when old spreading and pointing four ways; in all states shining with very minute papulæ. Flowers solitary, bright reddish purple, resembling those of the preceding, terminating the little short lateral branches, and opening in the forenoon. Peduncles short, cylindric, covered with small spangling papulæ. Filaments very numerous, purple, spreading and of different lengths. Anthers and pollen buff-coloured. Styles large, sulphur-coloured. Capsule swelling above the entire part of the calyx, where it is deeply five-angled, each angle with a grooved line down the back, marking the points in which it is to open when ripe.

This species puts on very different appearances, according to its age and the treatment it receives. In the full ground, under a south wall, in a poor soil, the leaves will be above an inch in length and nearly semicylindric, and the young shoots will be covered with pilefcent papulæ, pointing downwards, and appearing in a microscope like minute hooks of glass or ice. Whereas the leaves in the stove, when not luxuriant, are seldom a quarter of an inch in length, and the papulæ are not pilefcent^c.

Native of the Cape, where it was found by Masson. Introduced in 1774. It flowers in July and August^d.

43. The texture and form of the leaves is almost the same as in *M. corniculatum*, and they come out in bundles at intervals in the same manner; they are not however so bluntly triquetrous, that they have not the two very long leaves, and that they are rounder, smoother, more frequent, longer and more slender, tougher and more pliant.

It had not produced flowers in the Eltham garden, although it had been cultivated there many years before 1732^e. They come out from the lower axils of the leaves on the branches, on short peduncles; the calyx is equal and middle-sized; the corolla purple with lanceolate-linear petals; the stamens are whitish^f.

44. Plant trailing on the ground, diffuse, and extending from half a yard to a yard in length, the lower part ash-coloured and round, the upper purple, slightly compressed, and having, as it were, two angles, whence the leaves spring. Branches scarcely to be called six-angled, being chiefly semicylindric or triangular, often purplish and crowded. Leaves an inch and half long, appearing dotted when held up to the light, scarcely connate; the angles edged with a just perceptible cartilaginous margin, which is rough to the touch, and finely ferrulate when nearly viewed, and on the keel-angle largest and coarsest; the lower ones are longer and straighter, the upper ones and those that come out from the joints are shorter and incurved, the younger and middle leaves are sickled inwardly,

the outer and older ones are sickled outwardly. Flowers terminating the smaller branches, solitary, not small, purple, pretty but not showy, on peduncles two inches long, with a pair of leaves on each: the inner petals gradually smaller, and the innermost filamentose. Calycine segments unequal, two longer and three shorter, membranaceous^g.

45. Branches three quarters of a yard or a yard in length, at first ascending, but afterwards incapable of supporting themselves in an erect posture, they become deflexed or incumbent. Leaves shaped somewhat like a sabre or cimeter, slightly bent in, the inner part next the branch flat or slightly hollowed in the middle, the outer compressed and produced into a sharp back, the outer edge, especially in the upper part, slightly crenated; they are glaucous-green, except at the end, where they are usually purple, smooth but not shining, and not-porous. Flowers large, three inches in diameter, handsome, of a very vivid shining purple colour, paler towards the middle, composed of numerous petals, almost equal, in three or four rows. Anthers oblong, whitish. Style multifid, dividing into twelve short, thickish, cirrhose, greenish parts. Calycine leaflets thick, three-sided, of which three are membranaceous. Capsule twelve-celled, large, fleshy, turbinate, cornered and as it were winged with two lines on each side that stand out a little.

This species very seldom produces flowers, it flowered however in the Eltham garden in the year 1732, at the end of April^h. It had been cultivated earlier, named in 1714, by the Dutchess of Beaufortⁱ; but whether it flowered in the garden at Badminton we are not told. According to the Kew catalogue it flowers in August and September.

46. This is a decumbent plant, whilst young almost herbaceous, becoming shrubby by age. Branches weak, procumbent, short, often pendulous, ancipital, mostly in pairs from the axils of the leaves; which have short harmless spines at the point, like herbaceous serratures; sometimes a few very short harmless spinules appear towards the points both on the lateral and keel angles, those on the keel slightly recurved and weaker than the others. Flowers as large as those of *bellidiflorum*, and much like them, but of a somewhat deeper ground colour, with a higher-coloured line of purple up the middle of the petals, and not so pale on the outsides, opening in the forenoon. Peduncles angular, terminating, long, one to three from the same origin; when only one, invested with a pair of bracteal leaves just below the middle, like the leaves of the branches: lateral peduncles much less and shorter than the central one, each supporting one flower, and often furnished with a pair of bractes. Calycine segments equal, three with slight membranaceous edges. Petals numerous, in one row, equal, broad-linear, with from one to three notches at the point. Filaments numerous, converging or arched over the styles and germ, purple. Anthers small, paler. Styles very short, spreading, or rather five stigmas with roughened feathery purplish points. Capsule hemispheric, five-angled, five-celled; cells small and dry. Seeds few in the green capsule, white, oval-kidney-shaped.

Native of the Cape. Flowering in September and October, but rarely producing flowers^j.—Cultivated in 1758, by Mr. Miller^k.

47. This is a shrubby plant, not erect. Branches opposite and alternate, axillary, rather crowded, generally ascending, but sometimes almost decumbent; whilst young, stout, greenish or purplish green and angular; when old, long, brown, woody, strong and cylindrical. Leaves of different lengths, according to their own ages and that of the plant, from two to five inches long, and not a quarter of an inch broad. The young leaves usually ascending, incurved, very glaucous, with pellucid, very numerous, well-defined punctures: the old ones expanding or recurved, glaucous and dotted; all opposite, connate, and swelled just below the base where they unite, and awl-shaped above, slightly compressed, with the angles very entire;

^a Haworth.^b Hort. kew.^c Haworth.^d Hort. kew.^e Dillen. elth.^f Linn.^g Dillenius, Haworth.^h Dillenius.ⁱ Hort. kew.^j Haworth.^k Hort. kew.

the keel-angle sometimes slightly cartilaginous in the young leaves. Flowers solitary, very large and specious, bright purple, making a fine contrast with the very glaucous leaves and deep brown branches^f.

Mr. Curtis remarks, that the leaves sometimes throw out internally a tooth near their extremities, and that it has been introduced within these few years, most probably from the Cape, by Mr. Masson.

48. Leaves the thickness of a finger, shining, long, with a cartilaginous rugged keel^g. They are curved in or sickled, but so as the curvature verges to the inner flat side, not the outer acute one; they are sometimes of a darker, sometimes of a paler green, frequently purple at the end. Flowers three inches in diameter, yellow, shining in the sun. Calycine segments four, two longer, two shorter, sometimes membranaceous at the edge, and hooked at the back, with frequently a fifth leaf, thicker and longer than the others, and more like the stem leaves. Petals very many, the inner ones smaller, entire, more or less cuspated. Stamens very numerous, saffron-coloured, with yellow anthers. The style divides into eight, ten or eleven curled parts. Capsule eight-celled, or sometimes ten or eleven-celled. It is called *Hottentot's Figs*, being eaten by the Hottentots, and also by Dutch inhabitants of the Cape.

It rarely produces flowers, except from old plants. They appear in July^h.

Native of the Cape. Introduced in 1690, by Mr. Bentickⁱ.

49. This grows up into a long slender and not much branched shrub, from a foot to two feet high and more. Leaves slender, oblong, bluntly three-sided, green not glaucous, rugged to the sight, not the touch, with frequent green tubercles, which when held to the light appear whitish and pellucid. Similar tubercles are observed in the lower part of the fruit. Flowers terminating, middle-sized, golden within, red on the outside. Petals very many, narrow, entire, cuspated, nearly of the same size, the ends being tinged with a slight redness appear saffron-coloured. Stamens very many, at first less scattered, but when the petals are fully expanded, they are spread out upon them: the anthers are tinged with the same colour as the petals. Style divided into five short villose segments^k.

Mr. Haworth makes two species of this, which he calls *bicolorum* and *coccineum*. He remarks that the first is at once known by its yellow flowers, and the second by its deep orange-coloured ones. When past bloom, the unfertile bracteal leaves investing the peduncles of *coccineum*, point it out from *bicolorum*, which has at that time considerable shoots in the axils of its uppermost leaves. *Bicolorum* has also a paler bark, longer and more rugged leaves, and the shoots are more robust. *Coccineum* has handsomer flowers, which in old plants are very numerous.

Native of the Cape. Cultivated in 1696, in the royal garden at Hampton Court. It flowers from May to September^l.

50. This is a shrubby plant, scarcely capable of supporting itself upright when tall. Branches woody, dark brown, slender, long, not crowded; the young ones somewhat compressed and greener. Leaves slightly glaucous, smooth, erect, between subtriquetrous and semicylindric, with acute points, which often assume a purplish tinge. Flowers large and specious, of a very deep orange colour, opening very early in the morning if the sun shines, remaining open only a short time: quickly folding if the sun disappears, or if the plant be removed into the open air. Peduncles terminating and axillary, round, thickening upwards, but sometimes not quite so thick close to the calyx as a little below it. Calyx large; segments acute, nearly equal, more or less membranaceous and dotted. Petals numerous, long, linear but broadish, sharpish, deep orange on the inside, paler without, making a fine appearance when expanded. Filaments deep yellow, just shorter than the calyx. Germ smooth. Styles five-angled, or rather one style deeply divided into five

segments or stigmas, which are black purple, spreading, fixed as it were to the style by an extremely short slender thread, swelling out in the middle, and tapering obliquely towards the points, or rather gibbous awl-shaped, with a roughened surface. Capsule urn-shaped, slightly hollowed at the top, five angled, five-celled. Seeds rather few. It varies with paler flowers^m.

This is one of the taller and more upright species, as well as the earliest in point of flowering, producing its blossoms from February to Mayⁿ: according to the Kew catalogue, from June to August. Mr. Miller cultivated it in 1750^o, but it does not appear in his Dictionary.

51. This is an elegant species, three quarters of a yard in height, with woody stems, not so thick as the little finger, and not much branched, procumbent, covered with an ash-coloured bark. Flowers on the upper branches, solitary, terminating, large, of an elegant yellow colour, composed of two or three rows of petals, which are blunt, entire or sometimes jagged, the outer longer and flat, the inner suddenly shorter, more erect, concave, and at their base a circle of saffron-coloured anthers on very short filaments; the bottom of the flower being void, smooth and even, hollowed out like a dish. They open several times from eight in the morning to three or four in the afternoon, if the sun shines; and have a little smell.

Calycine segments long, mucronate, with a few serratures on the back; three longer, two shorter, having a pellucid membrane towards the base spotted with red. The calyx, and leaves about the edges, when held up to the sun appear to have large white dots. The leaves, except those on the flowering branches, come out several together, are long and pointed, deeply serrate on the back only, seldom on the edges; they are of a green glaucous colour. The branches, especially the flowering ones are round only slightly compressed at the edges, ash-coloured at bottom, next the flowers pale green, or elegantly purple. Capsules large, flattened at top, purple, five-angled, with a five-cleft star, the residue of the style, in the centre, winged by five lines which descend along the peduncles to the very branches: cells five, large, with large roundish-flattened seeds in them^p.

Native of the Cape. Petiver received it in flower, in June 1706, from the Temple Garden. Dillenius received it from Holland before 1732, and gives a caution constantly to raise young plants, because the old ones are very apt to perish. It is probably for want of attending to this caution, that the species is now so rare in this country, if indeed it be in any of our collections.

52. Stems from a foot to two feet in height, procumbent, woody and much branched. Branches round, slender. Leaves in pairs, at an inch or an inch and half distance, an inch in length, thickish, on an old plant narrower and shorter, on a young one longer and thicker, not quite round, but obtusely triangular, with the angles however so blunt, that they are rather cylindric than three-sided: they are overspread with glittering spangles of a greenish yellow colour. The stems and lower branches are bay-coloured and smooth; the upper ones are reddish brown, rough to the touch, with many whitish dots, which were originally spangles: the peduncles and calyxes shine with spangles like those of the leaves, but thicker. Flowers terminating, on peduncles from an inch to an inch and half in length; they are large, concave, with the margin bent back, composed of numerous petals cohering at the base, gradually smaller, and filamentose in the middle, of a dirty red colour on the outside, but within very dark orange-coloured, deepest at the edge; the narrow middle petals next the white filaments being very dark, this flower is easily distinguished from the other sorts by this circumstance. Filaments short, neither spreading, nor collected into a bottle. Style villose. Calycine segments often reflex and hooked, and having a thin pellucid membrane about the edge. Capsule

^f Haworth. ^g Linn. ^h Dillenius. ⁱ Hort. kew.
^k Dillenius. ^l Hort. kew.

^m Haworth. ⁿ Curtis. ^o Hort. kew.
^p Dillenius.

small, depressed, with five prominent rays and as many cells^a.

It varies with paler, smaller flowers^r.

Native of the Cape. Cultivated in 1716, by Professor Richard Bradley. It flowers from may to august^t.

53. Native of the Cape, where it was found by Masson, and introduced in 1774. It flowers from august to october^t.

54. This is a branching divaricating shrub^u, found also by Masson at the Cape, and introduced at the same time with the preceding. It flowers in july and august^x.

55. This is a stemless plant, producing offsets, which when the old leaves that enveloped them decay, appear like distinct plants. Leaves connate for half an inch or an inch at the base, spreading, glaucous green, dotted, semicylindric, awl-shaped; or, convex on the outside, flat on the inside, usually but not always triquetrous at the points, generally about two inches and a half or three inches long, but sometimes longer^y.

Dillenius remarks, that this species is distinguished from all others by the central leaves being long and narrow, not ill representing a heron's bill.

Native of the Cape. Cultivated in 1732, by James Sherard, M. D.

56. Native of the Cape, where it was found by Mr. William Paterfon. Introduced in 1780 by the Countess of Strathmore. It flowers in november^z.

57. Stem woody, from a foot to two feet in height, covered with an ash-coloured bark, deformed by age with irregular wide fissures, knotted and jointed, divided and subdivided into several opposite branches. Leaves so bluntly triangular as to appear to be round, an inch and half or two inches in length, the size of a swan's quill, with dense bundles of other leaves coming out from the axils, glaucous, smooth, appearing pellucid when held up to the light, purple at the end as are also the branches. Branches and leaves at short intervals, and affecting an upright position this plant has the appearance of a shrub, though probably it would be weighed down by the number and size of the leaves and branches. Flowers in a sort of umbel at the ends of the branches from the axils of the leaves, small, pale yellow. Petals broadish, blunt, entire, equal, spreading out regularly. Capsule turbinate, commonly five-celled but sometimes divided into more parts. Seeds rather large, three-sided, rufous.

It varies with shorter and more manifestly three-sided leaves and fewer flowers^a.

Linneus remarks, that the flowers smell very sweet, that the corolla is scarcely longer than the calyx, with the petals having one or two teeth at the end, and the stamens small, with the filaments villose at the base.

Native of the Cape. Cultivated in 1732, by James Sherard, M. D. It flowers in may and june^b.

58. This is a shrub variously branched. Branches usually opposite, but sometimes alternate, axillary; at first herbaceous, compressed or ancipital and spreading, afterwards becoming rounded and more horizontal, finally quite round; woody, firm, and covered with a loose brown bark. Leaves almost upright when young, spreading when full grown, and often reflected when old; scarcely connate when young, slightly connate when old; of a very dull glaucous colour, or rather somewhat hoary and soft to the touch, with a thickish skin, very turgid on all sides, but most so above, with very blunt angles, marked by moniliform lines of semitransparent or lucid contiguous punctures; they are blunt with a fine white almost imperceptible point, best observed on the youngest leaves^c.

Native of the Cape, where it was found by Masson. Introduced in 1774^d.

59. Stems half a yard high and more, woody, with frequent joints, ash-coloured with fissures at bottom, bay-coloured and more smooth above. The lower and middle branches are twisted, the upper ones are

^a Dillenius. ^r Haworth. ^s Hort. kew. ^t Idem.
^u Haworth. ^x Hort. kew. ^y Haworth.
^z Hort. kew. ^a Dillenius. ^b Hort. kew.
^c Haworth. ^d Hort. kew.

straight and little divided. Peduncles an inch and half or two inches long. Flowers large, pale yellow or sulphur-coloured on both sides, sometimes slightly tinged with red on the outside. Petals long, narrow, cusped, with smaller ones interspersed among the others. They remain expanded only a few hours, and contract about noon: but open several times, and have a succession during the summer months. Style, filaments and anthers of the same colour with the corolla. Capsules small, bluntly turbinate. Seeds small, dusky yellow. Leaves glaucous, roughish and wrinkled, with frequent tubercles, which appear to be pellucid dots when held up to the light^e.

Mr. Haworth remarks, that it is a strong upright shrub, and that the flowers are produced only by old plants, and by them sparingly.

Native of the Cape. Cultivated 1696, in the royal garden at Hampton Court. It flowers in june and july^f.

60. Dillenius, comparing this with variety β , says that the stems are longer, less pressed to the ground; all the leaves at the joints are very long, more thick and glaucous; the peduncles not naked but surrounded by a pair of short leaves; the flower of a deeper yellow colour, with a red line along the back; in β this inclines more to purple, and shines through the tips of the petals. Stamens numerous, neither collected nor much scattered, yellowish with whitish anthers. Styles very many, (Linneus says ten) reddish, slender, villose. Capsules round, depressed, fifteen or sixteen-celled, with a crown on the top of the same number of rays. The leaves which spring from the axils of the larger ones are less frequent, and less bent in: but these younger leaves have the angles more acute and are more glaucous than the longer leaves at the joints, which the nearer they are to the root, the paler and more flaccid they seem to be, the rest are more rigid and succulent, not wrinkled and scarcely dotted, but the lower ones have transverse lines on their flat sides, are somewhat wrinkled, and much dotted underneath. The flowers continue some days and expand about noon: they are flat, the size of those of Dandelion: petals cusped, the inner ones somewhat shorter but fewer. Stems half-erect or reclining, scattered, round at top, striated and somewhat angular at bottom, woody, a palm or a long span in length, not much branched, nor throwing out roots at the joints.

β . This throws out many procumbent branches, tough at the lower part, but not properly woody, herbaceous at the upper part, about three inches in length, round or slightly angular, jointed at short intervals, with bluntly triangular leaves, from which other leaves spring in bundles, of the same form but shorter, the root-leaves and those at the base of the branches are remarkably long. The leaves bend like the horns of kine, whence the trivial name; they are somewhat glaucous, become soft and flaccid, and then appear marked with many lines and dots. Peduncles six inches in length or nearly so and naked. Flowers the size and almost the form of those of Dandelion, but paler or sulphur-coloured, composed of numerous petals of which the inner ones are shorter, with a red purple streak running along the middle on the outside, the same tinge appears at the extremity and base of the petals. Stamens numerous with yellow anthers. Style villose, many-cleft. Capsule compressed, many-celled. The flowers open about noon, but do not appear very often^g.

Native of the Cape. It flowered in the Eltham garden in 1726.

61. Root annual, not much branched, of short duration. The whole plant is sprinkled over with glittering particles, like the Ice plant, to which it bears some affinity in its duration^h. Stems branching, of a bright red colour, trailing. Leaves yellowish green, opposite, attenuated at the base. Flowers small, axillary, solitary, on longish peduncles, yellow. Calycine segments unequal, three being short, two longer and broader. Petals numerous, scarcely equal to the longest

^e Dillenius. ^f Hort. kew. ^g Dillenius.
^h Curtis.

segments of the calyx, linear, expanding in the afternoon. Filaments numerous, yellow. Anthers yellow. Germ roundish. Capsule obtuse-angled, obtruncate. Seeds numerous, small, roundish, brown¹.

Introduced from the Cape by Masson in 1774. It flowers in July and August^k. It was cultivated earlier in the botanic garden at Upsal, where it was probably introduced by Thunberg.

62. Native of the Cape, where it was found by Masson, and introduced in 1774. It is an annual, and flowers in July¹.

63. Stem short, thickish. Branches unequal, spreading irregularly on the ground, covered with a smooth bark of a dusky yellowish colour, with other smaller simple ones springing from them, which are also irregular and twisted. Leaves pointed, slightly excavated within in the middle, the outer part produced and swelling, of a yellowish green colour, with frequent minute dots regularly in lines. Compared with *M. expansum*, the flowers are somewhat smaller and whiter, petals narrower, peduncles shorter, so that the flowers frequently scarce emerge from the bundles of leaves. They are filamentose, and where they are white, shine with a silvery brightness in the sun; but in the middle, next the stamens, they are slightly tinged with yellow and shine less. They are without scent, open two or three times, and in the day time only. Two of the calycine leaflets are larger, three smaller, and of these one is very small. Capsule oblong-rounded, contracted into a neck about the calyx, with minute silvery tubercles on the surface, shining in the sun; within four-celled^m.

Linneus remarks, that three leaflets of the calyx are spreading, and two horned; that the corolla is shorter than the calyx; and that it has four styles.

Mr. Haworth observes, that the young leaves, when just beginning to separate, have a very striking resemblance to the beak of a bird.

Native of the Cape. Cultivated in 1705, by Dr. Uvedale. It flowers from June to Octoberⁿ.

64. Found by Masson at the Cape, and introduced in 1787. It is an annual and flowers in July. These annuals are very subject to be lost in our gardens.

65. This is another annual, introduced by Masson from the Cape, in 1774. It flowers in July and August^o.

66. Root annual. Stem herbaceous, a span high, scarcely thicker than a goose quill, almost upright, round, rough with clustered reflex or spreading white hairs. Branches opposite, almost upright, higher than the stem, dichotomous. Leaves opposite, horizontal, embracing, quite entire, blunt, very smooth, ciliate especially at the base, where they are also channelled. Peduncles from the forks, solitary, round, upright, rough with very spreading hairs, the length of the leaves, one-flowered. Flowers upright, the size of the common Marygold. Calyx very large, rough with white hairs; segments spreading, unequal: two longer than the corolla, lanceolate, flat, hairy within at the base; three the length of the corolla, subcylindric, membranaceous within towards the base. Corolla sulphur-coloured, shining, spreading very much. Petals very numerous, in several rows, the inner ones gradually smaller, linear-subulate; the inmost bristle-shaped, curved inwards, covering the stamens, from which indeed they differ only in being destitute of anthers. Filaments yellow, in a cylinder, covering the pistils. Anthers nodding, oblong, yellow. Germ depressed, smooth, with from twelve to fifteen streaks. Styles twelve to fifteen, upright, spreading at top. Capsule orbicular, flatish, many-celled. Seeds semi-orbicular, compressed, black, smooth, small.—It is distinguished by the number of pistils and cells^p.

Native of the Cape. Introduced in 1774, by Mr. Francis Masson. It flowers in July and August^q.

67. *α*. Mr. Haworth remarks, that the calycine leaves are proportionally larger than those of the white-flowered one. The juicy leaves, and more particu-

larly the flowers, when bruised, stain paper a strong yellow colour.

β. This is a diffuse, shrubby plant. Branches cylindrical, axillary, long, at first upright, afterwards declining and very diffuse, sometimes covered thinly with bristly hairs, for the most part only with numerous roughish papulæ, which are greenish on the young shoots, and white on the old ones. Leaves very gross; distinct, spreading, convex beneath, concave above, echinate or furnished on every part with straight strong white hairs or bristles, which arise from large papulose dots, are nearly upright, and sometimes hooked. The young leaves, when the plant is drawn up in a stove, sometimes become entirely smooth, and smaller than usual, but even in this state the roughened or warted branchlets distinguish it from *M. barbatum*. Peduncles axillary, short, one or more from the same place, sometimes hispid, sometimes not. Calycine segments unequal, three long and resembling the leaves on the branches, two very short with membranaceous edges, all more or less echinate with short white bristly hairs. Flowers pretty numerous, small, opening in the fore part of the day, white. Petals linear, obtuse, entire, very little longer than the leaves of the calyx. Filaments numerous, slender, often echinate with short hairs, attached to the petals below, and converging above. Anthers very minute, yellow, ovate, with a groove on one side, fixed to the filaments by their sides, but towards the top: pollen deep yellow. Germ nearly hemispherical, or approaching to conical, with a hollow or navel at top, smooth, shining, with five smoothish angles. Styles yellow, spreading, united below, and occupying the navel on the crown of the germ. Capsule five-angled, five-celled^r.

Native of the Cape, where it was found by Masson. Introduced in 1774. It flowers from July to October^s.

68. *α*. Dog-chap Fig Marigold is stemless whilst young, but requires by age considerable trailing woody stems. Leaves connate, spreading, glaucous, opaque not marked with lucid dots, somewhat sabre-shaped, or attenuate from the middle downwards to the base, where they are semicylindric; thickening towards the points, where they are triquetrous, with a sharp keel, and sides edged with irregular harmless teeth; terminating in a similar tooth, placed on the inner side. Flowers large, showy, yellow, opening in the afternoon, and closing in the evening. Peduncles often furnished with connate bractes, long, terminating, usually three, the middlemost often longest, cylindrical upwards, often nearly ancipital and thickened. The two outer calycine segments are rather longer than the three inner, which are blunter and membranaceous. Petals bright shining yellow within, often tinged with purple on the outside; numerous, linear, not very blunt, entire. Filaments numerous, whitish yellow. Anthers deep yellow. Styles straight, as long as or longer than the stamens, greenish yellow^t.

β. Cat-chap Fig-Marigold is entirely sessile, of a whitish glaucous colour, with the leaves paler at the base, with frequent round whitish dots, especially towards the end; they are shorter than those of the preceding, more resupine, less triquetrous, but with a rounder back, and more frequent, longer, incurved prickles, terminated by slender harmless spinules, which are sometimes white, sometimes reddish; the leaves have a white line at the end, which is continued towards the back. There is first a flower in the middle, and afterwards several come out successively at the sides, all sessile. Calyx five-angled; segments two broader and three narrower. Corolla golden-coloured within, not having any tinge of red, yellow with a tinge of red on the outside; petals in three or four rows, entire, cusped; the inner ones somewhat smaller. Stamens numerous, more scattered than in the preceding. Capsule round, sessile, with a brownish circle at top, in the centre of which are vestiges of the styles, and in the circuit three green risings^u.

¹ Haworth.

^k Hort. kew.

¹ Idem.

^m Dillenius.

ⁿ Hort. kew.

^o Idem.

^p Linn. dec.

^q Hort. kew.

^r Haworth.

^s Hort. kew.

^t Haworth.

^u Dillenius.

According to Mr. Haworth, the plant is less and softer to the touch than the preceding variety, and is completely stemless in all stages of its growth. Leaves shorter, dotted, much softer to the touch, and of a laxer structure, rounded or blunt on the keel, and not acutely triquetrous upwards, as in *caninum*; edged above with long harmless spinulose hairs or teeth, not with short fleshy denticulations, as in *caninum*.

Mr. Haworth adds two other varieties, and he regards them all as species.

γ. *M. tigrinum*. Tiger-chap Fig-Marigold, is stemless in all its stages of growth; it is more succulent and gross than *felinum*. Leaves rather shorter, beset with much longer hairs on the sides, and having numerous whitish spots. Flowers sessile, yellow, large.

δ. *M. murinum* or Mouse-chap Fig-Marigold. In this the branches in very old plants are some inches long and numerous, forming a fine tufted plant. Leaves connate, when young resembling the gaping jaws of a small quadruped, the denticulations on each side resembling teeth; when old, the leaves spread out and are even recurved; all are very glaucous, only about a fourth part of the size of the others, and often roughly dotted: dots lucid, elevated into small tubercles. Flowers small and yellow^x.

Natives of the Cape. Dog-chap Fig-Marigold was cultivated in 1717; and Cat-chap about the same time: They flower from May to July.

69. At first this is a low plant, but it becomes larger and stronger, it does not however rise above a long span in height in six years: the stem is then thick and woody, and several reclining twisted branches spring from it alternately, covered with a dusky reddish bark, smooth but transversely chinked and irregular; at the end of which come out several leaves disposed crosswise; they are thickish, bluntly flat at top, with a roundish back below, more compressed towards the end, and terminating in a process at the lower part; their colour is deep glaucous green, except the old ones, which are yellowish and when dry brown: the whole covered with frequent green dots, pellucid when held up to the light, protuberant towards the end of the leaves and rendering them somewhat rugged there. Peduncles an inch and half or two inches long, bracted. Flowers opening in the afternoon, (about four o'clock) like *M. ringens caninum*, and like that coming out frequently several from the same peduncle, but they are much smaller and of a paler yellow colour. Petals many, narrow, cupped, the outer more spreading, the inner more upright, at first forming a concave flower, but afterwards more flat and scattered, pale red on the outside. Stamens upright, with thickish, cylindric anthers. Calycine segments equal, at first upright, but afterwards bent down, and then becoming upright again. The flowers keep open a great part, if not the whole of the night. Capsules small round-five-angled, each angle roundish, with a streak along the middle, five-celled. Seeds small, like sand^y.

Native of the Cape. Cultivated in 1714 by the Dutchess of Beaufort. It flowers from May to July^z.

70. This is a middle sort between the caulescent and sessile ones, properly belonging to those which are procumbent, and acquiring by age woody branches, short and pressed to the ground, from which, at short distances; and on short slender woody petioles, of a dusky pale brown colour, spring thick leaves in clusters, bright green and shining, triquetrous inclining to round, wider towards the base and somewhat flattened on the upper part, the lower part rounded, towards the middle where the flat part ends, some short processes come out on both sides, sometimes on one side only, and sometimes they are wholly wanting; hence towards the point the leaves take a different form, and have the sides from round flattened; they are not however broad and flat, but triquetrous-cylindric. It is a circumstance peculiar to these leaves, that one side of each is much shorter than the other, and hence they are called difform: they have frequent largish dots on them, which appear pale and pellucid, but sometimes

dusky green; they are generally protuberant and thereby render the surface irregular. Peduncles thick, herbaceous, bluntly triquetrous from half an inch to an inch and half in length. Flowers rather large, like those of the tongue-leaved sort, but somewhat smaller, and of a deeper yellow, internally they are of a shining golden colour, externally of a reddish saffron colour, and when far advanced they are saffron-coloured within. Petals oblong, blunt, entire, not so numerous as in some sorts, in a single or double row. Stamens very many, pale yellow. Styles many (eight or thereabouts) short, cirrhose, greenish yellow. Capsule eight-celled. Seeds triquetrous, brown and wrinkled.

Native of the Cape. Cultivated in the Eltham garden several years before 1732, lost by the severity of a winter, and recovered there from the botanic garden at Chelsea^a.

71. Lower leaves oblique, the others more upright, not at all or but little bent in or sickle-shaped; they are long, thick, rigid, smooth and shining, flat within or on the top, underneath produced into a sharpish back, which becomes blunter and rounder in the lower part; all the sides are nearly equal: they are of a white elegantly glaucous colour, except that they are yellowish near the base with slender transverse lines. Flowers large, yellow, on a long thick peduncle. It flowered many years before 1732, and frequently in the Chelsea garden during winter^b. According to the Kew catalogue it was cultivated in 1714, by the Dutchess of Beaufort.

72. The leaves of this species in all the varieties are not decussated, but lie in the same oblique plane. α. The leaves of this are wider and more compressed about the edge; the flowers somewhat larger, with blunter petals, more scattered and less numerous, with scarcely any peduncle. One plant has several heads, from each of which are produced clusters of leaves in pairs, disposed like those of the tongue Aloes, but with the edges not horizontal but oblique. There are generally three or four pairs of these leaves; they are broad and thick, flat above, pillowed below, bright green, smooth and shining, sometimes blunt, sometimes a little pointed, generally in the shape of a shoemaker's knife. The younger leaves in this and the other varieties are folded together and obliquely inserted into each other. The flowers come out successively in August and September from the axils, beginning with the lowest, they are subsessile, large, yellow, somewhat paler than in the next variety, shining in the sun; petals somewhat blunter, entire or sometimes cut here and there. Stamens numerous, with oblong yellow anthers. Style divided into nine or eleven villose stigmas. Capsule roundish, divided into as many cells, with a crown at top of nine or eleven rays. Seeds like sand, from round pointed. Calyx of four unequal segments, two longer and two shorter.

β. Broad Tongue-leaved Fig Marigold, has thick leaves, flat above, convex beneath, with the margins thicker and less upright than in the preceding, smooth and shining, pale green especially towards the base, when held up to the light appearing to be composed of innumerable vesicles. Three or four pairs of these leaves lie in the same inclined plane; these are sometimes flatter and blunt at the end, sometimes very much cut at the edge. From the lower pair first, and then from the next, a short peduncle arises, obtusely triquetrous, bearing a large flower of a shining golden colour, with many stamens, having oblong golden anthers. Style divided into nine or ten cirrhose parts. Calycine segments four, sometimes five. Capsules roundish, divided into nine or ten cells, continuing the whole winter, and ripening in the spring; they are obtusely pyramidal and brownish. Seeds very many, like sand, rufous, pointed, bluntly triquetrous.

γ. Narrow Tongue-leaved Fig Marigold is very like the preceding, but the petals have a slight tinge of red on the outside, the older leaves are more reflex; the younger ones, which are closer and more luxuriant, are somewhat twisted in and excavated, and are of a fuller green colour. The fruit is smaller and softer,

^x Haworth.

^y Dillenius.

^z Hort. kew.

^a Dillenius.

^b Idem.

not elevated but rather depressed, roundish, and commonly streaked with eleven angles; it is generally eleven-celled; the cells being the same in number as there are horns of the style, which are depressed at the bottom of the flower under the stamens, and are curled and wrinkled. Petals in two or three rows, almost of the same length, of a shining yellow colour. Stamens numerous, slender. Calycine segments usually four. Peduncle an inch long, somewhat longer, than in the preceding, flat on one side, raised into an angle on the other, triquetrous-compressed, pale green. It flowers in august and september.

d. This is distinguished from the others by the leaves being longer and more erect. The peduncles of the flowers are longer. Capsules less globular, commonly divided into nine cells. Calycine segments four, three longer and narrower, one shorter and broader with a membranaceous margin. The flowers have a double or triple row of petals, shining in the sun with the splendour of gold. Stamens numerous with oblong saffron-coloured anthers^c.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort^d.

73. This species grows up into a stem an inch and more in thickness, and two or three feet in height; standing upright with little or no assistance, with a crown of clustered leaves a long span in length at the top, and branches a foot long and more at the base, which hang down with the weight of a multitude of leaves. Very old plants grow a yard in height, with long incurved twisted branches. The stems and lower branches are of a dusky yellowish colour, but the upper flowering branches are green; on the lower part of these the leaves are alternate, but on the upper part, where the flowers come out, they are clustered and somewhat shorter, in pairs at short intervals, triquetrous, with equal angles, slightly grooved on the sides, especially on the inner side; but the alternate ones have the inner side rather flat. They are not dotted, but are of a deep green, almost glaucous, like the leaves of Pinks, at the angles towards the base tinged slightly with purple. Peduncles from the axils of the upper leaves a span in length, thick, at first hanging down, but afterwards erect. Flowers large, expanding when the sun shines, straw-coloured above, tinged with red underneath, composed of numerous slender cusped petals, gradually smaller and the inner ones filamentose. Style divided into ten parts, concealed at first by the stamens, which on the second or third expansion of the flowers, recede from each other and leave the styles naked. Capsule obtusely conical, the size of a nutmeg, marked with fifteen lines, ten-celled. Seeds small, roundish, pointed, rufous: when ripe, the upper fungose part opens into a toothed crown, the rays or toothlets and holes of which are the same in number as the lines on the fruit: but before the fruit is resolved into this toothletted crown, the lines become as many furrows as there are cells. Calyx entire at the base, divided above into five oblong segments, broad at the base, triquetrous-cylindric; at bottom a rib runs from each of the wider segments along the peduncle, which has a pair of leaves near the base. The flowers are open from eight or nine in the morning to four or five in the afternoon^e.

Native of the Cape. Cultivated in 1714, by the Dutchess of Beaufort. It flowers from may to august^f.

74. Plant somewhat below, covered with a grayish bark. Branches mostly opposite, axillary, decumbent; whilst young smooth and papulose below, covered higher up with pilefcent papulæ, and at the uppermost parts with short numerous horizontal hairs. Leaves dark green, connate, sheathing, very blunt, channelled above, rounded beneath; lower ones erect, incurved, imbricate, crossing each other in pairs, shining, smooth, papulose, resembling the links of a chain; upper ones spreading more and more distant, pointing obliquely upwards, ciliate at the base with pilefcent papulæ; uppermost often alternate, covered

with the same papulæ. Flowers terminating, from one to five, when three or four forming a small dichotomous panicle; when five forming a kind of spike, curving sharply upwards; they are the size of a shilling, quite green, and open in the forenoon. Peduncles cylindrical, covered with numerous short horizontal hairs. Calyx ovate, obscurely pentangular, segments unequal, two longer, the three shorter membranaceous on the edges. Petals very numerous, slender as bristles, acute; innermost shortest, often converging so as to conceal the stamens. Filaments numerous, very short, of different lengths, whitish green. Anthers large, white, nearly square, emarginate at both ends, with a deep furrow on each side, giving them a twin appearance: pollen whitish. Styles shortish, green, awl-shaped. Capsule urn-shaped, pentangular. Seeds not very numerous, small, kidney-shaped^g.

Native of the Cape, where it was found by Masson. Introduced in 1774. It flowers in july and august^h.

75. Native of the Cape of Good Hope, where it was found by Thunbergⁱ.

There are doubtless many other species, but not being sufficiently determined, or distinguished from varieties, I have confined myself chiefly to those which are ascertained by Dillenius, Linneus, and Aiton.

There are several circumstances which may assist us in distinguishing the numerous species of this genus. Thus some are annual, though the far greater part of them be perennial. Some are stemless, as *ringens*, *bellidiflorum*, *linguiforme*, *albidum*, *rostratum*, *calamiforme*, *difforme*, *dolabriforme*. Some are lax with a pendulous stem or branches, as *Tripelium*, *tortuosum*, *expansum*, *loreum*, *corniculatum*, *acinaciforme*, *edule*, *forficatum*, *filamentosum*, *crassifolium*, *tenuifolium*, *pomeridianum*. The rest are shrubby, with a woody hard stem. The greater part has opposite leaves, but some have them alternate, as *nodiflorum*, *crystallinum*, *Tripolium*, *pugioniforme*. Most of them have five styles, but some have four, others ten^k, and the number varies in several of the species. *Spinosum* (n. 32.) has trichotomous thorns; and *tuberosum* (n. 33.) has a tuberous root.

This beautiful genus was first named *Ficoides* by Hermann, from the similitude of the fruit in shape to the Indian Fig. Breynius, soon after named it *Mesembrianthemum* or Noon-flower, because most of the flowers open about noon when the sun shines. Dillenius changed Breynius's name to *Mesembryanthemum*, signifying a plant which has the embryo in the middle of the flower. Linneus has followed Dillenius in this, although the change, in my opinion, is by no means a happy one. Dillenius however has treated this genus in his masterly style, and Linneus has added little or nothing to what he had done.

Dillenius distinguishes the species from the leaves, and has given a synoptical table of those which he cultivated in Dr. Sherard's garden at Eltham. He remarks, that the corolla grows above or rather round the fruit, and may be extracted entire in some of the species; but in the greater part, especially those which have filamentose flowers, it adheres so firmly to the top of the fruit and the middle of the style, that it cannot be extracted entire: that the petals, or segments of the corolla are either less numerous and all nearly of the same size and form, or more numerous and of different sizes, the interior ones being narrow like the filaments. The fruit is at first green, thick and succulent, but when ripe contracts, and becomes a fungous dry brownish substance, of a turbinate, globular or oblate spheroidal form, sometimes with a smooth and regular surface, sometimes more or less angular. The number of cells within correspond with the number of styles, but not with the leaflets of the calyx, except in the four and five-celled species. In those which are many-celled, the number of segments in the calyx is seldom more than five: and in *M. linguiforme*, which has more cells than five, the calyx has only four segments.

^c Dillenius.^d Hort. kew.^e Dillenius.^g Haworth.^h Hort. kew.ⁱ Linn. suppl.^f Hort. kew.^k Linn. spec.

Hermann, in his different works, has enumerated twenty-three species, two of which do not seem to belong to this genus. Breynius has seventeen species. Plukenet has forty-four. Bobart has fifteen. J. G. Volckamer has twenty-four. Ray has thirty-nine, but some of the species are repeated under different names. Tournefort has thirty-six, in the Paris Memoirs. Bradley figured thirty species. Boerhaave enumerated fifty-three, but his two last do not appertain to this genus. Dillenius has described and figured fifty-seven, some of which however are varieties. Miller, in the last folio and quarto editions of his Dictionary has enumerated forty-six; but he has not described any of them. Aiton's Catalogue of the Royal Garden at Kew contains seventy, and this work seventy-five species. Mr. Haworth has many more, some of which however are still regarded by botanists as varieties only, though they are sold by nursery-men as distinct species.

PROPAGATION AND CULTURE.

This fine genus was unknown to the ancients, indeed very few of the species were cultivated till the end of the last and the beginning of the present century. *M. edule* was introduced in 1690, by Mr. Bentick from Holland, and in 1696 several of the species were cultivated in the royal garden at Hampton Court. Some were in the botanic garden of the Apothecaries at Chelsea in 1700. Dr. Uvedale and Charles Dubois, Esq. had some species in 1705. The Dutchess of Beaufort had many in 1714. Professor Bradley cultivated a good collection between 1716 and 1727. About the same time the Sherardian garden at Eltham boasted a very fine assemblage of these singularly beautiful plants: and as many were cultivated by Mr. Miller at Chelsea. *M. australe* was introduced from New Zealand, in 1773, by Sir Joseph Banks. *M. compactum*, by the Countess of Strathmore 1780, and many species by Mr. Francis Masson in 1774, 1775 and 1787. The collections of these plants at Kew, Mr. Lee's nursery at Hammer-smith, and several others of the nurseries about London are very splendid.]

The Ice plant (*M. crystallinum*) and other annual sorts are propagated by seeds, sown on a hot-bed early in the spring. When the plants come up, plant them on a fresh hot-bed to bring them forward. After they have taken root in the hot-bed they should have very little water. When they are large enough to transplant again, plant each in a small pot filled with light fresh earth, but not rich, and plunge them into a hot-bed of tan, shading them in the heat of the day until they have taken new root, and then giving them plenty of fresh air. At the end of June some of the plants may be inured to the open air, and afterwards may be turned out of the pots and planted in a warm border, where they will thrive and spread, but will not be very productive of flowers; some therefore must be continued in the pots, and removed to the shelves of the stove, that they may flower plentifully and produce good seeds.

The perennial sorts are easily propagated by cuttings during any of the summer months; such of them as have shrubby stalks and branches, very readily take root when planted in a bed of light soil, and covered either with mats or glasses, but when they are covered with the latter, they must be shaded every day when the sun is warm; these cuttings of the shrubby sorts need not be cut from the plant more than five or six days before they are planted, during which time they should be laid in a dry room, not too much exposed to the sun, that the part which was separated from the old plants may heal over and dry before they are planted, otherwise they are apt to rot; these may be planted at about three inches distance from each other, and the earth pressed close to them, but none of their leaves should be buried in the ground, for as they abound with moisture, if they are covered with the earth, it will cause them to rot, and that often destroys the cuttings; therefore when the cuttings are taken from the old plants, they should be divested of their lower leaves, so far as may be necessary, to allow a naked stalk of sufficient length for planting.

When the cuttings are planted, it will be necessary to give them a little water, to settle the ground about them, but it should be done with caution, for too much wet will spoil them; if these are shaded every day from nine or ten o'clock till three or four, when the sun is warm, it will prevent the ground from drying too fast, so that the cutting need not be watered oftener than once in a week; but if there should happen some gentle showers of rain, it will be proper to take off their covers, and let them receive it, but they should be screened from hard rains. The cuttings thus managed will have put out good roots in about six weeks, when they should be carefully taken up, and each planted in a separate small pot filled with light sandy earth, and then placed in a shady situation, giving them a little water to settle the earth to their roots; in this place they may remain about ten days or a fortnight, by which time they will have taken good root, and may be removed to a sheltered place, where they may have more sun, in which they may remain till autumn; during the summer months, these may be watered twice, or in very hot weather, three times a week, but it must not be given them in too great plenty; but as the sun declines in autumn, they should not have it oftener than once a week, for if they are often supplied with it, the plants will grow luxuriant; their leaves and branches will be so replete with moisture, that the early frosts in the autumn will destroy them; whereas when they are kept dry, their growth will be stunted; so that they will be hardy enough to resist small frosts, but there must be care taken that they do not shoot their roots through the holes of the pots into the ground, for when they do, the plants will grow very luxuriant; and when the pots are removed, and those roots are torn off, their leaves and branches will shrink, and will not recover in a long time, if ever; to prevent which, the pots should be removed every fortnight, and where the roots are beginning to come through the pots, they should be cut off. The sorts which grow very freely should be shifted three times in the summer, to pare off their roots, and keep them within compass, and these should never be planted in rich earth for the reasons before given; for if the earth be fresh, it will require no dung or other compost, unless it is strong, in which case sea sand, or lime rubbish, will be a good mixture; the quantity of either must be in proportion to the stiffness of the ground, always being careful to render it so light, as that the wet may easily pass off.

We next proceed to treat of those sorts, whose stalks and leaves are very succulent. The cuttings of these should be taken from the plants ten days or a fortnight before they are planted, that they may have time for their wounded part to heal over and dry; the lower leaves of these should also be stripped off, that their naked stalks may be of a sufficient length for planting. As these are mostly plants of humble growth, so if their stalks are divested of their leaves an inch and a half, it will be sufficient. The cuttings of these sorts require to be covered with glasses, to keep off the wet; they must also have less water than the other, but in other particulars require the same treatment. The roots of these not spreading and extending so much as those of the other, will not require to be shifted oftener than twice a year at most; they must also be kept in small pots to confine their roots; the earth in which they are planted should be rather light and not rich. During the summer season they must not have too much wet, and in the winter they must have but little water. If these succulent sorts are placed in an open airy glass-case in winter, where they may have free air admitted to them in plenty in mild weather, and are screened from the frost, they will thrive much better than when they are more tenderly treated.

The other shrubby sorts may be sheltered in winter under a common frame, where, if they are protected from frost and wet, it is all they require; for the hardier these are treated, the greater quantity of flowers they will produce; and some of the sorts are so hardy, as to live abroad when planted close to a good affected wall, and in a poor dry soil; so that where there is room to dispose them again a wall, and the border

border is raised with lime rubbish to prevent their rooting deep and growing luxuriant, they may be preserved through the winter with very little shelter, and these will flower much better than those under cover.

[The hardiest sorts are *bispidum*, *striatum*, *barbatum*, *crassifolium*, *glaucum*, *uncinatum*, *corniculatum*. These will sometimes abide several winters, on a dry artificial rock, or upon the top, or at the foot of a dry wall.

These plants thrive best in winter in a dry light airy stove or large glass case, not overstocked with plants, especially such as cause watery vapours by casting their leaves. The flues should be gently worked in cold and damp weather, and the plants should not be placed too near each other, should have as much free air as possible when the weather is dry and favourable, and should be watered only sparingly in cold weather. Those sorts which hold water in the centre, should not be watered over their tops in winter.

From about May to September all the sorts thrive best in the open air, in a sheltered warm sunny situation, no more watered than just to preserve their leaves from shrivelling. But if the season be wet, it may be better to leave them in the house, which during this season will be thin of plants and have the lights generally open.

The generality of species are best planted in small pots, not larger than thirty-twos. They should be filled with a light sandy unmanured soil, that will not bind. The smallest sorts thrive still better in fixtys.

All the perennial and shrubby sorts may be increased very readily in a stove, either from seed or cuttings, not covered by bell-glasses. Sow the seed, as soon as procured, unless it be in the depth of winter, in a poor light sandy soil, kept damp but not wet: its germination will be much assisted by the bark-bed.

They all remain a long time in the seed leaf. When the young plants appear, they should have rather more water and air, until they have four or five leaves, when they may be transplanted into the smallest pots, kept in the same gentle hot-bed until they have got fresh roots, when they should be gradually hardened to the open air, if it be summer, or placed near the old plants in the dry stove, if it be winter. When they have filled the small pots with their roots, they should be removed into larger ones.

When raised from cuttings, the shoots need not be large, and the youngest are the best; they should be divested of a few of the old leaves, and if very succulent, laid in a dry shady place, from one to twenty-four hours, to heal their wounds, after which plant them in the soil mentioned above, with the earth pressed close; water them very sparingly, and shade them from the sun until they have struck root, but without covering them by a hand-glass. Their striking will be greatly accelerated by plunging them into a gentle hot-bed; but most of the sorts will succeed very well without that assistance, if kept in the house; and many will do well during the summer even in open borders, provided they are gently watered when dry.

May is the most favourable season for striking them; but they may be struck at almost all times of the year in a very moderate stove. Some strike in ten days, some take a fortnight, and others require a month or six weeks.

8. Strikes readily from young shoots, but with difficulty from old ones. It is apt to lose its leaves, and then looks like a different plant.

20. *M. cordifolium* planted in a south border will cover many feet of ground, flower and perfect seeds.

29. *M. reptans*, in the open air will extend its branches above a foot and half every way, putting out roots at every joint.

39. *M. crassifolium*. This and many others, particularly the creeping and procumbent sorts, may be struck from the extreme shoots, although they have only two leaves.

42. The old firm shoots are struck with difficulty from cuttings; but the young and tender ones most readily.

48. *M. edule*. A single joint will strike very well in any way.

61. *M. pinnatifidum*, cannot be made to root from cuttings, which however do not die until they have perfected flowers, and even ripened seed.

67. The old wiry firm shoots strike with difficulty from cuttings, but are so tenacious of life as to exist a whole year without losing their leaves. The young shoots strike freely.

68 β. *M. ringens* *felinum* may be struck from a single leaf.

71. *M. albidum* does not root so freely from cuttings as the other stemless species, especially from an old plant. The reason is, that it is of a very firm texture, and it is a general rule that such strike with difficulty, and those of a more lax succulent nature on the contrary strike with facility.

73. *M. pugioniforme*. Cuttings of this strike with difficulty. It very much dislikes the knife. Select small shoots, separate them with a sharp knife, bruise or handle them as little as possible, plant them in a mixture of light earth and potsherds, keep them in a stove in the shade, and water them sparingly. It frequently perfects very fine seeds, by which it may readily be increased¹.

MESOPHÆRUM. See *Bystropogon*.

MESPILUS (of Pliny, *Μεσπίλη* of Theophrastus.)

Lin. gen. n. 625. *Reich. n.* 681. *Schreb. n.* 857.

Tourn. t. 410. *Juss.* 335. *Gärtn. t.* 87.

Class. 12. 4. Icosandria Pentagynia.

Nat. order of Pomaceæ. Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, concave-spreading, five-cleft, permanent.

COR. *Petals* five, roundish, concave, inserted into the calyx.

STAM. *Filaments* twenty, awl-shaped, inserted into the calyx. *Anthers* simple.

PIST. *Germ* inferior. *Styles* five, simple, erect. *Stigmas* headed.

PER. *Berry* globular, umbilicated, closed by the converging calyx, but almost perforated by the navel.

SEEDS five, bony, gibbous.

Obs. The genera of *Cratægus*, *Sorbus* and *Mespilus* are very nearly allied, scarcely to be distinguished but by the number of styles. The leaves in *Sorbus* are pinnate, in *Cratægus* angular, in *Mespilus* commonly entire.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five. Berry inferior, five-seeded.

SPECIES.

1. *Mespilus Pyracantha*. Evergreen Thorn or *Mespilus*.

Lin. spec. 685. *Reich. 2.* 497. *hort. cliff.* 189.

vir. cliff. 44. *Scop. carn. n.* 596. *Pallas ross. 1.*

29. t. 13. f. 2. *Du Roi herb. 1.* 413. *Medic.*

loc. oecon. Lutr. 1774. p. 227. *Lour. cochinch.*

320. Villars dauph. 3. 542.

M. aculeata amygdali folio. Tournef. inst. 642. Dubam.

arb. 2. t. 20. n. 7. Barrel. t. 874.

Oxyacantha Dioscoridis, f. Spina acuta Pyri folio.

Baub. pin. 454.

O. Theophrasti. Ger. emac. 1604.

Pyracantha. Park. parad. 605. f. 2. Baub. hist.

Raii hist. 1459.

Uva ursi. Dalech. hist. 164.

Rhamnus 3 Dioscoridis. Lob. ic. 2. 182.

Thorny, leaves lanceolate-ovate crenate, calyxes of the fruit blunt.

2. *Mespilus germanica*. Dutch Medlar.

Lin. spec. 684. *Reich. 2.* 497. *hort. cliff.* 189.

upf. 129. mat. med. 127. Gärtn. fruct. 2. 43.

Huds. angl. 217. Wither. arr. ed. 3. 461. Hall.

helv. n. 1094. Du Roi herb. 1. 409. *Neck.*

gallob. 218. Pollich pal. n. 474. Kniph. cent. 2.

n. 45. Ludw. est. t. 38. Pallas ross. 1. 29.

t. 13. f. 1. Villars dauph. 3. 542. *Krock. filef.*

n. 758.

α. *Mespilus. Dod. pempt. 801. 1. Ger. 1265. 1.*

emac. 1453. 1. Raii syn. 453. Blackw. 154.

Park. parad. 568. t. 569. f. 3.

¹ Haworth.

- M. vulgaris. *Baub. hist.* 1. 69. *Raii hist.* 1460.—
f. minor. *Park. theat.* 1422. 2.
M. germanica fol. laurino non ferrato, f. M. sylvestris.
Baub. pin. 453.
M. sylvestris. *Mill. dict. n.* 1.
M. germ. stricta. *Narrow-leaved Dutch Medlar.*
Ait. hort. kew. 2. 172. *With leaves doubly ferrate.*
Neslier des bois. *Dubam. arb.* 1. 334. t. 2.
β. M. fol. laurino, major. *Baub. pin.* 453.
M. maxima sativa. *Park. theat.* 1422. f. 1.
M. sativa altera. *Ger. emac.* 1453. f. 2.
M. germanica. *Mill. dict. n.* 2.
M. diffusa. *Broad-leaved Dutch Medlar.*
Ait. hort. kew. 2. 173. *With leaves almost entire.*
Neslier cultivé a gros fruit. *Dubam. arb.* t. 3, 4.
Plenck, ic. 393.
Unarmed, leaves lanceolate tomentose underneath, flowers sessile solitary.
3. Mespilus arbutifolia. *Arbutus-leaved Mespilus.*
Lin. spec. 685. *Reich.* 2. 498. *hort. cliff.* 189.
Du Roi herb. 3. 418. *Mill. fig.* t. 109.
(*Cratægus*).
Sorbus virginiana folio arbuti. *Herm. lugdb.* 578.
t. 669.
S. aucuparia virginiana, foliis arbuti. *Breyn. prodr.* 1. 15.
α. M. arbutifolia rubra. *Red-fruited.*
β. M. arbutif. nigra. *Black-fruited.*
γ. M. arbutif. alba. *White-fruited.*
Ait. hort. kew. 2. 173.
Unarmed, leaves lanceolate crenate tomentose underneath.
4. Mespilus Amelanchier. *Alpine Mespilus.*
Lin. spec. 685. *synt.* 466. *Reich.* 2. 498. *hort. cliff.*
189. *Scop. carn. n.* 595. *Pollich pal. n.* 475.
Jacqu. austr. 3. 55. t. 300. *Mill. fig.* t. 178. f. 1.
Barrel. ic. 527. *Villars dauph.* 3. 542.
Pyrus Amelanchier. *Du Roi herb.* 2. 219. *Hall.*
helv. n. 1095.
Sorbus Amelanchier. *Crantz. austr.* 90.
Amelanchier Gallorum. *Lob. obs.* 608. *Barrel. ic.*
527.
Vitis idæa 3. *Clus. hist.* 1. 75. *Park. theat.* 1458. 7.
Diospyros. *Baub. hist.* *Raii hist.* 1461.
Unarmed, leaves oval ferrate hirsute underneath.
5. Mespilus Chamæ-Mespilus. *Bastard Quince or Mespilus.*
Lin. spec. 685. *synt.* 466. *Reich.* 2. 499. *mant.* 398.
Hall. helv. n. 1090.
Cratægus. *Lin. hort. cliff.* 497. *vir. cliff.* 43. *Jacqu.*
wind. 243. *austr.* 3. t. 231.
Sorbus. *Crantz. austr.* 83 t. 1. f. 3.
Chamæmespilus. *Baub. hist.* *Raii hist.* 1460.
Cotoneaster folio oblongo ferrato. *Baub. pin.* 452.
C. forte Gesneri. *Clus. hist.* 1. 63.
Cotoneaster Gesneri. *Ger. emac. app.* 1606. f. 2.
Unarmed, leaves oval acutely ferrate smooth, flowers corymb-capitate.
6. Mespilus canadensis. *Snowy Mespilus.*
Lin. spec. 685. *synt.* 466. *Reich.* 2. 499. *Du Roi*
herbk. 1. 416. *Gron. virg.* 54. *Dubam. arb.* 9.
Unarmed, leaves ovate-oblong smooth ferrate sharpish.
[7. Mespilus japonica. *Japan Mespilus.*
Lin. synt. 466. *Thunb. jap.* 206.
Unarmed, leaves oblong blunt ferrate at the tip, tomentose underneath.]
8. Mespilus Cotoneaster. *Dwarf Mespilus.*
Lin. spec. 686. *synt.* 466. *Reich.* 2. 500. *hort. cliff.*
189. *fl. suec. n.* 438. *Fl. dan. t.* 112. *Hall. helv.*
n. 1093. *Pollich pal. n.* 476. *Leers herb.* 3.
n. 375. *Scop. carn. n.* 594. *Crantz. austr.* 81.
Pallas ross. 1. 30. t. 14. *Krock. files. n.* 759.
Villars dauph. 3. 542. *Kniph. cent.* 1. n. 58.
Cotoneaster folio rotundo non ferrato. *Baub. pin.* 452.
Cotoneaster. *Baub. hist.* *Raii hist.* 1917.
Cotoneaster Gesneri. *Park. theat.* 1424. f. 3.
Chamæ-mespilus. *Ger. emac.* 1454. f. 4.—*Gesneri.*
Clus. hist. 1. 60.—*Cordi.* *Baub. pin.* 452.
Epimelis. *Dalech. hist.* 198, 199.
Unarmed, leaves ovate quite entire sharpish tomentose underneath, germs smooth, berries two-seeded or three-seeded.
9. Mespilus tomentosa. *Quince-leaved Mespilus.*
Ait. hort. kew. 2. 174.

M. orientalis. *Mill. dict. n.* 9.
Unarmed, leaves ovate quite entire blunt tomentose underneath, germs woolly, berries five-seeded.

DESCRIPTIONS, &c.

1. This is a bushy irregular shrub. Branches strigose and rugged, testaceous-brown, divaricated, alternately spinose. Spines axillary, commonly branched with secondary spines, sometimes gemmiferous and producing branchlets. Leaves scattered smooth, petioled, continuing till winter, lanceolate with a point, crenate; but in the garden ferrate. Corymbs copious on the branches, compound, subsessile, or elevated on the leafy branchlets, on divaricating peduncles. Flowers white, scarcely larger than those of Elder. Calyx spreading very much, acutely five-toothed. Petals oval, concave. Stamens about twenty-four. Germ depressed, villose. Styles shorter than the corolla and stamens. Berry globular, fulvous, the size of a pea, umbilicated with the calyx; pulpy, five-seeded^a. The fruit, according to Scopoli, is as large as the common Medlar; the seeds subovate and compressed.

Native of the South of Europe; common on Caucasus, and in the Chersonesus Taurica; also in China. It flowers with us in May. Cultivated in 1629, as appears from Parkinson^b.

It has the names Pyracantha in Latin, and Buïsson ardent in French from the redness of its berries.

2. The Medlar is a small or middle-sized branching tree. Branches woolly, armed in a wild state with stiff spines, covered with an ash-coloured bark. Leaves oval-lanceolate, ferrate towards the point, somewhat woolly, on very short channelled petioles. Bractæ linear, as long as the corolla. Calyxes terminating, fleshy, woolly within; teeth longer than the corolla. Petals white, blunt, entire, with a very short claw. Stamens unequal, thirty or more, with cloven anthers^c. Fruit an inferior turbinate berry, umbilicated at top with a wide depressed area, and crowned with the five linear calycine leaflets, fleshy, reddish brown: pulp thick mixed with callose granules. It contains five gibbous, wrinkled, one-celled stones, in each of which are two seeds, but one is usually abortive, the other is obovate, compressed like a lens, much pointed downwards, whitish with a brown spot at the top^d.

α. The wild tree differs from the cultivated one in having more slender, strigose, thorny branches, and much smaller leaves, flowers and fruits. Pallas remarks, that all the parts are very small in his specimens from Persia, with narrower leaves, ferrulate frequently almost to the base. In those from Caucasus the leaves were somewhat larger, and sometimes quite entire. In the Persian Medlar, according to Gmelin, the leaves are red when they burst from the buds. Spines only three or four lines in length, stout, very sharp, spreading. Styles four or five. Fruit much smaller than in the gardens, containing five seeds.

Native of the South of Europe, and in Asia. Said to grow in all the hedges about Minchiville, but scarcely to be reputed indigenous of Britain. It flowers in June and July.]

Mr. Miller makes two species of the Wild and Dutch Medlar. The first, he says, grows naturally in Sicily, where it becomes a large tree. It rises with a straighter stem, and the branches grow more upright than those of the Dutch Medlar. The leaves are narrower and not ferrate. The flowers are smaller; and the fruit is shaped like a Pear.

β. The Dutch Medlar never rises with an upright trunk, but sends out crooked deformed branches at a small height from the ground. The leaves are very large, entire, and downy on their under side. The flowers are very large, as is also the fruit, which is rounder, and approaches nearer to the shape of an Apple. This, bearing the largest fruit, is now generally cultivated: but there is one with smaller fruit, called the Nottingham Medlar, of a much quicker and more poignant taste. [There are other varieties of the fruit, which are now little noticed.

^a Pallas.

^b Hort. kew.

^c Linn. Wither. Krock.

^d Gærtner.

3. This seldom rises more than five or six feet high in Virginia, where it grows naturally in moist woods. Three or four feet is the greatest height it attains in England. Branches few, slender, upright. Leaves alternate, pale green above, ash-coloured underneath. The flowers are produced in small bunches, on long peduncles, at the sides and extremities of the branches. Petals dull white, with several brown spots on their upper side. Fruit small, roundish, a little compressed, purple when ripe. It flowers in may, and the fruit ripens in october^c.

Petals and calycine segments sometimes six, seven or eight^f.

It varies with red, black and white fruit; and was cultivated in 1700 by the Earl of Clarendon^g.]

4. This rises with many slender stems three or four feet high, putting out small side branches, covered with a dark purple bark. Leaves three quarters of an inch long, and half an inch broad, slightly ferrate. The small side branches which sustain the flowers are very hairy and woolly, as are also the footstalks and under side of the leaves, but their upper sides are smooth and green. The flowers come out in bunches at the end of the shoots. The petals are long and narrow; and the stamens about ten in number. Fruit small, black when ripe.

[Linneus remarks, that whilst it is young the branches, petioles, peduncles and under surface of the leaves are tomentose, but that when it is so far advanced as to bear fruit, it puts off the pubescence and becomes smooth. It is very nearly allied to *M. canadensis* and *Chamaespilus*. Pollich observes that the berries have eight, nine or ten seeds in them. Clusius remarked ten, and sometimes more; and Villars has reckoned as far as eleven.

The wood of this shrub is very hard, and the bark is black. The flowers are white, larger than in any of the others. The fruit is good to eat^h; sweet and reputed wholesome. It has the name *Amelanchier* in Provence from *Amelanchos*, on account of the berries having the taste of honey.

Native of the South of Europe. It was cultivated in England in 1730ⁱ.]

5. This has a smooth stalk, about four or five feet high, sending out slender branches covered with a purplish bark. Leaves about two inches long, and one inch and a half broad, yellowish green on both sides, on long slender foot-stalks. Flowers axillary, four or five together in a close head, purplish; with long, narrow, purplish bractes. Fruit, small red.

[This shrub, whilst young, is woolly, like the preceding and following species, when farther advanced it is naked. According to Crantz; the very young leaves are quite smooth, they gradually acquire pubescence, and cast it off as they grow old: they are obovate, like those of the Plum sharply ferrate, the ferratures bent in towards the tip and very slender. Stipules linear, longer than the petioles, deciduous. Corymb from the axils peduncled, conglobated into a head, on a subvillose peduncle, shorter by half than the leaves. Bractes between the flowers, linear, longer than the flower, coloured, deciduous. Teeth of the calyx shorter than the tube; whereas in *Amelanchier* they are longer. Haller, Jacquin and Scopoli affirm that the flowers have only two styles^k.

Native of the Pyrenees, the mountains of Austria, &c.. Ray found it on the higher parts of Jura, near Geneva. It was cultivated in Britain in 1683, by Mr. James Sutherland^l.]

6. This is a low shrub, seldom more than five feet high, dividing into several smooth branches, covered with a purplish bark. The leaves grow upon long slender foot-stalks; are an inch and half long, and an inch broad, smooth on both sides, and ferrate. The flowers come out in small bunches at the ends of the branches; they are about the size of those of the common Hawthorn, and are succeeded by small fruit of a purplish colour.

[Native of Canada and Virginia. Cultivated in

1746, by Archibald Duke of Argyle. It flowers in april and may^m.

7. This is a large lofty tree. Branches thick, knobbed, with similar tomentose branchlets. Leaves alternate, subpetioled, blunt, attenuated below, entire except towards the tip, where they are serrate, erect, recurved at the tip, marked with parallel nerves, the upper surface bright green, smooth, the under cinereous-tomentose, with the middle nerve thick; they are a span long, the younger ones less. Petiole thick, tomentose. Flowers in spikes at the ends of the shoots. Spike compound, tomentose. Peduncles and pedicels thick, short, tomentose, scaly. Scales or bractes ovate, blunt, concave, pressed close, tomentose. Calyx bell-shaped, thick, tomentose; segments blunt, erect. Filaments twenty, longer than the calyx. Anthers round. Germ hirsute. Styles the length of the calyx. Berry ovate, the size of a Cherry, subtomentose, yellow, pulpy. Seeds from one to five, semiglobular, smooth, larger than peas, brown: when there is only a single seed it is globular. The fruit seems rather to be a pome, with from one to five cells; and the taste of it approaches to that of the Apple: it is ripe in may and june. It flowers in october and november. Native of Japanⁿ.

8. This is a low spreading shrub, not more than four or five feet high, covered with a smooth ash-coloured or purple bark, when young pubescent, but becoming smooth with age. Leaves alternate, the upper surface bright green and smooth, the lower white-tomentose, finely netted, they are about an inch long, and three quarters of an inch broad. Petioles two lines in length, channelled above. There are two lanceolate, acuminate, deciduous, reddish stipules at the base of the petioles. Peduncles either solitary and unbranched from the tops of the twigs, or forming little corymbs of three or four flowers, which are peduncled, somewhat nodding, round and pubescent, with a small bracte at the base. Calyx lanuginose. Petals scarcely larger than the calyx, white tinged with purple. Stamens about nineteen. Germ inferior, roundish, smooth, reddish. Styles three, sometimes four and even five. Stigmas capitate, sulphur-coloured. Berry bright red, pear-shaped, or globular-ovate, flatted at top, crowned with the five-toothed calyx, the segments converging when the fruit is ripe; the pulp is yellow. Seeds three, seldom four or five, ovate, yellowish, sharpish, convex and somewhat rugged on one side, triangular on the other^o.

Pallas describes it as being seldom higher than a man, but in rocky situations not more than an ell in height: the trunk not more than an inch in diameter, with a brown cinereous bark, and a very hard, tough, compact wood: the twigs have a smooth testaceous or reddish bark. The corymbs commonly four-flowered, but frequently from five to seven-flowered, and sometimes having three, two, and even one flower, with a leaf or two at the base, and an awl-shaped deciduous little bracte to each pedicel. Flower the size of Hawthorn. Calyx bluntly five-toothed. Corolla white or reddish white. Filaments fifteen to twenty, with ovate whitish anthers. Styles two, three or four, the length of the stamens. Berry globular, subumbilicate, green, next orange, then red, and finally black, smooth, fleshy, insipid, or slightly austere. Seeds two, three, or more frequently four.

Native of many parts of Europe and Siberia. Ray observed it on the hills bordering on the Rhine, on mount Saleve and Jura. It was cultivated in 1656, by Mr. John Tradescant, junior. It flowers in april and may^p.]

9. This has a smooth stalk about eight feet high, dividing into many smooth branches. Leaves two inches and a half long, of a thick substance, dark green on their upper side, but downy on their under, standing upon short foot-stalks. The flowers come out of the side of the stalk upon short small branches, five or six growing upon each in a close bunch: the petals are of a purple colour, little longer than the

^c Mill. fig. ^f Du Roi. ^g Hort. kew. ^h Villars.
ⁱ Hort. kew. ^k Linn. ^l Hort. kew.

^m Hort. kew. ⁿ Thunberg. ^o Pollich.
^p Hort. kew.

calyx, which is woolly, with blunt segments. The fruit is large, roundish, and of a fine red colour when ripe.

[Cultivated in 1759, by Mr. Miller. It flowers in april and may^a.]

PROPAGATION AND CULTURE.

All these sorts are hardy enough to thrive in the open air in England, and some of them are very ornamental plants for gardens, where, during the season of their flowering, they will make a fine appearance; and again, in autumn, when their fruit are ripe, they will afford an agreeable variety, and their fruit will be food for the deer and birds; if clumps of each sort are planted in different parts of the garden, nothing can be more ornamental.

The American kinds are usually propagated in the nurseries, by grafting or budding them upon the common White Thorn, but the plants so propagated will never grow to half the size of those which are propagated by seeds; so that those plants should always be chosen which have not been grafted or budded, but are upon their own roots.

But there are many who object to raising the plants from seeds, on account of their seeds not growing the first year, as also from the tediousness of the plant's growth after; but where a person can furnish himself with the fruit in autumn, and take out their seeds soon after they are ripe, putting them into the ground immediately, the plants will come up the following spring; if they are kept clean from weeds, and in very dry weather supplied with water, they will make good progress; but if they are planted in the places where they are to remain, after two years growth from seeds, they will succeed much better than when the plants are of greater age; the ground should be well trenched, and cleansed from the roots of all bad weeds. The best time to transplant them is in autumn, when their leaves fall off; they should be constantly kept clean from weeds, and if the ground between the plants is dug every winter, it will greatly encourage the growth of the plants, so that if they are cleaned three or four times in the summer, it will be sufficient.

All the sorts of *Mespilus* and *Cratægus* will take, by budding or grafting upon each other; they will also take upon the Quince, or Pear stocks, and both these will take upon the Medlars; so that these have great affinity with each other.

MESPILUS. See *Cratægus* and *Ebretia*.

[MESSERSCHMIDIA. (So named by Linneus from Daniel Gottlieb Messerschmid, who travelled into Siberia.)

Lin. gen. Reich. n. 204. Schreb. 252. Gærtn. t. 109. Juss. 129.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*. *Borraginæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted; segments sublinear: erect, permanent.

COR. one-petalled, funnel-form. Tube cylindric, rude, longer than the calyx, globular at the base. Border five-cleft, plaited, membranaceous at the sides. Throat naked.

STAM. Filaments five, minute, in the lower part of the tube. Anthers awl-shaped, upright, within the middle of the tube.

PIST. Germ subovate. Style cylindric, very short, permanent. Stigma capitate, ovate.

PER. Berry dry, suberous, cylindric-rounded with a retuse umbilicus, surrounded with four blunt teeth, bipartile.

SEEDS two within each part of the pericarp, oblong, bony, incurved, outwardly rounded, inwardly angular.

ESSENTIAL CHARACTER.

Cor. funnel-form with a naked throat. Berry suberous, bipartile, each two-seeded.

SPECIES.

1. *Messerschmidia fruticosa*.

Lin. syst. 190. suppl. 132. L'Herit. stirp. nov. 2. t. 1.

Stem shrubby, leaves petioled, corollas salver-shaped.

^a Hort. kew.

2. *Messerschmidia Arguzia*.

Lin. syst. 190. suppl. 132. mant. 42. 334. hort. upl. 36. Reich. 1. 404.

Tournefortia fibrifica. Lin. spec. 202. Aët. petrop. 1763. 315. t. 11.

Arguzia montana. Amm. ruth. 38.

Stem herbaceous, leaves sessile, corollas funnel-shaped.

DESCRIPTIONS, &c.

1. This is a tall, rugged, rough-haired, branching shrub, with the branches paniced at the top. Leaves alternate, on long petioles, lanceolate, entire, veined, rough-haired. Spikes compound, directed one way, dichotomous, at the ends of the twigs on the top of the stem. Calyx very short. Corolla small, globular, inflated towards the border, which is small and flat. Berry depressed, rounded, surrounded by four teeth prominent in a circle, longitudinally two-parted. It has the corolla of *Tournefortia* with the fruit of *Messerschmidia*. It differs from the next species, which it otherwise much resembles, in its shrubby stem, petioled leaves, shorter calyx, and smaller salver-shaped corollas with a flat border^a.

Native of the Canary islands, where it was found by Masson. Introduced in 1779. It flowers from June to October^a.

2. Root creeping. Stem upright, a span high. Branches alternate. Leaves alternate, ovate-oblong, veined, tomentose, hoary. Corymbs or bunches of flowers often two. Calyx shorter than the tube of the corolla. Corolla white, larger than in the preceding, with the throat naked and pervious, the border plaited, and the sides membranaceous^a. Berry juiceless, globular, umbilicate, obscurely striated, brown-ash-coloured, having two stones in it, bipartile: rind thick, fungous-coriaceous: stones roundish, convex on one side and longitudinally striated, flattish on the other, three-celled; the two lateral cells having seeds, the middle one barren, half open at top. Seeds four, oblong, slightly attenuated upwards, so obscurely angular as to be in a manner round^a.

Native of Siberia. Introduced in 1780, by Peter Simon Pallas, M. D.^a

MESUA. (So named by Linneus, from John Mesue, a physician of Damascus, who lived in the eighth century^a.)

Lin. gen. n. 665. Reich. n. 915. Schreb. n. 1146. Juss. 258.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Guttiferæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved: leaflets ovate, concave, blunt, permanent, the two outer smaller ones opposite.

COR. Petals four, retuse, waved.

STAM. Filaments numerous, capillary, the length of the corolla, connate at the base into a pitcher. Anthers ovate.

PIST. Germ roundish. Style cylindric. Stigma thickish, concave.

PER. Nut roundish, acuminate, with four longitudinal raised futures.

SEED single, roundish.

ESSENTIAL CHARACTER.

Cal. simple, four-leaved. Cor. four-petalled, Pist. one. Nut four-cornered, one-seeded.

SPECIES.

1. *Mesua ferrea*.

Lin. spec. 734. syst. 632. Reich. 3. 369. fl. zeyl. n. 203.

Nagassarium. Rumph. amb. 7. p. 3. t. 2.

Naghas. Herm. zeyl. 7.

Calophyllum nagassarium. Burm. ind. 121.

Balutta-tsiampacam f. *Castanea rosea indica*. Rheed. mal. 3. 63. t. 53. Raii hist. 1680.

DESCRIPTION, &c.

This is a tree with opposite lanceolate leaves, five times as long as the internodes, quite entire, the upper surface smooth and green, the under glaucous and smooth; on very short petioles. Flower in each axil of the leaves sessile. Petals very large, rounded.

^a Linn. suppl.

^a Hort. kew.

^a Linn. mant. and suppl.

^a Gærtner.

^a Hort. Kew.

Germ

Germ within the calyx. Style thick, the length of the stamens. Stigma capitate^a.

Native of the East Indies. Rheede says, it is much cultivated in Malabar, for the beauty of the flowers, which come out there in July and August; and that it bears fruit in six years from the nut, continuing frequently to bear during three centuries.

He describes it as a very large tree, spreading like the Lime, with flowers the size and shape of the wild Rose or Sweet Briar, but with only four white petals. Fruit, when it begins to ripen smooth and greenish, but rufous and wrinkled when ripe, with a rind like that of the Chestnut, and three or four kernels within, the shape and size, substance and taste of Chestnuts.

METEL. See *Datura*.]

METHONICA. See *Gloriosa*.

[METOPIUM. See *Rhus*.

METROSIDĒROS. (From *μῆτρα medulla*, and *σίδηρος ferrum*; the heart of these trees having the hardness or colour of iron.)

Banks Mss. *Gärtn. frucht.* t. 34. f. 2. Smith in Linn. *transf.* 3. 266. *Leptospermum*. Forst. *gen.* t. 36. f. a—e & m—t.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Myrti*.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-cleft, half superior.

COR. Petals five, concave, nearly sessile, deciduous.

STAM. very long, standing out, free or separate. Anthers incumbent.

PIST. Germ turbinate, fastened to the bottom of the calyx. Style filiform, erect. Stigma simple, small, scarcely dilated.

PER. Capsule three-celled (sometimes four-celled), three-valved (sometimes four-valved), partly covered with the belly of the calyx.

SEEDS very numerous (when unripe) linear-chaffy; when ripe, very few, rounded or angular.

ESSENTIAL CHARACTER.

Cal. five-cleft, half-superior. Pet. five. Stam. very long, standing out. Stigma simple. Caps. three-celled.

SPECIES.

1. *Metrosideros hispida*.

Smith in Linn. *transf.* 3. 267.

Leaves opposite cordate at the base embracing, branchlets peduncles and calyxes hispid.

2. *Metrosideros floribunda*.

Smith in Linn. *transf.* 3. 267.

Leaves opposite petioled ovate-lanceolate, panicle brachiate, pedicels umbelled.

3. *Metrosideros costata*.

Smith in Linn. *transf.* 3. 267. *Gärtn. frucht.* 1. 171.

Leaves opposite petioled linear-lanceolate acuminate oblique, panicle brachiate-decompound, pedicels subumbelled.

4. *Metrosideros diffusa*.

Smith in Linn. *transf.* 3. 268.

Melaleuca diffusa. Forst. *prodr.* 37.

M. lucida. Linn. *suppl.* 342.

Leaves opposite ovate veined smooth on both sides, panicles axillary or terminating, pedicels opposite.

5. *Metrosideros villosa*.

Smith in Linn. *transf.* 3. 268.

M. spectabilis. *Gärtn. frucht.* 1. 172?

Melaleuca villosa. Linn. *suppl.* 342.

M. æstuosa. Forst. *prodr.* 38.

Leptospermum collinum. Forst. *gen.* n. 2.

Leaves opposite ovate veined pubescent underneath, thyrses axillary or terminating opposite villose, flowers sessile clustered.

6. *Metrosideros florida*.

Smith in Linn. *transf.* 3. 269.

Melaleuca florida. Forst. *prodr.* 37.

Leptospermum scandens. Forst. *gen.* n. 1.

Leaves opposite obovate-oblong veined smooth, thyrses terminating, calyxes turbinate naked.

^a Linn. *zeyl.*

7. *Metrosideros glomulifera*.

Smith in Linn. *transf.* 3. 269.

Leaves opposite ovate netted-veined pubescent underneath, heads lateral peduncled, both they and the bractes tomentose.

8. *Metrosideros angustifolia*.

Smith in Linn. *transf.* 3. 270.

Myrtus angustifolia. Linn. *mant.* 74.

Leaves opposite linear-lanceolate naked, peduncles axillary umbelled, bractes lanceolate smooth deciduous.

9. *Metrosideros ciliata*.

Smith in Linn. *transf.* 3. 271.

Melaleuca ciliata. Forst. *prodr.* 38.

Leptospermum ciliatum. Forst. *gen.* n. 3.

Leaves scattered almost opposite elliptic blunt coriaceous subciliate at the base, corymbs terminating hairy.

10. *Metrosideros linearis*.

Smith in Linn. *transf.* 3. 271.

Melaleuca linearis. Schrader *sert. hannoveran.* 19. t. 11.

Leaves scattered linear channelled acute becoming rigid, flowers lateral clustered sessile.

11. *Metrosideros lanceolata*.

Smith in Linn. *transf.* 3. 272.

M. citrina. Curt. *magaz.* t. 260.

Leaves alternate lanceolate mucronate, flowers lateral clustered sessile pubescent.

12. *Metrosideros faligna*.

Smith in Linn. *transf.* 3. 272.

Leaves alternate lanceolate attenuated to both ends mucronate, flowers lateral clustered sessile smooth.

13. *Metrosideros capitata*.

Smith in Linn. *transf.* 3. 273.

Leaves scattered obovate mucronulate, heads terminating, calyxes and branchlets hairy.

DESCRIPTIONS, &c.

1. This is a very magnificent species, easily distinguished by its broad sessile leaves, and hispid branches. Flowers yellow, with wide-spreading stamens, growing in umbels, many of which unite to form a large terminating corymb, rough with red-brown hairs, like those of *Robinia hispida*. Young plants are to be seen in most collections about London; but it has not yet flowered.

2. Flowers smaller, appearing to be white. Panicles formed of several branches crossing each other, and terminating in little umbels. Sometimes the flower-stalks are hispid, sometimes smooth.

3. This may be known from the preceding by its narrower, longer, more rigid and shining, oblique or falcated leaves. The panicle is more irregularly and repeatedly branched; its utmost ramifications but imperfectly umbellate. The flowers are much larger, yellowish white^b. Calyx ovate-globular, with from five to twelve ribs, very shortly five-toothed, suberous, thick, aromatic. Seed, when ripe, roundish plano-convex, with a short crest at the top and on the back, dun-coloured, smooth^c.

These three species were found at Port Jackson in New South Wales, by Mr. White^d.

4. Leaves three-nerved on the lower surface, the nerves vanishing before they come to the tip. Flowers yellow^e.

It was gathered in New Zealand by Messrs. Forster, and communicated to Linneus by Dr. Sparrman.

The stem is much branched. Young branches and backs of the younger leaves downy; flower-stalks, bractes and calyx very much so. Flowers red, very ornamental, standing at the end of each branch in a pair of small dense panicles or thyrses, which are truly axillary and opposite, though the branch, terminating abruptly, is not protruded beyond them^f.

It resembles the preceding very much, but that is quite smooth and has yellow flowers: this has the stem, petioles, panicle, peduncles and calyx white with down, the flowers red, and the stamens much longer^g.—It is a native of Otaheite.

6. The branches are long, each terminated by a thyrses of large yellowish flowers, with the calyx re-

^b Smith.

^c Gärtn.

^d Smith.

^e Linn. *suppl.*

^f Smith.

^g Linn. *suppl.*

markably

markedly lengthened out, almost as in the Clove. Leaves smooth. Flower-stalks and calyx scarce perceptibly silky, with close-pressed hairs.—Native of New Zealand.

7. This is a tree, with round opposite branches. Leaves on shortish downy foot-stalks, entire, a little waved. Flowers greenish yellow, clustered in little globular heads, which stand on simple downy foot-stalks about an inch long, growing laterally, mostly opposite to each other, just above the insertion of the uppermost leaf-stalks, and contrary to them. Each head of flowers is accompanied by a pair of oblong downy bractes; the calyx is also downy.

This species is but slightly aromatic. Gathered near Port Jackson by Mr. David Burton.

8. Linneus first took this to be a *Myrtus*, and afterwards determined it to be a *Leptospermum*; but the stamens being distinct, thrice as long as the petals, and twice as long as the style, which has a perfectly simple stigma, and the calycine teeth being deciduous, it is a true *Metrosideros*.

The ripe capsules precisely resemble those in Gærtner's figure of *Melaleuca suaveolens*, but that is, in other respects, a very different plant.

Burman's synonym, quoted by Linneus, can hardly belong to this plant, unless his description is very bad; for he calls the fruit a black berry, with one cell and a single seed.

The dried leaves of this species are tinged with the same metallic green that is observable in those of *Metrosideros hispida*, and some other New Holland plants of this order. It is a native of the Cape of Good Hope.

9. Leaves remarkably rigid, thick and concave, their margin reflexed, as in *Celastrus lucidus*, but less shining, whitish and reticulated with transverse veins beneath, and marked with a straight central nerve. The base of most of them is ciliated with long spreading hairs, like those on the young branches, flower-stalks, calyx and even petals. The flowers are large, handsome, deep-red, but few together, in a terminating corymb or umbel. Fruit large, depressed, projecting in three lobes much above the rim of the calyx. Gathered by Messrs. Forster in New South Wales.

10. Leaves very long, narrow, somewhat pungent, rigid and harsh. There is a variety with semicylindrical leaves, more rough on the back than the more common kind. The flowers surround the branches in a long cylindrical sessile cluster. Their petals are green, often slightly downy. Stamens very long, crimson. Capsules round, depressed, when old crowding each other into an angular form. This has flowered at Hanover, but not here, though it is not uncommon in our collections.

11. This is a beautiful shrub. The corolla very nearly resembles that of the preceding. It first flowered several years ago at the Marchioness of Rockingham's.

12. This is distinguished from the preceding by its tapering less rigid leaves, smaller yellowish flowers, the calyx and petals of which are quite smooth in all their parts, neither downy nor fringed.

Dr. Smith suspected that this might be *M. viminalis* of Gærtner; but the original specimens of that species in Sir Joseph Banks's herbarium are very different, having linear-lanceolate leaves not tapering at the ends, and downy flowers. The plant figured by Rumphius in t. 17. f. 2. of his second volume has some resemblance to this, but he describes it as very aromatic, which ours is not.

13. This differs widely in appearance from all the other species. The leaves are scarcely one-third of an inch in length, very slightly veined, obsoletely crenate, or rather rough in the margin with minute points. Flower-stalks short, forming little terminating heads. Calyx tubular, very hairy, with foliaceous permanent teeth. Petals small, purple. Stamens of the same colour, and about thrice as long as the corolla. Germ very small, in the bottom of the calyx. Style equal to the stamens. Stigma a little enlarged, but not capitate. The immature fruit has the rudiments of three small valves. The form of the flower is much like

that of *Lythrum*. The leaves are dotted, but scarcely aromatic.

This and the three preceding were found in New South Wales by Mr. White^b.

There are several other species of this genus, but they are not yet sufficiently ascertained. *M. gummifera* of Gærtner is an *Eucalyptus*. *M. armillaris* and *nodosa* belong to the genus *Melaleuca*.]

MEUM. See *Albamanta*.

MEXOCOTL. See *Bromelia*.

MEZEREUM and MEZERION. See *Daphne*.

[MICHAUXIA. (In memory of Andrew Michaux, Botanist to the King of France, who travelled into Syria, Persia and North America, and discovered this genus of plants.)

Lin. gen. Schreb. n. 1769. p. 840. L'Herit. monogr.

Mindium. Juss. gen. 164.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Campanaceæ*. *Campanulaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, sixteen-parted: segments lanceolate, unequal, the alternate ones revolved.

COR. one-petalled, wheel-shaped, eight-parted, larger than the calyx: segments linear-lanceolate, spreading very much, revolute at the tip.

Nectary eight-valved, stamiferous.

STAM. Filaments eight, awl-shaped, permanent. Anthers linear, very long, pressed close to the style.

PIST. Germ inferior, turbinate. Style columnar, permanent. Stigma eight-parted: segments awl-shaped, revolute.

PER. Capsule turbinate, truncated, eight-celled, valveless: cells rhomboid.

SEEDS very numerous, small, oblong, inserted into the receptacles.

ESSENTIAL CHARACTER.

Cal. sixteen-parted. Cor. wheel-shaped, eight-parted. Nect. eight-valved, stamiferous. Caps. eight-celled, many-seeded.

SPECIES.

1. *Michauxia campanuloides*. Rough-leaved *Michauxia*. L'Herit. monogr. Ait. hort. kew. 2. 8. Curt. magaz. 219.

Mindium. Dioscor. l. 4. c. 16.

Medium *Dioscoridis* vel *Mindium Rhazis*. Rauw. itin. 284. t. 35. Dalech. hist. app. 33. Baub. hist. 2. 805. Raii hist. 2. 732.

Viola mariana laciniatis foliis peregrina. Baub. pin. 94. *Campanula*. Mor. hist. 2. 460. f. 5. t. 3. f. 31. Gron. orient. 19.

Mindium. Adans. fam. 2. 134. Juss. gen. 164.

DESCRIPTION, &c.

This is a handsome biennial plant, with the habit of a *Campanula*. Stem simple, panicled when in flower, upright, herbaceous, rough-haired, green, two feet high, the thickness of the little finger, milky as are also the branches, peduncles and calyxes. Branches alternate, axillary, flowering all over, spreading, reclining at the end. Root-leaves petioled, cordate; the next petioled and runcinate. Stem-leaves half-embracing, lanceolate, acute, widening into ears at the base, irregularly gashed, ferrate, nerved, wrinkled, rough-haired, rigid, waved, ascending at the sides, purple at the edge, four inches long, an inch and half wide. Flowers in a panicle, peduncled, bracted, hanging down, white, four inches in diameter; some slightly tinged with purple on the outside. Peduncles alternate, one-flowered, reflex, cylindrical, purplish. Bracte under the peduncle, half-embracing, cordate, acute, ferrate, rough-haired, spreading; and besides this a small bracte on the peduncle itself.

It differs from *Campanula*, in the number of parts only, as *Chlora* does from *Gentiana*. Michaux sent the seeds from Aleppo; and Billardiere found it on Lebanonⁱ.

Introduced in 1787, by Mons. L'Heritier. It flowers from June to August^k.

Mr. Curtis informs us, that he saw a plant of this fully blown at Messrs. Grimwoods at Kensington in 1792, nearly six feet high, branched almost to the

^b Smith.

ⁱ L'Heritier.

^k Hort. kew.

bottom, and loaded with a profusion of flowers, bearing some distant resemblance to those of the Passion-flower.

The seeds have not ripened in this country, so that being a biennial plant we cannot keep it at present. It requires the protection of a greenhouse.

MICHELIA. (So named by Linneus, in honour of Pietro Antonio Micheli, of Florence, who published *Nova Plantarum Genera*, Flor. 1729. fol.)

Lin. gen. n. 691. Reich. n. 749. Schreb. n. 943. Gært. t. 137. Juss. 280.

Class. 13. 7. Polyandria Polygynia.

Nat. order of *Coadunatæ*. *Magnoliæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved: leaflets petal-form, oblong, concave, deciduous.

COR. *Petals* fifteen, lanceolate; the outer ones larger.

STAM. *Filaments* very many, awl-shaped, very short. *Anthers* erect, acute.

PIST. *Germ*s numerous, imbricate in a long spike. *Styles* none. *Stigmas* reflex, blunt.

PER. *Berries* (berried capsules) as many, globular, one-celled, half-bivalved, G. dispersed in a raceme.

SEEDS four, (from two to eight, G.) convex on one side, angular on the other.

OBS. It differs from *Magnolia* only in the number of seeds, and in the softness of the pericarp. G.

ESSENTIAL CHARACTER.

Cal. three-leaved. *Pet.* fifteen. *Berries* many four-seeded.

SPECIES.

1. *Michelia Champaca*.

Lin. spec. 756. Juss. 508. Reich. 2. 627. fl. zeyl. n. 144. Osbeck. it. 93. 1. 141. engl. edit.

Tsjampaca. Rumph. amb. 2. 199. t. 67, 68.

Champacam. Rheede. mal. 1. 31. t. 19. Raii hist. 1641. Burm. ind. 124.

Leaves lanceolate.

2. *Michelia Tsjampaca*.

Lin. Juss. 508. Reich. 2. 627. mant. 78. Gært. fruct. 2. 263.

M. euonymoides. Burm. ind. 124.

Tsjampaca sylvestris. Rumph. amb. 2. 202. t. 68.

Leaves lanceolate-ovate.

DESCRIPTIONS, &c.

1. This is a lofty tree, with a trunk as large as a man can compass, covered with a thick ash-coloured bark. Leaves a span or more in length, and four or five inches in width, contracted into an oblong narrow point, of a hard texture, flat and smooth, dusky green above, brighter green beneath, on petioles an inch in length. Flowers on the extreme twigs, axillary, on thick, upright peduncles an inch and half in length, and having a very fragrant smell. Petals narrow in three rows; in the outer row eight, three times as broad as those in the middle row, which are also eight; towards the top they are more round and sometimes pointed or cusped, but less so than in the middle row: in the inner row they are small, short, very much-cusped towards the top, pale yellow. Fruit oblong spheroidal, with a thickish rind, first green, then pale whitish yellow, having a very sharp taste, and not a very pleasant smell^a. Calyx none. Corolla double. Petals fourteen; the six outer greater. Filaments surrounding the pistil: anthers longer than the filaments. Styles, &c. as in *Nymphæa*. The flowers are offered as an agreeable present^b.

Native of the East Indies.

2. Flowers whitish or pale yellow, not smelling so sweet. Leaves broader, petioled, and even when they are young covered with a silky pubescence, like those of the Willow^c. Capsules several, in a strobile-shaped spike compressed to an edge towards the axils, but on the outside swelling into a convex back, produced at top into a short point continued below into the peduncle: at first fleshy, but afterwards somewhat coriaceous, soft, orange-rust-coloured, opening on the outer side. Seeds one or two, ovate, turgid-lens-shaped, berried, red^d.

Native of the East Indies.

^a Rheede. ^b Osbeck. ^c Linn. ^d Gærtner.

MICHELIA. See *Gmelina* and *Pontederia*.

MICROCOS. See *Grewia*.

MICROLEUCONYMPHÆA. See *Hydrocharis*.]

MICRÖPUS. (From *μικρος* little, and *πους*, a foot.)

Lin. gen. n. 996. Reich. n. 1080. Schreb. n. 1346.

Gært. t. 164. Juss. 185. Gnaphalodes. Tournef.

439.

Class. 19. 4. Syngenesia Polygamia Neceffaria.

Nat. order of *Compositæ Nucamentaceæ*. *Corymbifera*; Juss.

GENERIC CHARACTER:

CAL. *Common inferior* five-leaved: leaflets thin; small, obsolete. *Interior* very large, five-leaved: leaflets loose, distinct, helmet-shaped, compressed, converging longitudinally by the margin.

COR. *Compound* of ten hermaphrodites in the disk, and five females in the circuit.

Proper of the hermaphrodite one-petalled; funnel-form, five-toothed, erect: of the female none.

STAM. in the hermaphrodites. *Filaments* five, bristle-shaped, very short. *Anthers* cylindric, tubular, the length of the corollet.

PIST. in the hermaphrodites. *Germ* obsolete. *Style* filiform, longer than the stamens. *Stigma* obsolete.

In the females. *Germ* obovate, compressed, within each scale of the common inner calyx. *Style* from the inner side of the germ, bristle-shaped, bent in towards the hermaphrodites; the length of the calyx. *Stigma* two-parted, slender, acuminate.

PER. none. *Calyx* unchanged, but the inner one larger, indurated.

SEEDS of the hermaphrodites none: of the females solitary, obovate, included in the proper leaflet of the inner calyx. *Down* none.

REC. with sharp very small chaffs separating the seeds of the females, but not the florets of the disk.

ESSENTIAL CHARACTER.

Cal. calyced. *Ray* of the corolla none. *Female florets* wrapped up in the calycine scales. *Down* none. *Recept.* chaffy.

SPECIES.

1. *Micropus supinus*. *Trailing Micropus*.

Lin. spec. 1313. Juss. 796. Reich 3. 942. hort. upf. 275. Gouan illustr. 74. Gært. fruct. 2. 389.

Cavan. hisp. 22 n. 37. t. 35.

Filago supina. Lamarck. flor. franc. 53. n. ix.

Gnaphalodes lusitanica. Tournef. inst. 439.

Pseudo-gnaphalium supinum, femine echinato. Mor. hist. 3. 93.

Gnaphalium supinum, echinato femine. Pluk. phyt. t. 187. f. 6.

Stem procumbent, leaves in pairs.

[2. *Micropus erectus*.

Lin. spec. 1313. Juss. 796. Reich. 3. 942. amoen. 3. 421. Loefl. hisp. 166. t. 1. f. 3. hort. cliff. 402.

(*Gnaphalium*). Gært. fruct. 2. 389.

Gnaphalium minus repens. Magn. monsp. 111.

G. minus latioribus foliis. Bauh. pin. 263.

G. Plateau 3. Clus. hist. 1. 229.

Filago f. Impia capitulis lanuginosis. Vaill. par. 52.

Leontopodium verius Dioscoridis. Barr. ic. 296.

Stem upright, calyxes toothless, flowers solitary.]

DESCRIPTIONS, &c.

1. This is an annual plant. The roots send out several trailing stalks, six or eight inches long, [divaricating, often branched, covered with a white nap, as is the whole plant. Leaves in pairs, generally opposite or nearly so, wedge-ovate, connate, plaited, three-nerved. Flowers axillary, sessile, from the base to the very top of the stem] in small clusters, very small, white. [Common calyx simple, (the inner one being called the corolla) composed of five or more scarious, pellucid segments, so small as to be scarcely visible to the naked eye. Florets hermaphrodites six, and females four. Corolla of the former green, with a purple five-parted border: of the latter longer, one-leaved, plaited, with the border pressed close on both sides, gaping at the tip, where the stigma issues forth, within green and smooth, without tomentose, becoming indurated, and then muricated on the back in two rows. In the hermaphrodites anther purple, germ effete, style simple, stigma club-shaped: in the females;

germ

germ sharp at the base; style longer than the corolla, arched inwards; stigma standing out, bifid, reclining on the hermaphrodite flowers. Receptacle very small, with very small chaffs. Seeds brown, ovate, closely included within the corolla^c.

Gærtner says, that he has searched in vain for the marginal chaffs that Linneus attributes to the receptacle, and suspects that they are nothing else but the minute leaflets with which the calyx is obsoletely calyced at the base.

Native of Portugal, Spain, Italy and the Levant. It was cultivated in 1759, by Mr. Miller, and flowers from June to September^f. In Spain it flowers in May.

2. This also is annual. The leaflets of the calyx are from seven to nine, compressed, woolly unarmed. Receptacle awl-shaped, separated into roundish tubercles, naked. Seeds obovate, bald, inclosed within the calycine leaflets^g.

Native of Spain, France, and the Levant.]

PROPAGATION AND CULTURE.

1. This is sometimes preserved in gardens for the beauty of its silvery leaves. If the seeds be sown in autumn, or permitted to scatter, the plants will come up in the spring, and require only to be kept clean from weeds, and thinned where they are too close. When the seeds are sown in the spring, they seldom grow the first year.

[MICROTEA. (From *μικρός*, smallness, so called from the minuteness of the parts of fructification.)

Lin. gen. Schreb. n. 1739. p. 797. Swartz prodr. 53. descr. t. 12.

Class. 5. 2. Pentandria Digynia.
Nat. order of Oleraceæ. Atriplices, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets oblong, permanent.

COR. none.

STAM. Filaments five, filiform, the length of the calyx, inserted into the receptacle. Anthers subglobular, twin.

PIST. Germ superior, subglobular, echinated. Styles two, very short, divaricating. Stigmas simple, acute.

PER. Drupe dry, coriaceous, thin, echinated.

SEED. Nut roundish, smooth, with a single kernel.

ESSENTIAL CHARACTER.

Cal. five-leaved, spreading. Cor. none. Drupe dry, echinated.

SPECIES.

1. Microtea debilis.

Swartz prodr. 53. descr. 542. t. 12.

Schollera. Ait. hagn. 2. 210.

DESCRIPTION, &c.

It is an annual, native of the island of St. Christopher's in the West Indies^h. Also of Granada, St. Eustatia, Guadaloupe, &c. Swartz thus describes it.—Plant smooth, a foot high. Stem herbaceous, branched, diffused, almost upright, striated, smooth. Branches irregular, diverging, weak, spreading. Leaves alternate, petioled, ovate-lanceolate, acuminate, entire, nerved, veinless, smooth, somewhat succulent, like those of Chenopodium, deep green. Peduncles terminating or lateral, opposite to the leaves, distachyous. Racemes filiform, almost upright: flowers approximating, mostly directed one way, on short pedicels, very minute, greenish white. Bractes lanceolate, hyaline at the base of the pedicels. Fruit the size of Mustard seed, having very minute cells on the surface, echinate at the edge. Nut black, shining. Or it may be considered as a seed covered with a coriaceous echinate or muricate skinⁱ.

MIEGIA. (J. Rud. Mieg published Theses Medicæ Basil. 1721, 4°.—And Achilles Mieg, published Specimen observationum Anatomicarum atque Botanicarum, Basil. 1751, 4°. I suppose this genus is named from one or both of them.)

Lin. gen. Schreb. n. 1713. p. 786.

Remirea. Aubl. guian. 44. t. 16.

Class. 3. 1. Triandria Monogynia.

^c Cavanilles.

^f Hort. kew.

^g Loeß. & Gärtn.

^h Swartz prodr.

ⁱ Swartz descr.

GENERIC CHARACTER.

CAL. Glume one-flowered, two-valved: valves ovate, concave, nerved: upper valve shorter, blunt; lower a little longer, sharpish.

COR. two-valved. Valves ventricose, nerved: outer ovate, blunt, within and longer than the calycine valve; inner oblong, compressed at the tip, sharpish, the edges convoluted, longer than the outer, within the upper calycine valve.

Nectary one-leaved, ovate, gibbous at the back, somewhat compressed, acute, even, thick, suberous, thinner at the tip and edges, shorter than the corolla, opposite to the larger corolline glume, involving the germ.

STAM. Filaments three, capillary, longer than the corolla. Anthers oblong, acute.

PIST. Germ oblong, subtriquetrous, within the nectary. Style simple, capillary, longer than the corolla. Stigmas two capillary.

PER. none.

SEED single, oblong, triquetrous-rounded, rolled up in the nectary, inclosed within the permanent calyx and corolla.

OBS. Aublet gives a character of his Remirea very different from this, which is from a dried specimen by Schreber. The nectary is singular in this plant.

ESSENTIAL CHARACTER.

Cal. one-flowered, and Cor. two-valved. Nect. one-valved, involving the germ. Seed triquetrous-rounded, included within the calyx, corolla and nectary.

SPECIES.

1. Miegia maritima.

Lin. spec. ed. Willd. 311.

Remirea maritima. Aubl. guian. 1. 44. t. 16.

DESCRIPTION, &c.

Root creeping. Culms half a foot high covered with leaves branched at the top. Leaves lanceolate striated acute rigid. Panicle terminating contracted into an ovate spike.—Native of the sandy coasts of Cayenne and Guiana^k.

MIGNONETTE. See Refeda.

MILFOIL. See Achillea.]

MILIUM (of Pliny. So called of Mille, a thousand; because of the multitude of its grains.)

Lin. gen. n. 79. Reich. n. 85. Schreb. n. 110.

Juss. 29. Tournef. t. 298.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ, or Grasses.

GENERIC CHARACTER.

CAL. Glume one-flowered, two-valved: valves ovate, acuminate, almost equal.

COR. two-valved, less than the calyx: valves ovate, one less.

Nectary two-leaved: leaflets ovate, obtuse, gibbous at the base.

STAM. Filaments three, capillary, very short. Anthers oblong.

PIST. Germ roundish. Styles two, capillary. Stigmas pencil-form.

PER. none.

SEED single, covered, roundish.

ESSENTIAL CHARACTER.

Cal. two-valved, one-flowered: valves almost equal.

Cor. very short. Stigmas pencil-form.

SPECIES.

[1. Milium capense. Cape Millet-Grass.

Lin. syst. 109. Reich. 1. 167. Willd. 1. 358. mant. 185.

Panicle capillary, calyxes acuminate, awn of the corolla terminating curved.

2. Milium punctatum. Dotted Millet-Grass.

Lin. spec. 91. syst. 109. Reich. 1. 167. Willd. 1. 359. amoen. 5. 392. Swartz obs. 37.

Branches of the panicle quite simple, flowers alternate in pairs directed one way.

3. Milium lendigerum. Yellow-spiked Millet-Grass.

Lin. syst. 109. Reich. 1. 167. Willd. 359. Schreb. gram. 14. t. 23. f. 3. Vahl symb. 2. 18. Wither. arr. ed. 3. 122. Villars dauph. 2. 71.

^k Willdenow.

- Agrostis australis*. *Lin. mant.* 30.
A. ventricosa. *Gouan hort.* 39. 547. t. 1.
Alopecurus ventricosus. *Huds. angl.* 28.
Gramen ferotinum arvense, panicula pyramidalis. *Raii hist.* 1288. *Scheuch. gram.* 148.
Gr. loliaceum, panic. ramosa lutea. *Magn. monsp.* 297. *Mor. hist.* 3. 182. f. 8. t. 3. f. 12.
Gr. alopecuro accedens, &c. *Pluk. phyt. t.* 33. f. 6.
Panicula subspiked, flowers awned.
 4. *Milium compressum*. *Compressed Millet-Grass.*
Lin. spec. ed. Willd. 359. *Swartz prodr.* 24.
Spikes generally in threes, florets alternate awnless pressed close to the rachis, culm jointed-compressed in the middle, peduncles very long.
 5. *Milium digitatum*. *Fingered Millet-Grass.*
Lin. spec. ed. Willd. 359. *Swartz prodr.* 24.
Spikes digitated generally in fours subseffile, florets awnless pressed close directed one way, leaves cartilaginous-ferrate at the edge.
 6. *Milium paniceum*. *Panic Millet-Grass.*
Lin. spec. ed. Willd. 360. *Swartz prodr.* 24.
Spikes subdigitate alternate approximating filiform, florets directed one way awnless pressed close three-cornered.]
 7. *Milium effusum*. *Common Millet-Grass.*
Lin. spec. 90. *Reich.* 1. 168. *Willd.* 360. *fl. suec.* n. 61. *hort. cliff.* 27. *Huds. angl.* 29. *Witber. arr. ed.* 3. 122. *Relb. cant. n.* 48. *Curt. lond.* iv. 12. 248. *Hall. belv. n.* 1525. *Pollich pal. n.* 67. *Leers herb. n.* 50. t. 8. f. 7. *Hoffm. germ.* 23. *Roth. germ.* 1. 30. 2. 79. *Krock. filsf. n.* 108. *Villars dauph.* 2. 70.
Gramen sylvaticum, panicula miliacea sparsa. *Baub. pin.* 8. *theatr.* 141. *Scheuch. gram.* 133. *Mor. hist. f.* 8. t. 5. f. 10.
Gr. miliaceum. *Lob. ic.* 3. *Ger. emac.* 6. 1. *Raii syn.* 402.—vulgare. *Park. theat.* 1153.
Flowers panicled dispersed awnless.
 8. *Milium confertum*. *Clustered Millet-Grass.*
Lin. spec. 90. *Reich.* 1. 168. *Willd.* 360. *Hoffm. germ.* 23. *Krock. filsf. n.* 109.
Gr. paniculatum alpinum latifolium, panicula miliacea sparsa. *Scheuch. gram.* 134.
Flowers panicled clustered.
 9. *Milium globosum*. *Globular Millet-Grass.*
Lin. syst. 109. *Willd.* 360. *Thunb. jap.* 49.
Panicula patulous, glumes awnless, pedicels with a yellow belt.
 10. *Milium paradoxum*. *Black-seeded Millet-Grass.*
Lin. spec. 90. *syst.* 109. *Reich.* 1. 169. *Willd.* 360. *Scop. carn. n.* 83. t. 1. *Schreb. gram. t.* 28. f. 2. *Villars dauph.* 2. 71.
Agrostis paradoxa. *Lin. spec.* 1. 62. *Ger. prov.* 81. *Sauv. monsp.* 45.
Gr. avenaceum paniculatum galloprovinciale, aquilegiae semine. *Mor. hist.* 3. 214. *Pluk. phyt. t.* 32. f. 2.
Flowers panicled awned.
 11. *Milium villosum*. *Woolly Millet-Grass.*
Lin. spec. ed. Willd. 361. *Swartz prodr.* 24.
Andropogon insulare. *Lin. spec.* 1480. *Swartz obs.* 383. *Diët. nostr. n.* 21. *Brown. jam.* 365. 2.
 12. *Milium ramosum*. *Branched Millet-Grass.*
Lin. spec. ed. Willd. 361. *Reitz. obs.* 6. 22.
Culm branched, flowers panicled usually in pairs hirsute.

DESCRIPTIONS, &c.

1. Culms a palm in height, even, very tender. Leaves narrow, with hairs scattered over them underneath, and the throat bearded. Panicle dispersed on every side. Pedicels as slender as a very fine hair. Calycine valves ovate, somewhat ventricose, acuminate, equal in length. Seed the length of the calyx. Awn terminating, curved, longer than the flower.

Native of the Cape of Good Hope^a.

2. Culm from one foot to two feet in height, simple, upright, round, jointed, smooth. Leaves broadish, entire, striated, even. Sheaths beardless, closed. Panicle upright, simple; branches alternate, scattered,

upright. Florets pubescent, two together, one generally less than the other, on very short pedicels, one shorter than the other, surrounded at the base with a dusky ring. Rachis angular, filiform, rough-haired. Calycine glumes equal, acuminate, rough-haired on the outside. Corolline glumes smaller, equal, ovate, the outer more shortly awned. Anthers very minute, brown. Stigmas feathered black-purple. Seed oblong, shining.

Native of Jamaica, in moist meadows^b.

3. This is a very small annual plant, extremely hard to ascertain, from the difficulty of seeing its characters. The spikes are concealed by small awns, through which very small seeds may be distinguished, of the same form and colour with those of *Panicum viride*, but only one-fourth or one-fifth of the size^c. Panicle linear-lanceolate, glossy, from an inch and half to three inches in length. Calyx belling and colourless at the base, finely ferrulated at the edges, the longer valve awn-pointed. Larger valve of the corolla terminating in four little teeth, the smaller valve in two; much smaller than the calyx^d: scarcely perceptible indeed without a glass^e.

According to Dr. Stokes, in its structure this grass is an *Avena*, and totally different from *Milium effusum*. Mr. Hudson made it an *Alopecurus*, but it cannot properly be considered as of that genus, because the corolla is two-valved. Linneus and Gouan have made it an *Agrostis*, and according to Withering, if it must be removed from this genus, it would best accord with that; but the remarkable swell at the base of the calyx, rendered still more remarkable by its being thin, colourless and transparent in that part, seems sufficient to establish it in its present situation.

Native of Portugal, the South of France and England. Isle of Shepey, Gillingham in Norfolk, near Weymouth.

4. This is a perennial grass, native of the West Indies.

5. Native of Jamaica. Annual.

6. Native of Jamaica^f.

7. Root perennial and creeping. Culms slender, three or four feet high, with about four joints. Leaves from four to seven inches or a foot in length, smooth, thin and weak, very finely striated their whole length, rough if drawn backward through the hand, three or four lines in breadth, terminating gradually in a fine point. Sheaths striated, smooth, at the inner base of the leaf terminating in a membrane which is often jagged. Panicles from four inches in length to a span, a foot or more, nearly upright, spreading and loose; the branches of it very fine and crooked^g. It appears to be much scattered from the various lengths of the pedicels, which grow in whorls, and give this grass an airy, light and elegant appearance^h. The filaments are longer than the corolla: the anthers first oblong, then forked at each end. Germ smooth. Styles turned back, feathered and white. It is distinguished from the Panics, to which it has the greatest natural affinity, by having a calyx of two valves onlyⁱ. The corolla is like that of *Phalaris arundinacea*, but it has no hairs at the base, and is not keeled; it is just shorter than the calyx^k. The height it usually attains, the situation in which it grows, and the delicacy of its panicle, distinguish this from all our other Grasses^l.

Native of most parts of Europe, in woods. It flowers in May.

8. This resembles the preceding very much, inso-much that Haller regards it only as a variety. The culm is from two to three ells in height, smooth and round. Leaves flat, smooth, six or seven lines in breadth, from six inches to a foot in length, soft, rough at the edges; sheaths striated, smooth. Panicle scattered, a foot or eighteen inches long and more, with more and closer flowers. Glumes of the calyx green, with smooth white edges; of the corolla whitish^m.

Native of Germany and Switzerland, in woods.

^b Swartz.

^c Villars.

^d Withering.

^e Woodward.

^f Swartz.

^g Curtis.

^h Withering.

ⁱ Curtis.

^k Stokes.

^l Curtis.

^m Krock.

^a Linn. mant.

9. Culm simple, upright, a foot high or more. Leaves lanceolate, striated, rugged, entire, margined, patulous, scarcely a finger's length. Sheaths ciliate at the throat and along the edges. Panicle patulous, subovate. Peduncles and pedicels capillary, flexuose, with a yellow belt below the tip. Calyxes ovate, blunt, awnless, smooth, brownish-green.—Native of Japan^a.

10. This species resembles the Reed. The root is annual. The culms a foot and half high. Panicle white, large and open. Calyx loose, whitish, nerved and compressed. Valves of the corolla even and shining, one of them ending in a long awn. Seed black, naked, shining, ovate^o. The culms are three or four feet high, and the root perennial, according to Villars.

Native of the South of France and Carniola. Introduced in 1771, by Mons. Richard. It flowers in July^p.

11. For the description see *Andropogon insulare*. It is an annual Grass, and a native of Jamaica. Browne affirms, that the roots and leaves pounded and applied externally, cure sores and ulcers of all sorts with more certainty than most other things used for that purpose. It is a strong detersive and agglutinant; and doubtless, would make an excellent ingredient in vulnerary apozems and infusions.

β. Bobartia or Round-headed Grass of Browne is a variety of this Milium. He only says that it grows very rank, and is easily distinguished by its large foliated heads.

12. Culms leafy, compressed, decumbent, with pubescent joints. Leaves linear, narrow, quite smooth, as are also the joints. Panicles several, on long peduncles, from the upper sheaths; each a span long, stiff, simply branched. Pedicels commonly two-flowered, villose, thickened, with a suborbicular receptacle long-haired at the edge. Beneath each flower a blackish ring. Lower flower subsessile. The lower peduncles are frequently twice two-flowered. Calyx lanceolate, acute, one-flowered: valves equal, hairy on the outside. Corolla almost cartilaginous, smooth, shining, shorter than the calyx: outer valve convex, with a stiff point at the top concealed within the calyx, and the edges slightly bent in; the inner awnless, flat, with the edges bent in and converging at the base. Anthers bifid at both ends. Germ minute. Styles white, almost the length of the corolla. Stigmas long, feathered, brown.

If the pencilled stigma be the essential character of *Milium*, this Grass should be referred to *Agrostis*: but the habit, calyx concealing the corolla, and the ovate form of the corolla, which is not acuminate although it has a point, all forbid this arrangement.

Native of the East Indies^a.

MILIUM. See *Holcus* and *Panicum*.

MILK-PARSLEY. See *Selinum*.

MILK-VETCH. See *Astragalus*.

————— Bastard. See *Phaca*.

MILK-WORT. See *Polygala*.

MILLEFOLIUM AFFINIS. See *Selago*.]

MILLEFOLIUM. See *Achillea*, [*Acrostichum*, *Ceratophyllum*, *Cotula*, *Gnaphalium*, *Hottonia*, *Phellandrium*, *Ranunculus*, *Utricularia*.

MILLEGRANA. See *Herniaria*.]

MILLERIA. (So named by Houstoun in honour of his friend Philip Miller, F. R. S. Author of the *Gardener's Dictionary* and *Kalendar*.)

Lin. gen. n. 985. Reich. n. 1067. Schreb. n. 1332.

Mart. cent. 4. Juss. 187. Gärtn. t. 168.

Class. 19. 4. Syngenesia Polygamia Neceffaria.

Nat. order of *Compositæ Oppositifoliæ*. *Corymbifera*, Juss.

GENERIC CHARACTER.

CAL. Common one-leaved, three-parted, very large, converging into a plane-three-sided form, permanent: the two inner leaflets equal, subovate, acute, flat; the outer twice as large, roundish, acuminate, flat, cordate, more deeply divided from the rest.

COR. Compound half-radiate. Corollets hermaphrodite two, within the smaller calycine leaflets: female one, within the large calycine leaflet.

Proper of the hermaphrodites one-petalled, tubular, erect, five-toothed—of the female ligulate, erect, blunt, concave, emarginate.

STAM. in the hermaphrodites: *Filaments* five, capillary. *Anthers* as many, erect, linear, connected by the middle of their sides, the length of the corolla, acute.

PIST. in the hermaphrodites: *Germ* oblong, very slender. *Style* filiform, the length of the corollet. *Stigmas* two linear, weak, blunt, spreading.—In the females: *Germ* large, three-cornered. *Style* filiform, the length of the corollet. *Stigmas* two, bristle-shaped, reflex, long.

PER. none. *Calyx* converging into a three-cornered figure.

SEEDS in the hermaphrodites none. In the females solitary, narrower towards the base, blunt, oblong, three-sided. *Down* none.

REC. Common very small, naked.

Obs. In *M. quinqueflora* the female corollet is trifid, and there are four hermaphrodite tubular corollets. *Calyx* two-valved. *Style* of the male simple, of the female bifid.—The calyxes have always from seven to nine flowers. Cavanilles.

ESSENTIAL CHARACTER.

Cal. three-valved. Ray of the corolla halved. *Down* none. *Recept.* naked.

SPECIES.

1. *Milleria quinqueflora*. Five-flowered *Milleria*.

Lin. spec. 1301. Juss. 789. Reich. 3. 918. mant. 478. hort. cliff. 425. Gärtn. fruct. 2. 423.

M. dichotoma. Cavan. hisp. 58. n. 90. t. 82.

M. annua erecta, floribus spicatis luteis. Mart. cent. t. 41.

β. *Milleria maculata*. Mill. dict. n. 2.

M. annua ramosior, foliis maculatis profundius serratis. Mart. cent. t. 47. f. 2.

Leaves cordate, peduncles dichotomous, calyxes double.

2. *Milleria biflora*. Two-flowered *Milleria*.

Lin. spec. 1301. Reich. 3. 918. hort. cliff. 425. t. 25. hort. ups. 275. Loeß. it. 239. Gärtn. fruct. 2. 423.

M. annua erecta minor, foliis parietariæ, floribus ex foliorum alis. Mart. cent. t. 47. f. 1.

β. *Milleria triflora*. Three-flowered *Milleria*.

Mill. dict. n. 4.

Leaves ovate, peduncles quite simple, calyxes simple.

[3. *Milleria Contrayerba*.

Cavan. hisp. 2. n. 4. t. 4.

Eupatorioides salicis folio trinervi, flore luteo, vulgo *Contrayerba*. Feuillé, p. 18. t. 14.

Stem grooved, branches opposite decussated, leaves lanceolate serrate, flowers glomerate.

DESCRIPTIONS, &c.

1. Stem two feet high, stiff, smooth, grooved, brachiate. Root annual. Leaves opposite, triple-nerved, netted. Petioles connected at the edge, with a blunt reflex stipule interposed between them. Panicles trifid, dichotomous, with one-flowered pedicels. Calyx two-valved, squeezed or contracted, when past flowering converging into a globe. Male florets yellow; female one, three-parted. Style in the males simple, in the females bifid^r.]

It rises with an herbaceous branching stalk from four to five or six feet high. Leaves about four inches long, and three inches broad towards their base, drawing to a point at the end, slightly serrate, having two veins on each side the midrib, which diverge and join to it near the base, meeting again at the point, which is generally oblique to the foot-stalk, which is about an inch long, and has the leaf running down on each side of it; the leaves are of a light green and hairy. The peduncles come out at the divisions of the stalk; they branch out again by pairs, and terminate in loose spikes of yellow flowers, composed of four or five male or imperfect hermaphrodite florets, which have no seed, and one female ligulate floret, which is succeeded by a single, oblong, angular seed, wrapped in the calyx. It flowers in July and August, and the seeds ripen in autumn.

It was discovered by Dr. William Houstoun at Campeachy in the year 1731.

^a Thunberg.

^o Linn. Villars.

^p Hort. kew.

^r Retzius.

^r Linn. mant.

β. This approaches near to the preceding, but the stalks rise six or seven feet high, branching out very wide. The leaves are seven inches long, and four inches and a half broad towards their base, ending in long acute points; they are more deeply ferrate, and have several large black spots scattered over them; their surface is rougher, and they are of a darker green. The upper leaves are long and lanceolate. The peduncles branch out wider, and the spikes of flowers are shorter. It was discovered by Mr. Robert Millar at Campeachy, in 1734.

2. This is also an annual plant, rising with an herbaceous stalk upwards of two feet high, branching out at a small distance from the root into three or four slender stalks, which are naked almost to the top, where they have two ovate-lanceolate leaves placed opposite, about two inches long, and three quarters of an inch broad near their base, ending in points; they are hairy, stand on naked foot-stalks near an inch long, and are rough; they have three longitudinal veins, and are slightly indented on their edges. The flowers come out at the foot-stalks of the leaves, in small clusters. The common calyx is composed of three orbicular leaves, compressed together. In each of these are two imperfect hermaphrodite florets, which are barren, and one female ligulate fruitful floret, to which succeeds a roundish angular seed, inclosed in the calyx. It was discovered at Campeachy by Dr. Houstoun.

[According to Gærtner, the calyx of this is single and three-valved; one of the valves is very large, subcordate, crenulate, with an oval cavity in the middle; the two other valves are much smaller, lanceolate-ovate, almost equal, closing the cavity of the larger valve in front. There is no vestige of chaffs in the receptacle. Seed oblong, acuminate downwards, subtriquetrous, reddish chestnut-coloured, smooth, bald.—The preceding has a double calyx, the former one-leaved, unequally trifid, the latter augmented with five unequally leaflets, lying on the inner surface of the former: both are permanent, forming an involucre to the seed. The inner leaflets of the calyx may be regarded as chaffs, since they correspond with the number and different sizes of the germs; but since in the first species they are placed on the outside of the receptacle, and the second has them not, it seems better to refer them to the calyx. The outer segments of the calyx, being closely joined when ripe, form an ovate-turbinate, gibbous, coriaceous, black conceptacle, which incloses the seed, and at the same time conceals the five interior leaflets, which are membranaceous, very slender, oblong, unequal, and resembling chaffs. Seed subclavate, striated, curved inwards, brown, bald.]

β. Stem upright, three or four feet high, with ovate-lanceolate leaves the whole length, near four inches long, and almost two broad near the base; they have three longitudinal veins, and towards the top there are two more which diverge from the midrib, but join again at the point; the upper side is of a dark green and smooth, the under side pale green; the edges are indented. Flowers axillary in small clusters, having three imperfect hermaphrodite florets and one female floret in each, on short peduncles. The calyxes are much smaller than those of the preceding. It flowers and seeds here much later than the others. It was discovered by Mr. Robert Millar at Campeachy. [I have placed this as a variety of the second, but I am not able to ascertain whether it is so or not. The number of florets alone in this genus is not sufficient to constitute specific differences.

3. Stem red, grooved, three feet high. Branches somewhat spreading and villose. Leaves opposite, embracing, acutely ferrate, smooth, three-nerved, nerves protuberant on the lower surface, which is glaucous. Flowers terminating, glomerate in corymbs. Common calyx deeply three-parted: the parts ovate, concave, and frequently two bractes at the base. Corolla yellow, villose at bottom: imperfect hermaphrodite florets two to five, female one. In the latter, the germ is larger, oblong-ovate, striated, compressed. Seeds very smooth, longitudinally grooved, oblong-ovate.

It is an annual plant, native of Huanuco in Peru: and flowers at Madrid from september to december.

Jussieu, deceived by dry specimens, made a distinct genus of this plant, under the name of *Flaveria*; but in the living plant the *ligula* of the female floret is apparent.

The calyx is sometimes two-leaved and two-flowered, and then one is male or imperfect hermaphrodite, and one female. Sometimes it is four-parted and many-flowered, having five male, and one female floret. Now and then there is only a single floret, which is owing to the abortion of the rest.

Neither is the calyx very large, nor is it always three-parted. The male florets also exceed two, and in the first species are commonly seven or nine. The generic characters therefore of *Milleria* should be corrected thus:

Calyx simple, many-flowered; two-parted or three-parted. *Corolla* of the hermaphrodite tubular, with a five-parted border—of the female, ligulate, emarginate or trifid. *Seed* striated, solitary in the male; none in the others. *Down* none:.]

PROPAGATION AND CULTURE.

Sow the seeds early in the spring, on a moderate hot-bed. When the plants are about two inches high, transplant each into a separate pot filled with light rich earth. Plunge them into a moderate hot-bed of tanner's bark. Shade them until they have taken root; and water them frequently. Then raise the glasses every day to give them a large share of free air, when the weather is warm, and continue to water them duly, for they are very thirsty plants. In a month they will rise to a considerable height, and should then be shifted into larger pots, and plunged into the bark-bed, where they may have room to grow, especially the first sort. In the middle of july they will begin to flower; and the seeds will be ripe in a month or six weeks after. Gather them when they begin to change of a dark brown colour, for they soon fall off.

These plants will continue flowering till michaelmas, or later, if the season prove favourable: but when the cold of autumn comes on, they soon decay.

[MILLET CYPERUS GRASS. See *Scirpus*.

MILLET GRASS. See *Milium*.

MILLET, Indian. See *Holcus*.

MILT-WASTE. See *Asplenium*.]

MIMOSA. (So named by Tournefort, q. *Mimus mutabilis*, from the shifting or moving quality of the leaves, in some species.—A *Mimo*, *cujus motus imitari videtur*. Tournef.)

Lin. gen. n. 1158. *Reich. n.* 1271. *Schreb. n.* 1595.

Gærtn. t. 155. *Tournef. t.* 375. *Juss.* 346.

Acacia. Tournef. t. 375. *Inga. Plum.* 19.

Class. 23. 1. *Polygamia Monoecia*.

Nat. order of Lomentaceæ. Leguminosæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-toothed, very small.

COR. Petal one, funnel-form, half-five-cleft, small.

STAM. Filaments capillary, very long. *Anthems* incumbent.

PIST. Germ oblong. *Style* filiform, shorter than the stamens. *Stigma* truncated.

PER. Legume long, with several transverse partitions.

SEEDS many, roundish, of various forms.

OBS. Many male flowers fall off; some are female, others hermaphrodite in the different species.

Mimosa of Tournefort have a jointed legume, and the leaves as it were sensitive.

Acacias of Tournefort have a cylindric legume, and the leaves not moving with the touch.

Ingas of Plumier have a fleshy legume.

No part of the fructification is constant in this genus.

Calyx five-toothed, in others trifid.

Corolla one-petalled, in some five-petalled, others have no corolla.

Stamens in some many, in others ten, or five, or four, in some monadelphous, in others castrated.

M I M

Pericarp a Legume, but fleshy in some, membranaceous in others, in some winged, in others jointed, and in some four-valved.
Seeds of different forms.

ESSENTIAL CHARACTER.

HERMAPH. Cal. five-toothed. Cor. five-cleft. Stam. five or more. Pist. one. Legume.
 MALE. Cal. five-toothed. Cor. five-cleft. Stam. five, ten or more.

SPECIES.

* *With simple leaves.*

- [1. *Mimosa verticillata*. *Whorl-leaved Mimosa*.
L'Herit. fert. angl. 30. t. 41. Ait. hort. kew. 3. 438.
Curt. magaz. 110.
Unarmed, leaves whorled linear pungent.
2. *Mimosa simplicifolia*. *Simple-leaved Mimosa*.
Lin. syst. 913. suppl. 436.
M. simplex. Sparrm. in act. upf. vol. 3. p. 195.
M. Mangium. Forst. flor. austral. n. 395.
Mangium montanum. Rumph. amb. 3. t. 81.
Unarmed, arboreous, leaves ovate quite entire nerved blunt, spikes globular peduncled.

** *With leaves simply pinnate.*

3. *Mimosa alba*. *White Mimosa*.
Swartz prodr. 85.
Unarmed, leaves pinnate trijugous, pinnae equal ovate-acuminate, petiole submarginated.
4. *Mimosa Inga*. *Large-leaved Mimosa or Inga Tree*.
Lin. spec. 1498. Reich. 4. 337. hort. cliff. 209.
Swartz obs. 388. Brown. jam. 253. 10.
Inga flore albo fimbriato, fructu dulci. Plum. gen. 13. ic. 25.
Arbor filiquosa brasiliensis, foliis pinnatis costa media membranulis extantibus. Sloan. jam. 2. 58. t. 183. f. 1. Raii hist. 1762. Merian. surin. t. 51.
Unarmed, leaves pinnate five-paired, petiole marginated jointed.
5. *Mimosa laurina*. *Laurel-leaved Mimosa*.
Swartz prodr. 85.
Unarmed, leaves pinnate two-paired, pinnae ovate shining almost equal, petiole linear angular, spikes axillary solitary.]
6. *Mimosa fagifolia*. *Beech-leaved Mimosa*.
Lin. spec. 1498, syst. 913. Reich. 4. 338. Jacqu. amer. 264. t. 164. pict. 128. t. 247. Pluk. phyt. t. 141. f. 2.
Unarmed, leaves pinnate two-paired, petiole marginated.
- [7. *Mimosa nodosa*. *Knobbed Mimosa*.
Lin. spec. 1498. Reich. 4. 338. vir. cliff. 49. hort. cliff. 209. Lour. cochinch. 649.
Phaseolus arboreus tetraphyllos zeylanicus. Pluk. phyt. t. 211. f. 5. Burm. zeyl. 192. ind. 222. Raii suppl. 438.
Unarmed, leaves pinnate two-paired, inner pinnae smaller, petiole linear.
8. *Mimosa pilosa*. *Hairy-leaved Mimosa*.
Lour. cochinch. 650.
Unarmed, leaves pinnate many-paired very hairy, heads terminating, legumes straight slender.

*** *With bigeminate or tergeminate leaves.*

9. *Mimosa bigemina*. *Sharp four-leaved Mimosa*.
Lin. spec. 1499. Reich. 4. 339. fl. zeyl. n. 218. Burm. ind. 222. Vahl symb. 2. 103.
Katou-conna. Rheed. mal. 6. 21. Raii hist. 1746.
Unarmed, leaves bigeminate acuminate.]
10. *Mimosa Unguis cati*. *Blunt four-leaved Mimosa*.
Lin. spec. 1499. syst. 914. Reich. 4. 339. hort. cliff. 207. Swartz obs. 389. Brown. jam. 252. 4. Pluk. phyt. t. 1. f. 6. Plum. ic. 4. (Acacia).
Thorny, leaves bigeminate blunt.
- [11. *Mimosa tergemina*. *Tergeminate Mimosa*.
Lin. spec. 1499. syst. 914. Reich. 4. 339. Jacqu. amer. 265. t. 177. pict. 129. t. 262. f. 69. Plum. spec. 17. ic. 10. f. 1. (Acacia).
Unarmed, leaves tergeminate.]
- **** *Leaves conjugate and at the same time pinnate.*
12. *Mimosa latifolia*. *Broad-leaved Mimosa*.
Lin. spec. 1499. Reich. 4. 340. Plum. spec. 17. ic. 9. (Acacia).

M I M

Unarmed, leaves conjugate, pinnae terminating opposite, lateral ones alternate.

13. *Mimosa purpurea*. *Purple Mimosa or Soldier Wood*.
Lin. spec. 1500. syst. 914. Reich. 4. 340. Plum. ic. 10. f. 2. (Acacia).
Unarmed, leaves conjugate pinnate, inmost pinnae smaller.
- [14. *Mimosa reticulata*. *Netted Mimosa*.
Lin. syst. 914. Reich. 4. 340. mant. 129. Pluk. phyt. t. 123. f. 2. (Acacia).
Spines stipular, leaves conjugate, leaflets six-paired, petioles terminated by a gland and a prickle.]
15. *Mimosa viva*. *Lively Mimosa*.
Lin. spec. 1500. Reich. 4. 341. Brown. jam. 254. 13. Sloan. jam. 2. 58. t. 182. f. 7. Raii suppl. 480.
Unarmed, leaves conjugate pinnate, the partial ones four-paired roundish, stem herbaceous, unarmed.
16. *Mimosa circinalis*. *Spiral Mimosa*.
Lin. spec. 1499. Reich. 4. 341. Plum. spec. 17. ic. 5. Catesb. car. 2. t. 97.
Prickly, leaves conjugate pinnate, pinnae equal, stipules spinose.
- [17. *Mimosa cineraria*. *Ash-coloured Mimosa*.
Lin. spec. 1500. Reich. 4. 341. Brown. jam. 252. 5. Pluk. phyt. t. 2. f. 1. (Acacia).
Prickly, leaves conjugate pinnate, pinnae equal, prickles curved inwards.
18. *Mimosa casta*. *Chaste Mimosa*.
Lin. spec. 1500. Reich. 4. 342. hort. cliff. 208. upf. 145. Boerb. lugdb. 2. 55. Burm. ind. 212. Comm. hort. 1. 55. t. 28. (Æschynomene).
Prickly, leaves conjugate pinnate, partial ones three-paired almost equal.]
19. *Mimosa sensitiva*. *Sensitive Plant*.
Lin. spec. 1501. Reich. 4. 342. Breyn. cent. 31. t. 16. Trew. ebret. t. 95. Raii hist. 980. 4.
Prickly, leaves conjugate pinnate, partial ones two-paired, the inmost very small.
20. *Mimosa pudica*. *Humble Plant*.
Lin. spec. 1501. Reich. 4. 342. hort. cliff. 208. upf. 144. Gært. fruct. 2. 344. Plum. spec. 17. ic. 202. Breyn. cent. 40. t. 18. Comm. hort. 1. 57. t. 29. (Æschynomene). Raii hist. 979. 2. Caaco). Park. theat. 1617. f. 2.
Prickly, leaves subdigitate pinnate, stem hispid.
- ***** *With doubly-pinnate leaves.*
- [21. *Mimosa Entada*. *Ramping Mimosa*.
The same with the next species.
22. *Mimosa scandens*. *Climbing Mimosa*.
Lin. spec. 1501. syst. 915. Reich. 4. 343. Swartz obs. 389. Lour. cochinch. 650.
Gigalobium scandens claviculatum. Brown. jam. 362.
Lens phaseoloides. Burm. zeyl. 139.
Phaseolus maximus perennis, folio decomposito, lobo maximo contorto. Sloan. jam. 68.
Arbor filiquosa, juglandis folio, brasiliana, lobo longissimo, Acaciae filiquae instar distincto. Bauh. pin. 404.
Phaseolus novi orbis, f. Faba purgatrix, latissima cordis figura. Pluk. phyt. t. 211. f. 6.
Faba marina. Rumph. amb. 5. p. 5. t. 4.
Lobus brasiliensis ingens. Clus. exot. 3. 60.
Pusætha. Lin. zeyl. n. 644. Burm. ind. 222.
Perim-kaku-valli. Rheed. mal. 8. 59. t. 32, 33, 34.
Unarmed, leaves conjugate terminated by a tendril, leaflets two-paired.]
23. *Mimosa plena*.
Lin. spec. 1502. Reich. 4. 344. hort. upf. 145. Houst. reliqu. 10. t. 23. Mill. fig. t. 182. f. 2.
Unarmed, leaves bipinnate, spikes five-stamened, the lower ones full or double.
- [24. *Mimosa triquetra*. *Three-sided Mimosa*.
Vahl symb. 3. 102.
M. natans. Lin. suppl. 439. syst. 914.
Unarmed, procumbent, leaves two-paired, heads roundish, stems compressed below three-sided above.
25. *Mimosa natans*. *Floating Mimosa*.
Vahl symb. 3. 102.
Nitti-todda-vaddi. Rheed. mal. 9. 35. t. 20.
Neptunia oleracea. Lour. cochinch. 655.

Leaves

- Leaves bipinnate two-paired or three-paired, leaflets thirteen-paired, heads oblong, stem flexuose rooting at bottom.
26. *Mimosa virgata*. Long-twigged Mimosa.
Lin. spec. 1502. *syft.* 915. *Reich.* 4. 344. *Jacqu. hort.* 1. 34. t. 80.
Acacia virgata. *Gärtn. fruct.* 2. 317. t. 148.
 Unarmed erect angular, leaves bipinnate, spikes ten-stamened, the lower ones castrated males.]
27. *Mimosa punctata*. Spotted-stalked Mimosa.
Lin. spec. 1502. *Reich.* 4. 344. *Brown. jam.* 253. 8.
Comm. hort. 1. 61. t. 31. (*Æschynomene*).
 Unarmed, leaves bipinnate, spikes erect, flowers ten-stamened, lower ones castrated.
28. *Mimosa pernambucana*. Slothful Mimosa.
Lin. spec. 1502. *syft.* 915. *Reich.* 4. 345. *hort. cliff.* 209. *upf.* 145. *Pluk. phyt.* t. 307. f. 3.
Zan. hist. 151. t. 60. ed. 2. 162. t. 123. *Sloan. jam.* 2. 88.
 Unarmed, leaves bipinnate, spikes drooping five-stamened, lower ones castrated, stem decumbent.
29. *Mimosa arborea*. Rough Tree Mimosa.
Lin. spec. 1503. *Reich.* 4. 345. *Swartz obs.* 390.
Thunb. jap. 229. *Lour. cochinch.* 651. *Brown. jam.* 252. 3. *Pluk. phyt.* t. 251. f. 2. *Sloan. jam.* 2. 54. t. 182. f. 1, 2. *Raii suppl.* 477. (*Acacia*).
 Unarmed, leaves bipinnate, pinnas halved, acute, stem arboresous.
- [30. *Mimosa Julibrissin*. Smooth Tree Mimosa.
Scop. insubr. 1. 18. t. 8. *Ait. hort. kew.* 3. 440.
M. arborea. *Forsk. descr.* 177. n. 89. *Gmel. it.* 3. 372. t. 40.
 Arboresecent, leaves bipinnate, pinnules cultriform acuminate, all the flowers perfect.]
31. *Mimosa comosa*.
Swartz prodr. 85.
 Unarmed, arboreous, leaves bipinnate trijugous, pinnas (nine or ten-paired) oval retuse at the base, flowers paniced monadelphous.
32. *Mimosa Lebbeck*.
Lin. spec. 1503. *Reich.* 4. 345. *Hasselqu. in act. upf.* 1750. p. 9. *itin.* 473. *engl. edit.* 249. *Forsk. ægypt.* 177. n. 89. *Pluk. mant.* 2. t. 331. f. 1.
 Unarmed, leaves bipinnate quadrijugous, pinnas oval-oblong, flowers monadelphous in bundles, stem arboreous.
33. *Mimosa odoratissima*. Sweet-scented Mimosa.
Lin. syft. 915. *suppl.* 437. *Vahl symb.* 3. 102. *Pluk. amalb.* t. 351. f. 4.
 Unarmed, leaves bipinnate quadrijugous multijugous, leaflets oblong blunt, panicles rod-like, spikelets globular.
34. *Mimosa speciosa*. Bladder-Senna-leaved Mimosa.
Lin. syft. 915. *Jacqu. collect.* 1. 47. *Ait. hort. kew.* 3. 440.
 Unarmed, leaves bipinnate subquadrijugous, pinnas generally nine-paired, leaflets oblong smooth, a gland above the base of the rib.
35. *Mimosa vaga*.
Lin. spec. 1503. *Reich.* 4. 346. *hort. cliff.* 209. *Lour. cochinch.* 651.
Guabi-pocaca-biba. *Marcgr. bras.* 111. *Pis. bras.* 170.
 Unarmed, leaves bipinnate, outer pinnas larger curved in pubescent.
36. *Mimosa corniculata*.
Lour. cochinch. 651.
 Unarmed, bipinnate, petioles swelling at the base, supported by a little callous horn, leaflets generally eight-paired.
37. *Mimosa villosa*.
Swartz prodr. 85.
 Unarmed, leaves bipinnate generally five-paired, pinnas ovate, both they and the petioles villose, flowers globular many-stamened, stem shrubby.
38. *Mimosa latifolia*. Broad-podded Mimosa.
Lin. spec. 1504. *Reich.* 4. 346. *Plum. spec.* 17. ic. 6. (*Acacia*).
 Unarmed, leaves bipinnate, partial ones five-paired, branchlets flexuose, buds globular.
39. *Mimosa polytachia*.
Lin. syft. 915. *Reich.* 4. 347. *Jacqu. amer.* 265. t. 183. f. 53. *piet.* 129. t. 262. f. 67. *Plum. spec.* 7. ic. 12. (*Acacia*).

- Unarmed, leaves bipinnate, partial ones and pinnas six-paired oblong.
40. *Mimosa mangensis*.
Swartz prodr. 85. *Jacqu. amer.* 267. 5. *piet.* t. 262. f. 70.
 Spines solitary short, leaves bipinnate generally nine-paired, spikes globular axillary solitary.
41. *Mimosa muricata*. Muricated Mimosa.
Lin. spec. 1504. *Reich.* 4. 347. *Plum. spec.* 17. ic. 11.
 Unarmed, leaves bipinnate, partial ones five-paired, proper ones many-paired, stem muricated.
42. *Mimosa juliflora*.
Swartz prodr. 85. *Brown. jam.* 252. 2.
 Spines stipulary in pairs, leaves bipinnate bijugous distinguished by a gland, spikes pendulous, legumes compressed.
43. *Mimosa peregrina*.
Lin. spec. 1504. *Reich.* 4. 347. *hort. cliff.* 209.
 Unarmed, leaves bipinnate, partial ones sixteen-paired, pinnas forty-paired, with a petiolar gland at the base.]
44. *Mimosa glauca*. Glauous Mimosa.
Lin. spec. 1504. *syft.* 916. *Reich.* 4. 347. *Breyn. cent.* 1. 73. *Mill. fig.* 4. t. 4. *Trew. Ehret.* t. 36. *Catesb. car.* 2. t. 42. (*Acacia*).
 Unarmed, leaves bipinnate, partial ones six-paired, pinnas very many, with a gland among the lowest.
- [45. *Mimosa pterocarpa*. Wing-fruited Mimosa.
Vahl symb. 3. 103. *Pluk. mant.* 329. f. 3. (*Acacia*).
M. pterocarpa. *Lamarck encycl.* 1. 1. p. 13.
 Unarmed, leaves bipinnate many-paired, a petiolar gland between the two outmost, spikes axillary, legumes winged.]
46. *Mimosa grandiflora*. Great-flowered Mimosa.
L'Herit. fert. angl. 30. t. 42. *Ait. hort. kew.* 3. 441. *Pluk. amalb.* 3.
 Unarmed, leaves abruptly bipinnate, many-paired, pinnules many-paired, leaflets very distinct, raceme compound terminating.]
47. *Mimosa Houstoni*. Houston's Mimosa.
L'Herit. fert. angl. 30.
M. Houstoniana. *Mill. dict. n.* 16.
Gleditschia inermis. *Lin. spec.* 1509.
Mimosa. *Houst. reliq.* 12. t. 26.
Acacia americana, &c. *Houst. Mss.* 22. *Mill. fig.* 4. t. 5.
 Unarmed, leaves bipinnate abrupt commonly six-paired, pinnules many-paired, leaflets somewhat confluent, raceme compound terminating.]
48. *Mimosa cinerea*. Ash-coloured Mimosa.
Lin. spec. 1505. *syft.* 916. *Reich.* 4. 348. *Fl. zeyl.* n. 215. *Burm. zeyl.* 3. t. 2. *Pluk. phyt.* t. 121. f. 5. (*Acacia*).
 Spines solitary, leaves bipinnate, flowers in spikes.
49. *Mimosa cornigera*. Horned Mimosa or Cuckold Tree.
Lin. spec. 1505. *syft.* ed. 13. 770. ed. 14. 916. *Reich.* 4. 348. *hort. cliff.* 208. *suppl.* 438. *Jacqu. amer.* 266. *piet.* 129. *Seba thes.* 1. 113. t. 70. f. 13. *Pluk. phyt.* t. 122. f. 1. *Comm. hort.* 1. 209. t. 107. (*Acacia*).
 Spines stipulary connate divaricating compressed awl-shaped at the tip, leaves bipinnate, leaflets from twelve to twenty-paired, spikes axillary elongated.
- [50. *Mimosa Catechu*.
Lin. syft. 916. *suppl.* 439. *Woodv. med. bot.* 183. t. 66.
 Spines stipulary, leaves bipinnate many-paired, glands of the partial ones single, spikes axillary in pairs or threes peduncled.]
51. *Mimosa horrida*. Horrid Mimosa.
Lin. spec. 1505. *Reich.* 4. 349. *Vahl symb.* 1. 81.
M. Orfota. *Forsk. descr.* 177. & *M. gummifera*. *ejusd. cat. arab.* 124. n. 615. *Pluk. phyt.* t. 121. f. 4.
 Spines stipulary the length of the leaves, leaves bipinnate, partial ones six-paired, branches even.
52. *Mimosa fera*. Fierce Mimosa.
Lour. cochinch. 652.
 Spines branched, leaves pinnate, flowers in spikes.
53. *Mimosa eburnea*. Ivory-thorned Mimosa.
Lin. syft. 916. *suppl.* 437.

- Spines stipulary connate divaricating round awl-shaped, leaves bipinnate, leaflets six-paired, spikes globular peduncled axillary several.
54. *Mimosa latronum*. Rogues Mimosa.
Lin. syst. 916. suppl. 438.
Spines stipulary connate divaricating round awl-shaped, leaves bipinnate, leaflets four-paired, spikes elongated peduncled axillary commonly in pairs.
55. *Mimosa filicioides*. Fern-like Mimosa.
Cavan. hisp. 55. n. 86. t. 78.
Unarmed, leaves bipinnate, partial ones six-paired, leaflets very numerous, very small, ciliate, without glands.
56. *Mimosa tortuosa*. Writhe Mimosa.
Lin. spec. 1505. Reich. 4. 349. amoen. 5. 411.
Brown. jam. 251. 1. Swartz obs. 391.
Spines stipulary, leaves bipinnate four-paired, a gland between the lowest, pinnae sixteen-paired, spikes globular.]
57. *Mimosa farnesiana*. Farnesian Mimosa or Sponge Tree.
Lin. spec. 1506. syst. 916. Reich. 4. 349. hort. upf. 146. Vahl symb. 1. 81. Lour cochinch. 652.
M. scorpioides. Forsk. cat. const. 35. n. 448. & cat. aegypt. 77. n. 553.
Acacia indica farnesiana. Ald. farnes. 2. Raii hist. 977.
Spines stipulary distinct, leaves bipinnate, partial ones eight-paired, spikes globular sessile.
58. *Mimosa nilotica*. Egyptian Mimosa.
Lin. spec. 1506. syst. 917. Reich. 4. 350. mat. med. 221. hort. cliff. 208. Woodv. med. bot. 187. t. 67. Hasselqu. in. 475. Fabric. helmst. 327. Blackw. t. 377. Pluk. phyt. t. 123. f. 1.
Acacia foliis scorpioides leguminosæ. Baub. pin. 392.
A. vera. Baub. hist. 1. 429. Vahl aegypt. t. 8. (good). Park. theat. 1547.
A. ægyptiaca. Hern. mex. t. 366.
Acanthus Theophrasti. Raii hist. 976.
Spines stipulary spreading, leaves bipinnate, the outer partial ones separated by a gland, spikes globular peduncled.
- [59. *Mimosa stellata*.
Vahl symb. 1. 81. Forsk. descr. 177.
Spines stipulary, leaves bipinnate, petioles having recurved prickles underneath, flowers racemed.
60. *Mimosa pigra*.
Lin. spec. 1507. Reich. 4. 350. amoen. 4. 274.
Æschynomene spinosa quinta. Comm. hort. 1. 59. t. 30?
Æ. fol. acaciæ latioribus, frondibus longissimos aculeos habentibus. Breyn. cent. 20.
Prickly, even, leaves bipinnate with opposite prickles, spine erect between each of the partial ones.]
61. *Mimosa asperata*. Hairy peddled Mimosa.
Lin. spec. 1507. syst. 917. Reich. 4. 351. Mill. fig. t. 182. f. 3. Brown. jam. 253. n. 11.
Æschynomene spinosa quarta. Breyn. cent. 43. t. 19.
Æ. spinosa quinta. Comm. hort. 1. 59. t. 30.
Prickly, rough-haired, leaves bipinnate with opposite prickles, spine erect between each of the partial ones.
- [62. *Mimosa Senegal*.
Lin. spec. 1506. Reich. 4. 351. mat. med. 221.
Adanson in aet. par. 1778. p. 20.
Spines in threes, the middle one reflex, leaves bipinnate, flowers in spikes.
63. *Mimosa cælia*. Gray Mimosa.
Lin. spec. 1507. Reich. 4. 352. fl. zeyl. n. 217.
Pluk. mant. t. 330. f. 3. Burm. zeyl. p. 3. (Acacia).
Prickly, leaves bipinnate, pinnae oval-oblong obliquely acuminate.
64. *Mimosa pennata*. Small-leaved Mimosa.
Lin. spec. 1507. Reich. 4. 352. fl. zeyl. n. 216.
Lour. cochinch. 652. Burm. zeyl. 2. t. 1. ind. 224.
Prickly, leaves bipinnate very numerous linear-acerose, panicle prickly, heads globular.
65. *Mimosa Intsia*. Angular-stalked Mimosa.
Lin. spec. 1508. syst. 917. Reich. 4. 352. hort. cliff. 209. mant. 503. Pluk. phyt. t. 122. f. 2.
Intsia. Rheed. mal. 6. p. 7. t. 4.
Prickly, leaves bipinnate, pinnae curved inwards, stem angular, stipules longer than the prickles.

66. *Mimosa semispinosa*.
Lin. spec. 1508. Reich. 4. 353. hort. cliff. 208.
Prickly, leaves bipinnate, joints of the stem prickly above.]
67. *Mimosa quadrivalvis*.
Lin. spec. 1508. Reich. 4. 353. Mill. fig. t. 182. f. 1. Houst. reliqu. 11. t. 25. Læst. it. 266. n. 146.
Prickly, leaves bipinnate, stem quadrangular with recurved prickles, legumes four-valved.
- [68. *Mimosa tenuifolia*.
Lin. syst. 917. Reich. 4. 353. Plum. spec. 17. (Acacia).
Prickly, leaves bipinnate, partial ones twenty-paired, pinnae many-paired.
69. *Mimosa Ceratonia*.
Lin. spec. 1508. Reich. 4. 354. Plum. spec. 17. ic. 8. (Acacia).
Prickly, leaves bipinnate five-paired, partial ones three-paired, pinnae three-nerved.
70. *Mimosa tamarindifolia*.
Lin. spec. 1509. syst. 917. Reich. 4. 354. mant. 503. Plum. spec. 7. ic. 17.
Prickly, leaves bipinnate five-paired, partial ones ten-paired, petioles unarmed.
71. *Mimosa sinuata*.
Lour. cochinch. 653.
Prickly, leaves bipinnate many-paired, heads axillary, solitary, legumes sinuate, stem climbing.
72. *Mimosa saponaria*. Soap Mimosa.
Lour. cochinch. 653.
Cortex saponarius. Rumph. amb. 1. 6. c. 72. t. 66.
Unarmed, leaves bigeminate and pinnate, panicle terminating.]
- Species from Mr. Miller.
73. *Mimosa lutea*. Yellow Mimosa.
Mill. dict. n. 17.
Acacia spinosa, foliorum pinnis tenuissimis glabris, floribus globosis luteis, spinis longissimis. Houst. Mss.
Prickly, leaves bipinnate smooth, flowers globular peduncled, prickles very long.
74. *Mimosa angustissima*. Narrow-leaved Mimosa.
Mill. dict. n. 19.
Acacia non spinosa, floribus globosis albis, foliorum pinnis tenuissimis glabris, filiquis ad singula grana tumidis. Houst. Mss.
Unarmed, leaves bipinnate, pinna very narrow smooth, legumes swelling.
75. *Mimosa campeachiana*. Split-horned Mimosa.
Mill. dict. n. 20.
Acacia spinosa tenuifolia, spinis singulis cornu bovinum per longitudinem fissum referentibus. Houst. cat. Mill. fig. 4. t. 6.
Thorny, leaves bipinnate, pinnae narrow, with thorns like an ox's horn split lengthwise.
- [Species from the Plants of Coromandel.]
76. *Mimosa dulcis*. Sweet-tasted Mimosa.
Roxb. corom. 67. t. 99.
Thorns stipular, leaves bigeminate, leaflets obliquely oblong, smooth, pointed.
77. *Mimosa Xylocarpa*. Wood-fruited Mimosa.
Roxb. corom. 68. t. 100.
Leaves scattered in pairs, pinnate, leaflets from two to four-paired, entire, oblong, smooth, the outer pair largest, glands on the petioles, stipules lanceolate.
- Species from the Linnean Transactions, &c.
78. *Mimosa myrtifolia*. Myrtle-leaved Mimosa.
Smith in Linn. trans. 1. 252. New. Holl. 51. t. 15. Curt. magaz. 302.
Leaves elliptic lanceolate oblique quite entire cartilaginous at the edge, heads in axillary racemes, legumes linear with a thick edge.
79. *Mimosa suaveolens*. Sweet-scented Mimosa.
Smith in Linn. trans. 1. 253.
Leaves linear acuminate straight cartilaginous at the edge, the primordial ones pinnate, branches triquetrous.
80. *Mimosa hispida*. Little barbed Mimosa.
Smith New. Holl. 53. t. 16.
Leaves elliptical, oblique, rugged on each side and at the margin, branchlets hispid-pubescent, heads solitary.
81. *Mimosa*

81. *Mimosa microphylla*. Prickly red *Mimosa*.
Abbot's Georgia 123. t. 62.
M. Intia. *Walt. carol.* 252.
 Prickly all over, leaves bipinnate eight-paired, leaflets sixteen-paired, heads axillary peduncled solitary or in pairs.
- Species from Vahl's second part of Symbolæ Botanicae.*
82. *Mimosa mellifera*. Honied *Mimosa*.
Vahl symb. 2. 103.
M. unguis cati. *Forsk. descr.* 176.
 Thorny, leaves bigeminate blunt, prickles recurved.
83. *Mimosa nitida*. Shining *Mimosa*.
Vahl symb. 2. 103.
 Thorny, leaves bipinnate two-paired, a gland between each, leaflets five-paired, spikes globular peduncled.
84. *Mimosa umbellata*. Umbelled *Mimosa*.
Vahl symb. 2. 103.
 Thorny, leaves conjugate and bipinnate two-paired, flowers umbelled, legumes spiral.
85. *Mimosa Asak*.
Vahl symb. 2. 104. *Forsk. descr.* 176.
 Spines in threes straight, leaves bipinnate three-paired, proper five-paired, a gland between the lowest pair of the partial ones.

DESCRIPTIONS, &c.

This genus is composed of trees, shrubs, and under-shrubs; some are unarmed, and others have prickles or thorns either all over or at the base of the petioles. The leaves are chiefly pinnate or bipinnate, and the petiole is sometimes glandular. Flowers in heads or spikes, either axillary or terminating, some of them usually imperfect or abortive. Some of the species yield a gum from the bark, others a clammy juice from the pods. The leaves in general are contracted in the evening and expanded again in the morning; and some of the species, more sensible, yield to the touch, and are hence commonly called Sensitive plants. This genus, now become unwieldy from the number of known species, may perhaps be hereafter divided from the number of stamens and structure of the legume or pod^a.

1. The leaves on this plant are described as simple, linear and pungent or hard and prickly at the end, and growing in whorls six or seven together; but it has dissimilar leaves, and the primordial ones, or two or three first leaves which appear on the seedling plants are bipinnate. This disposition to produce dissimilar leaves occurs in several other species of *Mimosa*, lately introduced from New South Wales, of which country this is a native^b. It was found there by Mr. David Nelson, and was introduced at Kew by Sir Joseph Banks. It flowers from march to may^c. Mr. Curtis remarks, that it is some years in arriving at its flowering state: that he first saw it in flower, and afterwards with ripe seed-pods, at Mr. Malcolm's at Kennington.

2. This is a beautiful little tree, with a smooth ash-coloured bark, and large leaves, very flat, without any longitudinal rib, but with numerous nerves, they are quite smooth and on very short petioles. Stipules none. Spikes globular, axillary, small, on short peduncles. Legume compressed, curved inwards, the length of the leaf, torulose. When not in flower, it has no appearance of a *Mimosa*^d.

Native of the island of Tanna. Introduced in 1775, by John Reinhold Forster, L. L. D.^e

3. Native of Cayenne.

4. This is a tree from ten to fifteen or twenty feet in height. The trunk and branches without thorns. Leaves pinnate alternate. Leaflets five-paired, sessile, connected by a margined subulate common petiole, ovate-lanceolate, generally entire, nerved, veined, smooth. Glands solitary between each pair of leaves. Peduncles terminating, many flowered. Flowers in a sort of spike, rather large. Calyx one-leaved, five-toothed. Corolla twice as large as the calyx, five-toothed, greenish-white. Filaments monadelphous,

very long. Anthers minute. Germ oblong. Style filiform. Stigma blunt. Legume long, angular-compressed, curved, with the sutures two-keeled.

Native of the West Indies, especially on the banks of rivers, flowering early in the spring^f.

5. Native of the island of St. Christopher^g.

6. This is a tree thirty feet in height, with an elegant close head, and a straight trunk ten feet long, and a foot in diameter. The wood is whitish, and the bark is gray. Leaves two-paired or three-paired; leaflets subovate, blunt, dark green, the outer ones three or four inches long and much larger than the others. Spike simple, solitary, clofish, two inches long, containing about forty flowers, that are whitish and have scarcely any smell. Legume coriaceous, whitish yellow, inclosing a sweet whitish pulp, which is sucked by the natives. They call the tree and fruit in Martinico *Pois doux*.

Native of the West Indies^h.

7. This is a small tree, with spreading unarmed branches. Leaflets ovate, acuminate. Common petiole linear, proper scarcely any. Flowers white, in diffused racemes, ending in umbellets, having hermaphrodite and male flowers mixed. Segments of the corolla ovate. Filaments about one hundred, monadelphous. Legume compressed, curved, with few seeds.

Native of Ceylon and Cochinchina.

8. This is an upright shrub, four feet high, hairy, with spreading branches. Leaflets ovate, blunt, hairy on both sides, the lower ones smaller. Flowers terminating, conglobated into a large white head. Calyx five-cleft, upright. Corolla bell-shaped. Filaments twice as long as the corolla; with very small roundish anthers. Legume linear, straight, slender, many-seeded.

Native of Cochinchina, in woodsⁱ.

9. This is a tree with alternate leaves: Petioles bifid, with two leaflets at the top of each division. Leaflets lanceolate-ovate, like bay-leaves, smooth, quite entire, acuminate. Flowers in panicles, from the axils and ends of the branches, scattered, many-stamened, monadelphous, monopetalous, with the germ on a pedicel^k.

Native of the East Indies.

10. This is a small tree from seven to ten feet in height. The trunk is branched and unarmed. Branches subdivided, commonly unarmed, ash-coloured, wrinkled. Stipules none. Petiole bifid, each part terminated by two, sometimes but rarely by four leaflets. Leaflets wedge-shaped, ovate, blunt, entire, a little oblique, nerved, smooth. Glands at the division of the petiole, and between the pinnae. Peduncles axillary and lateral, clustered, scattered, terminated by a head of flowers. Corolla whitish. Filaments monadelphous, three times as long as the corolla, capillary, purplish. Anthers minute, simple. Germ oblong, compressed, blood-red. Style awl-shaped. Stigma simple. Legume compressed, twisted. Seeds five or six, compressed a little, shining, black, fastened by a scarlet membrane^l.

Native of Jamaica and other islands in the West Indies. Browne calls it the *Black-bead Shrub* or *large-leaved Mimosa*.] Miller says that they call it *Doctor Long*, and that the seeds are frequently brought to England by that name. [It was introduced in 1690, by Mr. Bentick^m.

According to Sloane, the seeds are eaten by goats, and sometimes by the negroes. The bark is very astringent, and is used in lotions and fomentations in America.

11. Petiole bifid, each pedicel terminating in two leaflets, and besides these, two opposite leaflets at the division of the common petiole. Flowers monadelphousⁿ. Corolla cylindrical, with a very small upright border. Filaments twice, thrice, and often four times as long as the corolla, with a five-cleft membrane connecting them at top, resembling an inner corolla. Legume long, compressed, acuminate, one-celled, two-

^a Jussieu.

^b Curtis.

^c Hort. kew.

^d Linn. suppl.

^e Hort. kew.

^f Swartz.

^g Idem.

^h Jacquin.

ⁱ Loureiro.

^k Linn. zeyl.

^l Swartz.

^m Hort. kew.

ⁿ Linn.

valved; the valves rolled in spirally after they are divided. Seeds several, subovate, shining black^o.

Native of the West Indies.

12. Flowers many-stamened, sessile^p. The leaves are like those of the Walnut; and the flowers are purple^q. Native of South America. Cultivated in 1768, by Mr. Miller.

13. This also has purple flowers, and is native of South America^r. It was cultivated in 1768, by Mr. Miller^s.

14. This is a tree with rigid branches, that are flexuose from bud to bud. Under each bud is a pair of horizontal, whitish stipular thorns, the length of the leaves. Leaves petioled, conjugate or one-paired, with pinnate, six-paired leaflets. Common petiole terminated above by a gland, beneath by a prickle. Leaflets oblong-linear, blunt, at equal distances, the lowest smaller. Legume oval, a hand in length and half as much in breadth, compressed, with large scattered seeds.

Native of the Cape of Good Hope^t.]

15. This has trailing herbaceous stalks, putting out roots at every joint, and spreading to a considerable distance. In the stove at Chelsea, a single plant, in one summer, spread near three feet square, and the branches were so closely joined, as to cover the surface of the bed: but when they are permitted to grow thus, they seldom produce flowers. The leaflets are narrow, and the petioles are short and smooth. Flowers axillary, on naked peduncles about an inch in length; they are of a pale yellowish colour, and are collected into small globular heads. Legumes short, flat, jointed, containing three or four compressed, roundish seeds.

[This species is so very sensible as to contract its leaves on every slight touch or change of the atmosphere; a puff of breath from the mouth will make an impression on it; and Sir Hans Sloane relates, that having marked his name on a bed of it with a stick, it continued visible for some time.

Native of Jamaica in the pastures or savannahs^u. Cultivated by Mr. Miller in 1759.]

16. The leaves of this tree divide into many ramifications; the leaflets are roundish, and placed in a very regular order. The seeds, which are flat, and one half of a beautiful red colour, the other half of a deep black, grow in long twisted pods, and hanging by a small thread for some time out of the pod, when they are ripe, make a very agreeable appearance. It was brought from the Bahama islands by Mr. Catesby, in the year 1726.

[It agrees with *M. Unguis cati* in its stipular spines, and long pods spirally convoluted, but differs entirely from it in the leaves^x.

17. This prickly shrub is common in most of the sugar colonies, especially in Antigua, where the leaves are frequently used, mixed with corn, for their riding horses; and it is thought to free them from bots and worms. It grows in a tufted form, and seldom rises above five or six feet from the ground, though it spreads a great deal more in its growth^y. Browne names it *Fingrigo* or thorny *Mimosa*. According to Linneus it is a native of the East Indies.

18. The lower flowers of the spikes are ten-stamened and barren; the upper ten-stamened and fertile. Native of the East Indies^z.]

19. This rises with a slender woody stalk seven or eight feet high, armed with short recurved thorns. The leaves grow upon long foot-stalks which are prickly, each sustaining two pairs of wings; the outer pair has two lobes which join at their base, and are rounded on the outside, but straight on the inner edges, shaped like a pair of sheep-shears; they are much larger than the inner, are almost two inches long, and one inch broad in the middle. From the place where these are inserted into the stalk, come out small branches, which have three or four globular heads of pale purplish flowers coming out from the side, on short peduncles; and the principal stalk has many

^o Jacquin. ^p Linn. ^q Plumier. ^r Idem.
^s Hort. kew. ^t Linn. mant. ^u Browne and Sloane.

^x Linn. ^y Browne ^z Linn.

of those heads of flowers on the upper part for more than a foot in length; and this, as also the branches, is terminated by like heads of flowers. Pods broad, flat, jointed, opening by two valves; containing one, two or three compressed orbicular seeds. The leaves move but slowly when touched, but the foot-stalks fall, when they are pressed pretty hard. [Linneus remarks, that the flowers are five-stamened and apetalous.

Native of Brazil. Introduced before 1733, by William Houstoun, M.D.^a] Mr. Miller says, that he sent the seeds from La Vera Cruz, where it grows naturally.

20. Roots composed of many hairy fibres, which mat close together, from which come out several woody stalks, which decline towards the ground, unless they are supported; they are armed with short recurved spines, and have winged or pinnate leaves, composed of four, and sometimes five pinnae, whose bases join at a point, where they are inserted into the foot-stalk, spreading upwards like the fingers of a hand. Flowers from the axils, on short peduncles, collected in small globular heads, of a yellow colour. Pods short, flat, jointed, in close clusters, almost covered with stinging hairy covers.

[Calyx funnel-form, trifold, with one lobe wider. Corolla none. Filaments four, six times as long as the calyx, erect, filiform. Germ roundish. Style awl-shaped, a little shorter than the stamens. Stigma acute^b. Legume oblong, compressed, jointed, girt by a filiform suture with harmless spinules: joints from two to four, papery, one-celled, separating from each other and from the suture, and opening by two valves. Seeds solitary, rounded, lens-shaped, smooth, shining, honey-coloured or rufescent, with an eye-like streak in the middle on each side, and fastened by a capillary chord to the inner margin of the valves: skin single, papery, thin: albumen watery, pale, thin, adhering close to the skin: embryo straight, yellow: cotyledons orbicular, leafy: plumule none: radicle rather large, retracted, straight, centrifugal^c.

Native of Brazil.] It is the most common of any species in the islands of the West Indies, and in the English gardens. The seeds are sold in the seed-shops, by the name of Humble Plant. [Parkinson calls it *Mimick*, *Mocking*, or thorny Sensitive Plant or Shrub, and says that he saw a living plant of it in a pot at Chelsea in Sir John Davers garden, where divers seeds being sown about the middle of May 1638 and 1639, some of them sprang up to be near half a foot high.

Sensitive plants were not unknown to the ancients. Theophrastus speaks of the *Αισχυρομενη* as growing about Memphis in Egypt; and Pliny of the *Æschynomene*, so called from its contracting the leaves at the approach of the hand.

It is thus characterized in the flowing poetry of Darwin:

“ Weak with nice sense, the chaste *Mimosa* stands,
“ From each rude touch withdraws her timid hands;
“ Oft as light clouds o’erpass the summer-glade,
“ Alarm’d she trembles at the moving shade;
“ And feels, alive through all her tender form,
“ The whisper’d murmurs of the gath’ring storm;
“ Shuts her sweet eye-lids to approaching night;
“ And hails with freshen’d charms the rising light.”

“ Naturalists” says Dr. Darwin, “ have not explained the immediate cause of the collapsing of the Sensitive plant; the leaves meet and close in the night during the sleep of the plant,” (which in Sweden, according to Linneus, is from six in the evening to three in the morning during the months of June and July) “ or when exposed to much cold in the day time, in the same manner as when they are affected by external violence, folding their upper surfaces together, and in part over each other like scales or tiles; so as to expose as little of the upper surface as may be to the air; but do not indeed collapse quite so far: for when touched in the night during their sleep, they fall still farther; especially when touched on the foot-stalks between the stems

^a Hort. kew. ^b Linn. ^c Gartner.

“ and the leaflets, which seems to be their most sensitive or irritable part. Now as their situation after being exposed to external violence resembles their sleep, but with a greater degree of collapse, may it not be owing to a numbness or paralysis consequent to too violent irritation, like the faintings of animals from pain or fatigue? A Sensitive plant being kept in a dark room till some hours after day-break, its leaves and leaf-stalks were collapsed as in its most profound sleep, and on exposing it to the light, above twenty minutes passed before the plant was thoroughly awake and had quite expanded itself. During the night the upper or smoother surfaces of the leaves are appressed; this would seem to show that the office of this surface of the leaf was to expose the fluids of the plant to the light as well as to the air^d.”]

It would be to little purpose to trouble the reader with the several idle stories related of these plants by travellers, nor to insert what has been said by others, who have attempted to account for the motion of the leaves of these plants on their being touched; I shall therefore only mention what I have myself observed in these plants, for more than forty years that I have cultivated them.

The first is, that they are more or less susceptible of the touch or pressure, according to the warmth of the air in which they grow; for those plants which are kept in a warm stove, contract their leaves immediately on being touched, either with the hand, a stick, or any other thing, or by the wind blowing upon them: some of the sorts only contract their small leaves, which are placed along the midrib; others not only contract their small leaves, but the foot-stalk also declines downward on being touched: the first are called Sensitive, and the second Humble Plants; but when these plants are placed in a cooler situation, they do not move so soon, nor contract so closely, as those which are in a greater warmth; and those which are entirely exposed to the open air, have very little motion, but remain in one state, neither expanded nor closed, but between both, especially in cool weather; nor do these shut themselves at night, as those do which are in a warm temperature of air.

The second is, that it is not the light which causes them to expand, as some have affirmed, who have had no experience of these things; for in the longest days of summer, they are generally contracted by five or six in the evening, when the sun remains above the horizon two or three hours longer; and although the glasses of the stove in which they are placed, are covered close with shutters to exclude the light in the middle of the day, yet if the air of the stove is warm, the leaves of the plants will continue fully expanded, as I have several times observed. Nor do these plants continue shut till the sun rises in the morning, for I have frequently found their leaves fully expanded by the break of day in the morning; so that it is plain the light is not the cause of their expansion, nor the want of it that of their contraction.

I have also observed, that those plants which are placed in the greatest warmth in winter, continue vigorous, and retain their faculty of contracting on being touched; but those which are in a moderate warmth, have little or no motion.

When any of the upper leaves of these plants are touched, if they fall down and touch those which are below them, it will occasion their contracting and falling, so that by one touching another, they will continue falling for some time. When the air of the stove in which these plants stand, is in a proper temperature of warmth, the plants will recover themselves, and their leaves will be fully expanded in about eight or ten minutes. I have frequently watched them as they have been recovering, and have always found it has been by a vibratory motion, like the index of a clock.

Some of the sorts are so susceptible of the touch, that the smallest drop of water falling on their leaves

^d Loves of the Plants, 2. 25.

will cause them to contract, but others do not move without a much greater pressure.

The roots of all the sorts have a very strong disagreeable odour, almost like that of a common sewer. I have met with some accounts of these plants, in which it is mentioned, that the leaves and branches have a poisonous quality, and that the Indians extract a poison from them, which kills by slow degrees, and that the root of the plant is the only remedy to expel it; but how far this is true I cannot say, having never made any experiments on the qualities of these plants; but if these plants have so deadly a quality as related, this sensibility with which they are endued, may be designed by Providence to caution persons from being too free with them; and as many of them are strongly armed with thorns, that is a guard against their being eaten by animals; for in all the enquiries which I have made of those persons who have resided in the countries where they naturally grow, I could never learn that any animal will browse upon them.

Mr. Miller has another species (n. 4.) to which he gives the same name of *pudica*, and which was discovered by the late Dr. Houstoun at La Vera Cruz. This has woody stalks, which decline to the ground, spreading out two or three feet from the root, and send out several side branches, armed with short yellowish spines under the foot-stalks of the leaves, and closely covered their whole length with bristly stinging hairs: the foot-stalks are three inches long, and at the top sustain four single winged leaves, whose bases meet in a point, but spread above like the fingers of an open hand: these wings are about three inches long, and have small narrow leaflets closely set by pairs along the midrib, which is also covered on the under side with the like bristly hairs as the stalk. Flowers axillary, upon pretty long peduncles, collected into globular heads, and of a pale yellowish colour. Pods small, jointed, containing two or three shining black seeds. The common Humble Plant has the wings of the leaves shorter than this, and the stalks are not hairy.

[22. This climbs to the tops of the tallest trees, to the height of one hundred and fifty feet, frequently overspreading many of the neighbouring branches, and forming large arbours. The withs are slender, but tough and flexible; striated, stiff, and smooth. Common petioles long, opposite, thickened at the base, round, very smooth, terminating in a tendril, by which the branches are supported. Pinnae four-paired, petioled, oblong, blunt at top, emarginate, nerved, smooth on both sides, shining. Glands none. Tendril long, upright, bifid at the end. Spikes axillary, erect, very long, many-flowered. Flowers approximating, subsessile, small. Petals five, erect, oblong, green. Filaments twenty to twenty-four, yellow, shorter than the corolla, and springing from its base. Anthers globular. Legume very large, from six to eight feet long, and five or six inches wide, compressed, variously writhed, two-valved. Seeds several, orbicular, somewhat compressed, with a hard brown shining rind, and a black mark. Most of the flowers are abortive^e.

Browne says that the female plants throw out their flowers separate, and are succeeded by so many pods. Loureiro found no male flowers, but all hermaphrodites. He assigns, as Linneus does, no more than ten stamens to the flowers, and says that they are twice as long as the corolla.

Native of both Indies and CochinChina. In the West Indies it is called *Cocoon*.]

23. This was discovered by Dr. Houstoun at La Vera Cruz, growing in stagnant water, where the stalks were very broad and flat, and floated on the surface: but where the water was dried up the stalks grew upright and were round, which is always the case when the plant is cultivated in a garden; so that they might easily pass for different plants with those who never saw them growing in both situations. When cultivated in a garden this has great resemblance to the 27th, but the stalks never grow so erect, the wings of the leaves are longer, and stand more horizontal in this;

^e Browne.

^f Swartz.

the heads of flowers are much larger, the stamens are longer, and the flowers on the under side of the spike which have no stamens are double; the pods also are shorter, and much broader than those of punctata. It is an annual plant in this country: and has since been found in the island of Barbuda, in a marshy spot.

[Stems round, herbaceous, smooth, procumbent, rooting at all the joints. Leaves three-paired or four-paired, contracting with the least touch. From the axils of these spring erect peduncles, four or five inches high, with scales the whole length, sustaining handsome, yellow, almost globular heads, the same size with those of red Clover. Flowers different in shape, nature and use: those in the middle truly five-petalled, in small five-cleft calyxes, with many long stamens; but those in the circuit instead of stamens have oblong, beautiful, golden leaflets, much wider and handsomer than the true petals, which are small and of a greenish colour. These double flowers are barren; but the single ones are succeeded by flat, smooth, two-valved legumes, containing several, black, shining, compressed seeds.²—Cultivated by Mr. Miller before 1733.

24. Stems slender, a foot high, simple, smooth, compressed at bottom, above striated and three-sided. Leaflets scarcely an inch long, with about twelve pairs: pinnae linear, blunt, mucronate, smooth, appearing in the magnifier to be ciliate-ferrate. Petioles not glandular. Stipules semicordate, attenuated, smooth. Peduncles axillary, solitary, shorter than the leaf, with two oblong leaves in the middle. Flowers in a globular head, the size of a pepper-corn. Legumes about six, unguicular, pedicelled, oblong, compressed, smooth, four-seeded. This is wrongly placed under the name of natans, among the species with simply pinnate leaves, in *Systema Vegetabilium*³. Observed by Koenig in the East Indies.

25. Stems herbaceous, angular, smooth, floating, putting out rooting fibres at the lower joints. Leaves petioled: pinnae small, the innermost smaller than the others, linear-oblong, quite entire. Glands none. Stipules ovate-rhomboidal, bluntish. Peduncles axillary, solitary, five inches long: spike oblong, nodding before flowering time: the lower florets a little more remote, barren and larger. Legumes compressed, an inch long.

Koenig sent this under the name of *natans*, but called that which bears this name in the Supplement of the younger Linneus *triquetra*. The former is an aquatic plant, being found floating on fresh waters in the East Indies; but the latter is by no means so: Vahl therefore has changed the name with propriety.

Loureiro has constituted a new genus out of this species under the name of *Neptunia*. He says that it is cultivated in Cochinchina for salads, being fastened to stakes in the water, that it may not float away, as it is entirely detached from the earth.

26. Spike roundish, nodding. Flowers ten-stamened, yellow; the lower ones of the spike without stamens or petals⁴.—Native of the West Indies. Introduced in 1774, by Joseph Nicholas de Jacquin, M. D. It flowers in July and August⁵.]

27. This rises with upright branching stalks six or seven feet high, becoming woody towards the root, but not perennial (at least they are not so here in any situation, the plants always decaying in winter;) they are smooth, and the leaves are composed of four or five pairs of long winged lobes, which have about twenty pairs of small leaves ranged along the midrib; they are smooth and rounded at their points, of a full green on their upper side, but pale on their under. These small leaves contract themselves together on their being touched, but the foot-stalks do not decline at the same time, as those do which are titled Humble Plants, this therefore is called the Sensitive Plant by way of distinction. The flowers are produced upon long foot-stalks, which come out from the wings of the leaves, and are disposed in globular heads which nod downward; they are yellow, and all those which have petals have ten stamina in each, but those situ-

ated round the border have neither petals nor stamina; those on the upper part of the spike are succeeded by pods an inch and a half long, and a quarter of an inch broad, which change to a dark brown when ripe, inclosing three or four compressed, shining, black seeds.

[The stem has callous dots irregularly disposed on it. The leaves are four-paired, with a depressed gland between the first pair. Leaflets twenty-paired. Peduncles with two, alternate, half-cordate bracts. Spikes oblong. All the florets ten-stamened, the lower ones male and castrated. Corolla five-petalled⁶. Browne calls it the larger smooth Sensitive, and says that it has been introduced into Jamaica from some other part of the world; probably from the continent of America.]

28. Stems seldom more than two feet and a half high, and smooth. Leaves composed of three or four pinnae, which are shorter, and the leaflets much narrower than in the 23d and 27th sorts: the heads of flowers are smaller, and the pods longer and narrower. It grows naturally in all the islands of the West Indies, where it is called the Slothful Sensitive Plant, because the leaves do not contract on being touched.

[The flowers are made up of many long white filaments, forming all together a round head. Pods flat, an inch long, and a quarter of an inch broad, with a round protuberance at each seed⁷.

29. This is a lofty tree, with an upright smooth trunk, covered with an ash-coloured bark. Branches diverging, bent down, smooth. Partial leaves twelve-paired. Universal petiole round, striated, ferruginous-pubescent: partial petioles also ferruginous. Glands roundish, concave, between the petioles. Scaleters bifid, minute, at the base of the partial petioles. Pinnae sixteen or eighteen-paired, halved, subsessile, acute, entire, smooth. Spikes peduncled, subglobular, composed of aggregate, sessile, white flowers. Peduncles axillary, slender. Corolla three times as long as the calyx, with a five-toothed border of a whitish flesh-colour. Filaments monadelphous, twice as long as the corolla. Legume subcylindric, curved, twisted, red, four or five inches long: valve blood-red within. Seeds spherical, shining-black⁸.

Branches, petioles and peduncles rough-haired. Leaves seven-paired, with seventeen-paired leaflets; the lowest smaller. Above the knee of the partial leaves a two-parted scale. Spike ovate. Flowers in bundles, one-petalled, five-cleft, monadelphous, many-stamened. Stamens flesh-coloured, very long. There is a variety which is smooth, with leaflets from twelve to fourteen, and twenty-seven pinnae⁹.

In Jamaica, where it is found in most parts of the island, it is called *Mountain* or *Wild Tamarind Tree*; it grows to a very considerable size, and is looked upon as an excellent timber wood¹⁰.

It is a native not only of the West Indies, but also of Japan and China.

30. This is a tree with a smooth ash-coloured bark; the branches as it were in whorls, tuberous at the base, nodding at the end. Leaves bipinnate; the common petiole patulous and the partial ones tuberous at the base. The primary petiole near the base sustains a gland, or hemispherical shining tubercle. Above the base of each secondary petiole are also two other glands, which are opposite and horned; one of these is frequently wanting, and the first pinnule occupies its place. Pinnules opposite, from eight to twelve-paired, seldom twenty-five in number, without any odd one. These leaflets are unequal-sided, paler and somewhat veined on the upper surface, on very short petioles, and terminated by a slender point. Stipules linear, patulous, soon falling. Peduncles from some of the ends of the young shoots, and having tubercles disposed in a sort of spiral line. From each tubercle come out two peduncles in an angle of about sixty degrees, each supporting from sixteen to twenty flowers in a spherical head. Flowers all perfect: one in the

² Houtt. reliqu.

³ Vahl.

⁴ Linn. from Miller.

⁵ Hort. kew.

⁶ Linn.

⁷ Sloane.

⁸ Swartz.

⁹ Linn.

¹⁰ Browne.

middle larger than the rest, with a one-leafed, five-cleft calyx; a tubular, five-cleft corolla, with ovate, concave segments, the tube twice or near thrice as long as the calyx, somewhat villose, and when examined by a magnifier appearing to have lucid dots scattered over it; from the bottom of this the nectary, striated, smooth, bearing the stamens on its edge, as in monadelphous flowers. In the bottom of this tube lies the germ, which is lanceolate, subsessile, green, smooth; the style is slender, long and white; the stigma blunt, appearing rough with very minute papillæ, when examined with a glass. The other flowers are smaller, and scarcely one or two of these produce fruit. The stamens are five times as long as the corolla, slender, straight, flesh-coloured, from twenty to twenty-eight in number. Filaments connate at the base into a tube. Anthers green, composed of two globules, in which are small, pellucid, spherical particles. Fruit from four to seven inches long, and an inch wide; pedicelled, flat, drawn to a point at both ends, margined, yellowish on the outside, first greenish and then white within, and never opening. From both sutures spring branched nerves, and the edge is slightly repand, sometimes sinuated here and there. Seeds elliptic, four lines long, of a reddish brown colour, moderately compressed, sharp at one end and rounded at the other, marked on both sides with one or two little eccentric pits and two raised lines forming an elliptical area; they are from seven to twelve in number, and fastened to one suture by a slender twisted thread, three lines in length, but they break loose when ripe, and move about if the pod be shaken. This has been confounded with the preceding^a.

Native of the Levant. Introduced about 1745, by Richard Bateman, Esq. It flowers in august^c.

31. Native of Jamaica^a.

32. Leaves destitute of glands. Pinnas from twelve to twenty, an inch in length. Bundles of flowers peduncled. Legume a span long^c. It is cultivated in the gardens at Cairo, where it flowers in June, and becomes a large tree; but Hasselquist does not ascertain whether it be a native of Egypt. Linneus however and Forskahl give it as indigenous of Upper Egypt. The Arabs call it *Lebbeck*, which Linneus has adopted for the trivial name of the species.

33. This is a lofty tree, with villose somewhat hoary branches, and hoary petioles. Leaves large, three or four-paired, with glands towards the lower pinnas and within the upper ones. Pinnas many-paired: leaflets obliquely oblong, very smooth above, hoary beneath. Panicles axillary, three, elongated, large, diffused: the pedicels terminating in globular spikes. Flowers white, very fragrant. Legumes flat, coriaceous, much resembling those of *M. latifolia*, but narrower and less waved^a. Vahl remarks, that there is an oblong, sessile gland near the base of the general petiole, and frequently two or four pedicels from the same point.

Native of the island of Ceylon.

34. This is a very elegant tree, quite smooth all over. Trunk round, with an even ash-coloured bark, marked with transverse ferruginous little warts. Leaves smooth, alternate: rib roundish, about a foot long, having a little above its origin an oval, sessile, conspicuous gland. Pinnas opposite, mostly four on each side, nine-paired or thereabouts, without an odd one. Pinnules oblong, obscurely sickle-shaped, very blunt, quite entire, on very short petioles, opposite, flat, an inch long. Peduncles three inches long, either solitary or a few together. Flowers numerous, sessile or on very short peduncles, extremely sweet, in a handsome head, at the top of which is one flower, different from the rest and abiding longer, which is probably the only fertile one, though all appear to be hermaphrodites. Calyx yellow. Corolla herbaceous^a.

35. This is a middle-sized tree, with spreading branches. Leaves four or five-paired; the partial ones four-paired: leaflets ovate, acute, incurved, smoothish: petioles linear, short, pubescent^a. Flowers umbelled, many-stamened, with tomentose calyxes,

according to Linneus:—white, subterminating, in a panicle terminating in heads, and about twenty stamens, longer than the corolla, according to Loureiro.

Native of the East Indies, Cochinchina, and Brazil.

36. This also is a middle-sized tree, with spreading branches. Leaves many-paired: leaflets commonly eight-paired: the common petiole thickened at the base, and propped by a recurved callous horn. The male flowers are many-stamened and monadelphous, with four-cleft calyxes and corollas. Panicle terminating, ending in flattish cymes of white flowers^a. Loureiro did not see any hermaphrodite flowers.

Native of China, near Canton.

37. Native of the West Indies^a.

38. Bractes half-cordate. Peduncles in threes. Flowers in heads. An obsolete gland on the common petiole below the partial pinnas. Germs globular, two-valved; with two, roundish, concave or hemispherical leaflets. Leaves very smooth^b.—Native of the West Indies. Introduced in 1777, by Daniel Charles Solander, L.L.D. It flowers most part of the summer^c.

39. This plant, which becomes a tree itself, climbs up other trees, overtops them, and drags them down by its weight. The trunk is round, covered with a brown bark, and often nine inches in diameter. Partial leaves on each side commonly three or four, of which the two end ones, after they have dropped their leaflets, are changed into very strong tendrils, which entwine the branches of any neighbouring tree, and adhere to it so close, that they can scarcely be separated. The proper leaflets are commonly seven on each side, oblong, blunt, emarginate. Particular spikes close, two inches long, turned upwards and erect, about thirty together on the same common peduncle, which is a foot long and stretched out horizontally. Flowers small, herbaceous, about 150 on each particular spike, so that in the whole compound spike there are about 4500. To this multitude of flowers, many of which are male, scarcely ten legumes succeed, and these very seldom arrive at maturity.

Native of the West Indies, where it is a great nuisance to the sugar planters by destroying the trees which they set to shelter their sugar grounds^d.

40. This is an upright tree, about twenty feet in height, with branches stretched out horizontally. Spines awl-shaped, acuminate, strong, subaxillary, five-lined. Leaves axillary, with the common petiole two inches long, and a small, oblong, blunt, upright gland a little above the base. Partial pinnas an inch long: leaflets oblong, blunt, scarcely three lines in length. Spikes globular, axillary, solitary, turned upwards, on a peduncle an inch in length. Flowers white, void of scent^e.

Native of Jamaica and other islands of the West Indies; and about Carthage in New Spain. Frequent in the island of Mango.

41. Peduncles long, bearing many spikes. Native of America^f.

42. This shrub rises frequently to the height of fourteen or fifteen feet or more. It is not so prickly as the *tortuosa*, (n. 56.) and its leaves are rather larger. It is of a spreading growth, and furnished with oblong flower-spikes, and very long legumes. It has been introduced into Jamaica from the continent, and thrives very luxuriantly in many parts of the low lands^g.

43. Legumes ovate-oblong, flat. Native of America^h.

44. Spikes globular, large, peduncled. Flowers white, apetalous, ten-stamenedⁱ. Legumes long, flat. It flowers in April, and the seeds are ripe in autumn. It was discovered by Dr. Houstoun at La Vera Cruz, and sent to Europe by him in 1729^k. But it had been cultivated before, in 1690, in the Royal garden at Hampton Court^l.

45. Branches unarmed, smooth, obscurely angular at top, having a few small dots scattered over them. Leaves twenty-four paired, the inmost smaller. Leaflets fifty-paired and more. Pinnas minute, smooth, veined when inspected by the magnifier, acute. Petioles

^a Scopoli. ^b Hort. kew. ^c Swartz. ^d Linn.
^e Linn. suppl. ^f Jacquin. ^g Loureiro.

^h Loureiro. ⁱ Swartz. ^j Linn. ^k Hort. kew.
^l Jacquin. ^m Idem. ⁿ Linn. ^o Browne.
^p Linn. ^q Idem. ^r Mill. fig. ^s Hort. kew.

channelled above, smooth, purplish at the base. Gland oblong, brown, towards the base of the petiole and between the two or three outer pairs, hollow. Stipules bristle-shaped. The lower spikes axillary, simple, solitary, shorter than the leaf; the upper ones subracemose, in pairs, two inches long. Flowers alternate, approximating, numerous. Calyx smooth. Legume a little compressed, an inch long, linear-lanceolate, surrounded longitudinally by a membrane.

It has the appearance of *M. Catechu*, but differs in having no spines, shorter spikes, and the calyxes smooth not hoary.

Native of the Isle of France^m.

46. This is very nearly allied to *M. Houstoni*, but differs from it in having more frequent pinnules, and the leaflets very distinct, ovate at the base; whereas in *M. Houstoni* they are confluent at the rachis, truncated at the base, and resemble a pinnatifid leaf.

Native of the East Indiesⁿ. Introduced about 1769, by Mrs. Norman. It flowers from June to September^o.

47. Leaves hairy underneath. Inflorescence as in *M. grandiflora*, but the flowers smaller. Corollas villose, permanent. Legumes parallelogram-shaped, acuminate, flat except where the seeds are, very tomentose, rufous. Seeds oblong, compressed, with a zone on each side, inserted into both margins of one of the futures.

This is the true *Gleditschia inermis* of Linneus, for which Duhamel, Du Roi and others have taken an unarmed variety of *Gleditschia triacanthos*^p; which see in this Dictionary.

It is one of the most beautiful species of the genus. The petals being very large, and of a fine purple colour, with their stamens stretched out to a considerable distance beyond the petals, the flowers make a charming appearance when the trees are covered with them; and when the pods, which are ferruginous, are ripe and hanging plentifully from every bough, the view of the trees is very pleasing from a small distance. The seeds were sent to Europe from La Vera Cruz, by Dr. Houston^q.

48. Stem branched, even. Spines either terminating the branches, or solitary from the axils, straight and long. Leaves lanceolate, very slender, ten-paired: leaflets twenty-two-paired. Spikes of flowers oblong, ovate or cylindrical, peduncled, axillary, solitary. There are no prickles on the plant^r.

Native of the East Indies.

49. This tree seldom exceeds twelve feet in height. It has numerous branches forming a pyramidal figure. Leaves small. Flowers also small, yellow, and void of scent, in a close cylindrical spike, an inch and half long. Legumes coriaceous, containing a buttery pulp, in which the seeds are rolled up. The spines are very singular, they are subaxillary and connate at the base, resembling the horns of oxen; they are brown, shining, hollow, and the longest are more than five inches in length; they are all over the tree, and when the pods are ripe and the leaves are fallen, they have a singular appearance. A sort of ant lodges in these thorns in innumerable quantities, and if the tree be shaken ever so little, they fall down like a shower of rain and attack the passenger. This tree grows every where in the woods about Carthageⁿ; flowers in June and July, and the seeds ripen in September^s.]

Mr. Miller says the spines are extremely large and crooked, and of a whitish colour, that the flowers appear to have little beauty in them, and that the branches growing deformed, and being but thinly set with leaves, even in their greatest vigour, and destitute of them during several months, the tree does not make a good appearance, but is chiefly singular on account of its writhed spines. He observes that it is rare in England. [It was cultivated in 1691, in the Royal Garden at Hampton Court^t.

50. This is a small tree, growing to twelve feet in height, and one foot in diameter; it is covered with a thick rough brown bark, and towards the top divides

into many close branches. Leaves alternate: partial pinnæ near two inches long, commonly from fifteen to thirty pair, having small glands between them: each wing has usually about forty pairs of linear leaflets, beset with short hairs. Spines short, recurved, in pairs at the base of each leaf. Flowers hermaphrodite and male, in close axillary spikes, four or five inches long. Calyx tubular, hairy, dividing into five oval pointed segments. Corolla whitish, twice the length of the calyx. Filaments twice the length of the corolla, adhering at the base of the germ, which is oval. Pod lanceolate, brown, smooth, compressed, with an undulated thin margin. Seeds six or eight, roundish, flattened, producing a nauseous odour when chewed.

An Indian drug, long known by the name of Terra Japonica, and now more properly called Catechu (from *Cate*, a tree, and *Chu*, juice,) is now ascertained to be the produce of this tree. This extract in its purest state is a dry pulverable substance, outwardly reddish, inwardly shining dark brown, tinged with a reddish hue: to the taste it discovers considerable astringency, succeeded by some sweetness. It dissolves almost wholly in water, except the impurities, which are usually sandy, and amount to about one-eighth of the mass. Rectified spirit dissolves about seven-eighths into a deep-red liquor. It may be usefully employed as an astringent, especially in alvine fluxes; also in uterine profluvia, in debility of the viscera in general, in catarrhal affections, &c. This extract is the basis of several formulæ, but the best way of taking it is in an infusion in warm water with cinnamon or cassia.

Native of Indostan, plentifully in the mountains^u.

51. Branches angular, smooth, with a brown bark. Leaves sometimes two from the axil of the spines: partial four or five-paired, inner shorter, with leaflets from five to seven-paired, outer eight to eleven-paired: leaflets linear, acute, smooth. Spines in pairs white, purple at the tip. Flowers in a globular head, axillary and solitary, first sessile then peduncled, shorter than the leaves. Legumes compressed, attenuated at the base^v.

Native of the East and West Indies and Arabia.—Linneus remarks, that in the American plant the heads of flowers are globular and peduncled, as in *M. tortuosa*, but that there is a minute two-valved bracte in the middle.

52. This is a large tree, with spreading branches, and large branched straight scattered spines. Leaves unequally pinnate, commonly five-paired; with oblong-ovate, emarginate, smooth leaflets. Flowers pale, in long, lateral, scattered spikes: males many, more slender: hermaphrodites fewer, at the base of the spike. Corolla five-cleft. Stamens ten. Legume eight inches long, curved, flat, smooth, brown. Seeds many, ovate, compressed.

Native of China and CochinChina; where it is also planted for hedges, which are impenetrable by animals^w.

53. This is a small tree, remarkable also for its tremendous spines, at the ends of the branches, next the flowers, where there are no leaves; they are two inches long, connate at the base, very straight, round, compressed as in *M. cornigera*, shining very much and whitish like ivory, red at the tip. The spines on the lower part of the stem are very short. Leaves four-paired. Leaflets small, ash-coloured, six-paired. Peduncles from four to eight in the axils of the spines, each terminating in small, yellow globules of flowers. Native of the East Indies.

54. This is a very thorny, branching, depressed shrub. Branchlets flexuose, interwoven, smooth, with whitish dots. Leaves very small. Spines shining, the colour of milk, over all the branches, long, very straight, divaricating. Spikes axillary, elongated, commonly in pairs, seldom solitary. Flowers white. Legume compressed, half-mooned.—Native of the East Indies: found by Koenig abundantly at the foot of Tripully mountain, between Tanschu and Tirut Schinapally.

These thorny *Mimosa*s, with their interwoven

^m Vahl. ⁿ L'Heritier. ^o Hort. kew. ^p L'Heritier.
^q Mill. fig. ^r Linn. zeyl. ^s Jacquin. ^t Hort. kew.

^u Woodville, Kerr, in med. obs. 5. 151.

^v Vahl from Forsk.

^w Loureiro.

branches and terrible thorns, form impenetrable thickets in the mountainous parts of India, and are the secure retreat of smaller animals, birds and rogues^z.

55. Stem shrubby, branched, three feet high, covered with a reddish bark; rugged, very hairy, especially when young, as are also the petioles and peduncles. Leaves alternate: leaflets seventy and more, ovate-oblong, one-nerved, wider on one side of the base, and hence approximating so as to resemble the leaves of Fern. Stipules awl-shaped, ciliate, withering. Flowers in pedicelled heads disposed in a panicle. Calyx one-leaved, whitish, very small, five-notched at top. Corolla white, with five ovate petals, double the length of the calyx. Filaments very numerous, white, in a diverging bundle, much longer than the corolla. Germ ovate-oblong, compressed, acuminate.

Native of Mexico. It flowered in the royal garden at Madrid in October. It approaches to *M. filicifolia* of Lamarck; (Dict. 1. 13.) and perhaps also to *M. peregrina* of Linneus^a.—This species should have been placed after n. 43.

56. This is a shrub, with a branching stem. Branches diffused, subdivided, flexuose, smoothish, spiny, with a brown bark. Spines in pairs, almost united at the base, stretched out, half an inch long. Leaves three or four from one point, alternate: partial ones two-paired or three-paired: pinnae twelve to sixteen, lanceolate, bluntish, entire, smooth. Universal petioles round, filiform, reddish: partial petioles angular. Glands solitary, brown, in the middle of the universal petioles, below the leaflets. Flowers peduncled, in heads, yellow. Peduncles solitary, above the spines among the leaves half an inch in length, bent down. Filaments monadelphous, twenty to twenty-four, upright, yellow. Germ ovate, minute. Legume horned, roundish, torulose, drawn to a point at both ends, beaked, black. Seeds obovate, black, compressed a little.

Between the outer coat of the pod and the inner membrane separating the seeds, there is a liquor of the consistence and colour of a syrup, which smells very strong, and is bitter and astringent. Browne says, that this would prove an excellent medicine, where rough astringents are requisite. The whole plant is bitter, and the flowers have a very strong smell^b. Indeed the smell of all the parts is so rank and disagreeable, that it cannot be used even for fire-wood. It is chiefly used for hedges. The cattle are said to browse upon the tender shoots in dry weather, and their milk thereby becomes rank.

Native of Jamaica, where it is common in the low lands, and is called the common Acacia or Acacia-bush^c.

57. Flowers many-stamened, very fragrant, yellow, in sessile heads^d. Vahl says they are always peduncled in the South of Europe and Barbary; and Loureiro informs us that they are so in Cochinchina. The petioles have a gland below the leaflets. The legumes are fusiform^e.

Native of St. Domingo and other islands of the West Indies, as Jamaica, Barbadoes, &c. according to Miller; also of Barbary, Egypt, and Cochinchina, at least in a state of cultivation.]

For the sweetness of its flowers it has been dispersed through most parts of Europe, has been made familiar to the Italian gardens, since it was introduced into the Farnese garden in 1611, and is cultivated in great plenty in Spain and Portugal. The Italian gardeners, who bring over orange-trees, &c. bring also many young plants of this to England, under the name of Gazia. [It was cultivated in 1731, by Mr. Miller, and flowers from June to August^f.]

58. This tree arrives at a large size in countries where it grows naturally, but in England is rarely seen more than eight or ten feet high. [It has the habit of *M. farnesiana* and Senegal; from the first it differs in having no callous dots upon the branches; from the second, in having the bark by no means white, but purple: nor has it spines in threes, like

M. Senegal, but in pairs, and longer than those of *M. farnesiana*. Branches purple, even. Partial leaves about five pairs; between two pairs of the outer ones a gland is inserted into the common petiole. Legumes necklace-shaped, compressed: the joints roundish-rhomb-shaped. Flowers many-stamened in peduncled heads. A gland between the outer pair of the partial leaves. Native of Egypt and Arabia. This is the tree which yields the Gum Arabic^g. It was cultivated here in 1664^h.

According to Hasselquist, the Arabs call it Charad, and it is this, not *M. Senegal*, that produces Gum Arabic, Frankincense, and Succus Acaciæ.

This species and *Mimosa Senegal* growing together promiscuously, the latter having by chance been brought to Europe instead of the former, and Prosper Alpinus not having distinguished them, *M. Senegal* was generally believed to be the tree that produced the above-mentioned gums: but the genuine tree was known only to those who cultivated it in Egypt, where they call the true one *Charad*, and the other, which is of no value *Fetne*. They both grow in Lower Egypt, where they are planted in gardens, but they grow wild in the sandy desert, near the ancient sepulchres of the Egyptians, and this, or *Acacia vera* is said to grow plentifully in several parts of Upper Egypt. The gum is gathered in vast quantities from the trees growing in Arabia petraea, near the north bay of the Red Sea, at the foot of mount Sinai, whence is brought the Thus, so called by dealers in drugs in Egypt from Thur or Thor, which is the name of a harbour in the north bay of the Red Sea, near mount Sinai; thereby distinguishing it from the Gum Arabic, which is brought from Suez, not far from Cairo. The gum Thus is also more pellucid and white; whereas Gum Arabic is of a brown or dirty yellow colour and generally opaqueⁱ.

59. Branches round, smooth, with a thorn on each side by the petiole. Leaves ten-paired: leaflets thirteen-paired, oblong, rounded at both ends, equal on both sides. Common petiole with a pair of opposite recurved prickles underneath to each pair, and an upright prickle above. Peduncle axillary, a span and half in length, villose above. Flowers in a compound raceme, numerous, spreading, scattered, on pedicels the length of the flowers. Calyx five-leaved; leaflets ovate, acute. Petals five, lanceolate. Filaments ten, distinct, a little longer than the corolla. Germ oblong. Style longer than the stamens. Stigma simple, blunt. Legume compressed, membranaceous, lanceolate.—Native of Arabia^k.

Loureiro has given the name of *stellata* to a species very different from this, and which Willdenow supposes may be the same with *M. verticillata*, n. 1.

60. The stem has recurved prickles scattered over it in pairs. Leaves commonly six-paired, with many-paired pinnae. On the universal petioles there are recurved prickles between each of the partial ones; and there is a straight upright prickle which is longer, between each pair of the partial ones, in place of a gland. Heads globular. Legumes membranaceous-compressed, jointed, rugged.—Native of South America^l.]

61. This has a shrubby erect stalk about five feet high, hairy and armed with short, broad, strong thorns, which are white, standing on each side, almost opposite, or alternate. Leaves five or six-paired, with a strong midrib, and between each pair two short strong spines, pointing out each way. Leaflets extremely narrow and very close. Towards the upper part of the stalk the flowers are produced from the sides on short peduncles; they are collected into globular heads, and are of a bright purple colour; the stalks are also terminated by smaller heads of the like flowers. Pods flat, jointed, about two inches long, and a quarter of an inch broad, spreading like rays, there being commonly five or six joined together at the base: they separate at each articulation, leaving the two side membranes or borders standing. The seeds, which are

^a Linn. suppl. ^b Cavanilles. ^c Swartz. ^d Browne.
^e Linn. ^f Idem. ^g Hort. kew. ^h Hasselquist, Engl. edit. 250. ⁱ Vahl. ^j Linn. amoen.

compressed and square, drop out from the joints of the pods, which are hairy at first, but as they ripen become smooth. The petioles do not fall on being touched, but the leaflets close up.

[Linneus remarks, that the whole plant is rough-haired except the pinnas. The leaves often fourteen-paired, with many-paired leaflets. An upright awl-shaped spine between each pair of partial leaves; and two stout recurved solitary opposite shorter prickles between each pair of partial ones. Legume compressed, with stiffish pale-red hairs^m.

According to Browne, it rises commonly to the height of seven or eight feet. The smaller branches and ribs are full of short recurved thorns; and each rib again emits a number of long slender prickles, from the inter-spaces of its foliations, or smallest ribs, which, like so many needles, guard the tender leaves. The branches are moderately thick, but the leaves are small, and very apt to move on every occasion. The pods are compressed and hairy, and when ripe divide into as many parts as there are seeds, which fall off separately; these parts, in the natural state are held between two ribs, that run along the margins of the pod, in the inner grooves of which they move with great ease, when contracted and detached from each other.]

Native of Vera Cruz, where it was found by Dr. Houstoun. [Browne says it was introduced into Jamaica from the main continent. Mr. Miller cultivated it before 1733.

Swartz affirms, that this and the preceding species are not distinct, but only varieties.

62. This is distinguished at first sight by its white bark. The spines at the base of the leaf are three, and not two, as in *M. nilotica* ⁿ.

Native of Africa.

63. Leaves blunt, broad, of five, six or seven pairs of leaflets: each leaflet of from twelve to sixteen pairs of pinnas. Gland oblong, above the base of the petioles. Prickles recurved, scattered on the stem and petioles. Peduncles simple, lateral. Panicle prickly with the flowers in heads^o.

Native of the East Indies. Introduced in 1773, by Sir Joseph Banks ^p.

64. Frutescent. Panicle very much branched, naked, terminating the stem and branches. Prickles small, scattered over the stem and panicle. Leaves having from twelve to twenty pairs of partial leaves, with an oblong melliferous pore at the base of the general petiole. Leaflets linear and almost capillary. No prickles on the petioles or peduncles. A gland above the base of the petioles^q.

Loureiro describes it as a large procumbent branching shrub, with many short scattered prickles. Leaves more than ten-paired, with about forty pairs of leaflets. Flowers white, polygamous, in a vast diffused terminating panicle, of very many small globular heads. Calyx four-toothed. Corolla none. Stamens above one hundred, very slender.

Native of the East Indies, and of CochinChina, where the bark is converted into a sort of tow, which is used for stopping cracks both in houses and boats. Introduced in 1773, by Sir Joseph Banks ^r.

65. Branches obtuse-angled, even. Prickles at the angles, recurved, scattered; and two, a little larger, under the stipules. Leaves four-paired. A gland between the lowest partial leaves. Partial leaves twelve-paired. Pinnules blunt, curved in a little. Prickles recurved, scattered, under the common petiole: and rudiments of little prickles among the partial leaflets^s.

Native of the East Indies. Introduced in 1778, by Patrick Russell, M. D.^t

66. Native of America.]

67. This has a creeping root. Stalks slender, having four acute angles, armed pretty closely with short recurved spines. Leaves on long prickly foot-stalks, and thinly placed on the branches. Wings two pairs, about an inch asunder, short: leaflets narrow, not very

close. Peduncles axillary, sustaining a small globular head of purple flowers. Legumes four-cornered, two inches long, four-celled, four-valved; containing several angular seeds in each cell.

Found at La Vera Cruz by Dr. Houstoun, [and cultivated by Mr. Miller before 1733. It seems to be originally of Africa, and to have been carried to America by the slaves.

68. This was at first considered as a variety of *M. pennata*. It is set down by mistake as a native of Ceylon, for it is from South America.

69. There are recurved prickles on the stem and petioles. Peduncles lateral, clustered, headed. Legumes blunt, with a prickly suture.—Native of South America^u.

70. Branches with few recurved prickles. Leaves four or five-paired. A gland between the lowest partial ones, which are twelve-paired, but the lowest pinnule wants the opposite on the inside. On the common petiole are two remote prickles, underneath between each partial ones. Stipules wide, acuminate, purple. Legumes very wide^x.—Native of America.

71. Stem shrubby, long, branched, prickly. Pinnae linear, many, very small. Peduncles long, sustaining small, globular heads of flowers. Calyx slightly four-cleft, with rounded segments. Corolla none. Legume long, straight, sinuous, compressed. Seeds oblong, flattish.—Native of CochinChina, in woods.

72. This is an arboreous shrub, with spreading unarmed branches. Leaves some unequally pinnate, others bigeminate: leaflets ovate, acuminate, petioled. It seems to be allied to *M. bigemina*.—Native of CochinChina, in woods.

The bark yields excellent soap^y.]

73, 74, 75. These are not described by Miller in his Dictionary. They were found by Houstoun in South America.

The last of them is one of the most singular species yet known, the spines being spread open and flat, appearing as if split lengthwise. The leaves are very beautiful, but the flowers being small and of an herbaceous colour, make no great appearance. In the natural place of its growth this tree produces flowers almost through the year, and a succession of pods is generally found on it; but the seeds are commonly eaten by insects before they come to maturity^z.

[76. Trunk ill-shaped. Bark ash-coloured, pretty smooth. Branches numerous, somewhat twiggy: young shoots winding and often bent back. Thorns stipular, suberect, sharp, but not long. Leaves alternate, twice-double: leaflets obliquely oblong, smooth, pointed, about an inch long. Petioles and petiolets end in a sharp point. Panicles terminating, thin, oblong, composed of diverging racemes of short pedicelled small globular heads of white corollas. Filaments numerous, united below into a tube. Legume swelled, particularly at the seeds, twisted like a screw, a little downy, the valves themselves thin, almost membranaceous; when ripe they open naturally, and expose to view much rose-coloured firm lobated fleshy pulp, in which the black shining seeds are hid.

This is probably not a native of India, but was introduced from the Philippine islands, for the sake of the pulp which fills the legumes. It grows quickly to a tree; a rich sandy soil suits it best; and it flowers in the cold season.

The fleshy pulp of the legumes is reckoned wholesome; it is sweet, but insipid and dryish. The Spaniards at Manilla raise many of the trees for the sake of this pulp, and call it Sappan-fruit. It would assist the poor in times of scarcity in those countries; and the gum, wood and bark may turn to account there. As it grows very fast, it may also be reared for fences, instead of many less useful bushes and trees.

77. Trunk straight. Bark brown, pretty smooth. Branches numerous. Leaves scattered about the extremities of the branchlets, in pairs. Leaflets opposite, without an odd one, from two to four pairs, with a single one below the pairs on the outside: they are

^m Linn.

ⁿ Idem.

^o Linn. zeyl.

^p Hort. kew.

^q Linn. zeyl.

^r Hort. kew.

^s Linn. mant.

^t Hort. kew.

^u Linn. spec.

^x Linn. mant.

^y Loureiro.

^z Mill. fig.

entire, oblong, smooth on both sides; the outer pair largest, about five inches long and two broad; those below are little more than half that size. Common petiole short, with a large brown gland: partial petiole round, with a similar gland between each pair of leaflets. Stipules lanceolate. Peduncles axillary, two to four; two to three inches long, each ending in a globular head of fragrant florets. Filaments ten, distinct, inserted into the bottom of the tube. Legume broad-fiddle-form, exceedingly hard and heavy; the outside covered with brown farina; about six inches long, and three broad. Seeds about ten, brown, smooth, each about as large as a kidney-bean.

This is one of the largest species of the genus. It is a native of the mountainous parts of the Circars only; casting its leaves during the cold season, and flowering at the beginning of the hot season.

The wood of this tree is of a chocolate-colour towards the centre. The natives esteem it much, and use it for many purposes, where hard durable tough timber is required; for plough-heads it is particularly in request, the Telingas seldom using iron in their ploughs^a.

78. Height three or four feet. Branches alternate, upright, angular, with a very tough smooth bark. Leaves of the young seedlings in pairs and pinnated, with oval leaflets: but when the stem rises, the common footstalks of its leaves become dilated, the leaflets cease to appear, and the whole shrub is furnished only with such dilated naked footstalks, which are to all intents and purposes leaves: they are alternate, vertical, smooth, firm and glaucous. Stipules none. On their upper edge near the base a small concave gland. Racemes axillary, solitary, erect, of about six alternate heads, each having three or four small white flowers. The calyx has only four segments, and the corolla four petals. Germ roundish. Pod linear, pointed, zigzag, brown, with a very thick margin. Seeds about six, oblong^b.

The flowers on the young branches are very numerous, and fragrant like those of *Spiraea Ulmaria*.

Mr. Hoy raised it from seeds brought from New South Wales, in Sion gardens, belonging to his Grace the Duke of Northumberland; and it flowered there in 1790^c. It produced ripe pods and perfect seeds in the stove of Chelsea garden, in May 1795; but in the greenhouse the flowers go off without any tendency to produce fruit. It is a shrub of quick growth and a ready blower^d.

Mr. Curtis remarks that the foliage is usually edged with red, and that he did not observe the leaves to be glaucous or very much undulated.

79. The branches of this are most acutely triangular, and much compressed; their edges bright red. Leaves alternate, four or five inches long, with a rib and margin like the last. Flowers in axillary racemes, yellowish white, fragrant. Petals four. Stamens numerous. Young capsules smooth and glaucous.

This species and the preceding belong to the first division of this genus, for the knowledge of which we are indebted to the southern hemisphere. In their adult state they have leaves totally different from those which they produce at first springing out of the ground, as described in the preceding species. We have not any description of the primordial leaves of *M. simplicifolia*, but it is probable that they also are pinnated.

This also flowered in Sion gardens under the care of Mr. Hoy, in the year 1790, from seeds brought from New South Wales^e.

80. This forms a thick rigid bush. Branches numerous, alternate, spreading, round, very rough with a short dense rigid pubescence, especially when young. Leaves alternate, apparently vertical, sessile, pointed, entire, extremely harsh with minute prominent scattered points, especially on the rib and the cartilaginous margin. Stipules in pairs, very minute, triangular, membranous. Flowers pale yellow, many together in little round heads, which stand solitary, on rough

axillary peduncles shorter than the leaves, destitute of bractes. Calyx in four segments ciliated. Petals four, concave. Pod compressed, broadish in proportion to its length. It has much asperity about it; whereas the other simple-leaved species are perfectly smooth. It is an inhabitant of Port Jackson in New South Wales, and the living plant has not yet been introduced^f.

81. Native of Georgia and Carolina.

82. In the leaves this resembles *M. Unguis cati*, but they are only one-fifth of the size. Legumes ensiform, compressed, not circinate. A gland at the base of the petiole, and not among the leaves.—Native of Egypt.

This should have been placed after n. 10.

83. Branches round, purple, flexuose, pubescent. Leaves remote, on very short petioles, very smooth, an inch and half long: the partial ones two-paired, the outer larger: the proper interior ones four-parted, the outer five-paired: pinnules sessile, the inner ones smaller, oblong, narrower on the inner side, oblique at the base, mucronate, bright green, shining above. Gland orbiculate, sessile between the partial leaves, purple edged with yellow. Petiole pubescent, terminated by a rigid spinule. Spines stipular, opposite, straight, spreading very much, stout, purple, paler at the tip. Peduncles axillary, in pairs, the length of the leaves, pubescent. Flowers eight to ten in each head.

Found by Koenig in the East Indies. This should be placed after *glauca*, n. 44.

84. This is a tree, with round smooth dotted branches, and short flexuose remote tubercled wrinkled branchlets. Leaves on the branches remote, alternate; on the branchlets approximating, subopposite or terminating. Leaflets eight or ten-paired: pinnules oblong, membranaceous, smooth, mucronate, the innermost smaller, those of the terminating pair obovate, oblique at the base on one side. A small gland between each pair of leaflets. Spines stipular, straight, spreading very much, blunt. Peduncles on the branchlets, axillary, solitary, an inch and half long, shorter than the leaf, filiform, angular, erect. Flowers from twelve to sixteen in an umbel. Calyx bell-shaped, five-toothed. Corolla one-petalled, twice as long as the calyx. Filaments numerous, very long, monadelphous. Legume involute-spiral, when young pubescent.

Found in Ceylon by Koenig.—Place after *glauca*, n. 44.

85. Branches purple, smooth, flexuose. Leaves usually in pairs: partial ones three-paired, the outermost larger pinnate; the inner two or three-paired, in the second pair four or five-paired: pinnules oval, the inner ones smaller. Petiole pubescent: a sessile gland between the lowest pair. Spines stipular, in threes, all straightish, the middle one shorter.

It differs from *M. Senegal* by its purple branches, straight spines, and fewness of pairs to the leaves: in that the leaves are many-paired and wider, and the petiole is terminated by a recurved prickles.

Native of Arabia^g.—This should be placed after *M. Senegal*, n. 62.

The numerous species of *Mimosa* may be distinguished by the following circumstances, in addition to the hints given at the foot of the generic character from Linneus, and at the head of the descriptions from Jussieu. If the species had been better observed and described these distinctions might have been more perfect.

Leaves simple in N. 1, 2. 78, 79, 80.

pinnate in N. 3 to 8. and 77.

bigeminate in N. 9 to 11. 76. 82.

conjugate and at the same time pinnate in N. 12 to 20.

bipinnate in the rest. N. 21 to 75: 81. 83 to 85.

Unarmed, or without thorns or prickles. N. 1 to 9.

11 to 13. 15. 21 to 39. 41. 43 to 47. 55. 72. 74. 77 to 80.

Armed. N. 10. 14. 16 to 20. 40. 42. 48 to 54. 56 to 71. 73. 75, 76. 81 to 85.

^a Roxb. corom. ^b Smith, New Holl. ^c Linn. transf.

^d Curt. magaz. ^e Linn. transf.

^f Smith, New Holl.

^g Vahl.

Most of the species have Stipules, as N. 24, 25. 30. 45. 49 to 59. 65. 70. 76. 80. 83 to 85.

Some however have no Stipules, as N. 2. 10. 78.

The greater part have Glands, chiefly on the petioles of the leaves, as N. 4. 10. 14. 27. 29, 30. 33. 38. 40. 43. 45. 56. 58. 63 to 65. 70. 77, 78. 83 to 85.

The following have no Glands. N. 6. 22. 24. 25. 32.

The Flowers are mostly hermaphrodite and male or sometimes female on one plant; in a few species however they appear to be all perfect, as in n. 30. but they are probably not really so, since few of them produce fruit.

Calyx commonly five-toothed or slightly five-cleft. In some species however it is

Five-leaved, as in n. 59. Or

Four-toothed, as in N. 36. 64. 71. 78 to 80.

Trifid, in N. 20.

Corolla commonly one-petalled, and five-cleft. But Five-petalled in N. 59.

Four-petalled in N. 36. 78 to 80.

None in N. 19, 20. 44. 64. 71.

White in N. 6 to 8. 10. 29. 33. 35. 36. 40, 41. 44. 54, 55. 64. 76. 78.

Greenish White, 4. 21, 22.

Yellowish White, 79.

Yellow, 20. 23. 26, 27. 53. 56, 57. 80.

Purple, 11, 12. 19. 47. 61. 67.

Stamens in the greater part many: and of these

Monadelphous, 4. 7. 9 to 11. 29, 30. 36. 56. 76. 84.

Four in N. 20.

Five in N. 19.

Ten in N. 18. 22. 26, 27. 44. 52. 59. 77.

Legume opening or two-valved in most.

Not opening, in N. 20. 30. 57. 61.

The following species are Sensitive or yield to a slight force more or less. *Pudica, viva, casta, plena, punctata, asperata, sensitiva, quadrivalvis.*]

PROPAGATION AND CULTURE.

Of Sensitive and Humble Plants.

These plants are all of them propagated by seeds, which should be sown early in the spring, upon a good hot-bed. If the seeds are good, the plants will appear in a fortnight or three weeks, when they will require to be treated with care, for they must not have much wet till they have acquired strength; nor should they be drawn too weak, so that fresh air should be admitted to them at all times when the air is temperate. In about a fortnight or three weeks after the plants come up, they will be fit to transplant, especially if the bed in which they were sown, continues in a proper degree of heat; then there should be a fresh hot-bed prepared to receive them, which should be made a week before the plants are removed into it, that the violent heat may be abated before the earth is laid upon the dung, and the earth should have time to warm before the plants are planted into it. Then the plants must be carefully raised up from the bed to preserve the roots entire, and immediately planted in the new bed, at about three or four inches distance, pressing the earth gently to their roots; then they should be gently sprinkled over with water, to settle the earth to their roots; after this they must be shaded from the sun till they have taken new root, and the glasses of the hot-bed should be covered every night to keep up the heat of the bed. When the plants are established in their new bed, they must have frequent, but gentle waterings; and every day they must have free air admitted to them, in proportion to the warmth of the season, to prevent their being drawn up weak; but they must be constantly kept in a moderate degree of heat, otherwise they will not thrive. In about a month after the plants will be strong enough to remove again, when they should be carefully taken up, preserving as much earth to their roots as possible, and each planted in a separate small pot, filled with good kitchen-garden earth, and plunged into a hot-bed of tan, carefully shading them from the sun till they have taken new root; then they must be treated in the same manner as other tender exotic plants from very warm countries.

The sorts which grow upright and tall, will soon rise high enough to reach the glasses of the hot-bed, especially if they thrive well; therefore they should be shifted into larger pots, and removed into the stove, and if they are plunged into the tan-bed there, it will greatly forward them.

The perennial sorts will live through the winter, if they are preserved in a warm stove, and the following summer they will produce flowers and ripen their seeds. Some of these may be propagated by laying down their branches, which will put out roots, and then may be separated from the old plants; and I have sometimes propagated them by cuttings, but the plants which rise from seeds are preferable to either of these.

There is no particular management which these plants require, different from others of the same warm countries; the great care must be to keep them in a proper temperature of heat, and not to give them too much water, especially in cool weather; nor should they be kept too dry, for many of the sorts require frequent waterings, as they naturally grow in moist places. There should also be care taken that they do not root into the tan-bed, for they soon put out their roots through the holes at the bottom of the pots, which, when they strike into the tan, will cause the plants to grow very luxuriant; but when they are removed, and these roots are cut or broken off, the plants seldom survive it; therefore the pots should be frequently drawn out of the tan, and if any of the roots are beginning to get through the holes at the bottom, they should be cut off close; and when the roots are very closely matted together, they should be turned out of the pots, and pared round to reduce them, and then potted again, either in pots of the same size, or if the plants require, in pots one size larger; but they must not be over-potted, for then the plants will not thrive.

Some of those sorts whose stalks spread near the ground, may be turned out of the pots in the middle of June, and planted in a very warm border, where, if they are covered with bell or hand-glasses, they will live through the summer; but these will not grow very large, and upon the approach of cold in the autumn, they are soon destroyed: however, those who have not conveniency of stoves or tan-beds, may raise the plants on common hot-beds in the spring; and when they have acquired strength, they may be treated in this manner, whereby they will have the pleasure of these plants in summer, though not in so great perfection, as those who have the advantages before-mentioned: but these plants will not thrive in the open air in this country, nor will they retain their sensibility when they are fully exposed to the air.

Propagation and Culture of Acacias.

These being all tender, are to be placed in stoves in the winter, and in summer must be but a short time exposed to the open air, and have a warm situation.

They are propagated by sowing their seeds on a hot-bed in the spring of the year, which will in a short time appear above ground, and in about five or six weeks after, be fit to transplant, when a fresh hot-bed is to be prepared for them, and should be pretty warm; the next thing to be provided is a quantity of small halfpenny pots, which are to be filled with fresh, light, sandy earth; these should be plunged into the hot-bed, but not into dung; for if these beds are made with warm horse-dung, they ought to be covered with earth as deep as the pots, whose bottoms should rest upon the dung, for otherwise the roots of the plants may suffer by too much heat; but beds of tanners bark seldom heat so violently. As soon as the earth in the pots is warm, which will be in two or three days, you should carefully take up the young plants out of the first hot-bed, planting four or five plants into each of these pots, giving them a gentle watering to settle the earth to their roots, and screening them with mats over the glasses from the heat of the sun, until they have taken root; after which time you must give them air, by raising the glasses in proportion to the heat of the weather, or to the constitution of the plants.

The 49th, 57th, and 58th sorts are very tender, especially while young, therefore should have a hot-bed of tanners bark; and as they increase in bulk, should be shifted into bigger pots. The earth for these should be a little lighter, and more inclined to a sand, than for the other sorts; but never plant them in pots that are too large, which is full as bad to these as to Orange-trees; neither give them too much water, especially in winter. The 58th sort being the hardiest of the three, will, when grown to be woody, stand in a common stove, which should be kept to the point of temperate heat in winter; and in the summer time, in warm weather, may enjoy the open free air: but the two other sorts must have a bark-stove in winter; nor should they be exposed to the open air in summer, at least for four or five years, until they are grown very woody, for they are very tender, and with great difficulty preserved in this climate. The stove in which these should be placed in winter, must be kept above the temperate point, as marked in the botanical thermometers. These should have very little water in winter, but in summer time will require frequent refreshings, though at that season it should not be given them in great quantities at one time. The 57th sort is a very beautiful tree. The 49th sheds its leaves just before the new ones come on, so that it is naked of leaves about a month or six weeks in the spring of the year, which has occasioned some people to throw them away as dead, when, if they had let them remain, they would have come out fresh again.

This I thought proper to mention, in order to caution people not to be too hasty in throwing out trees for dead, but preserve them through the succeeding summer, to see if they will shoot again; for I have known several plants, which, after having been given over by unskilful persons for dead, have the July following shot out vigorously again; and others, which have died to the surface of the earth, have risen again from the root.

The horned Acacias are very often destitute of leaves for two or three months, appearing to have no life; but they will put out fresh leaves towards autumn, which is commonly the season when they are most vigorous. These should be exposed in the summer season for about two months, to clear them from insects, which greatly infest them, in a place defended from strong winds; and in the winter they require a moderate degree of warmth.

All the other sorts here mentioned are propagated by seeds, which, seldom ripening in this country, must be procured from America, particularly at Campeachy, where there is great variety of this tree, many sorts of which have been hitherto unknown to botanical writers. In bringing over the seeds of these trees, they should be taken out of the pods when gathered, and put up in papers, and ought to have Tobacco, or some other noxious herb, put between the papers, to keep off insects, otherwise the seeds will be eaten and destroyed before they arrive in England. For the insects deposit their eggs in small punctures which they make in the pods; and as these are soon hatched, so they immediately attack the seeds for food, and eat holes through them, by which they are spoiled from growing. This has often happened to seeds which have been sent me from America.

There are several of these Acacias, which are very tender while they are young; but, after two or three years growth, become hardy enough to bear the open air in summer, though scarce any of them will live through the winter in a green-house, unless they have some warmth in very cold weather.

MIMOSA. See *Aeschynomene*.

MIMULUS (of Pliny, *Mimus personatus*; so named from its ringent corolla.)

Lin. gen. n. 783. Reich. n. 846. Schreb. n. 1049.

Gartn. t. 53. Juss. 122. Cynorynchium.

Mitch. 3.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Scrophulariæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, oblong, prismatic, five-cornered, five-folded, five-toothed, equal, permanent.

COR. one-petalled, ringent. Tube the length of the calyx. Border two-lipped. Upper lip upright, bifid, rounded, bent back at the sides. Lower lip wider, trifid, with the segments rounded: the middle one smaller. Palate convex, bifid, protruded from the base of the lip.

STAM. Filaments four, filiform, within the throat: two shorter. Anthers bifid-kidney-form.

PIST. Germ conical. Style filiform, the length of the stamens. Stigma ovate, bifid, compressed.

PER. Capsule oval, two-celled, opening transversely at top. Partition membranaceous, contrary to the valves.

SEEDS very many, small. Receptacle oblong, fastened on each side to the partition.

ESSENTIAL CHARACTER.

Cal. four-toothed, prismatical. Cor. ringent: the upper lip folded back at the sides. Caps. two-celled, many-seeded.

SPECIES.

1. *Mimulus ringens*. Oblong-leaved Monkey flower.
Lin. spec. 884. Reich. 3. 189. hort. upf. 176. t. 2.
Ait. upf. 1741. p. 82. Gartn. fruct. 1. 245. Curt.
magaz. 283. Pluk. amalb. t. 393. f. 3. (Euphrasia). Gron. virg. 69. (Lyfimachia). Mor.
hist. 2. 479. f. 5. t. 8. f. 6. Raii hist. 769.
(Digitalis).

Erect, leaves oblong linear sessile.

2. *Mimulus luteus*. Ovate-leaved Monkey-flower.

Lin. spec. 884. Reich. 3. 189. Feuille. peruv. 2. 745.
t. 34. (Gratiola).

Creeping, leaves ovate.

3. *Mimulus alatus*. Wing-stalked Mimulus.

Ait. hort. kew. 2. 361. Vahl symb. 2. 72.

Erect, leaves ovate petioled, stem square winged.

4. *Mimulus aurantiacus*. Orange Monkey-flower.

Curt. magaz. 354.

Stem erect shrubby round, leaves ovate-lanceolate bluntish.]

DESCRIPTIONS, &c.

1. Root perennial. Stalk annual, square, a foot and half high, with two oblong smooth leaves at each joint, broadest at their base, where they join round the stalk, but ending in acute points. The lower part of the stalk sends out two or three short branches, and the upper part is adorned with two flowers at each joint, from the bosom of the leaves on each side: they are of a violet colour, and have no scent [Capsule clothed with the five-cornered calyx, oval, two-celled. Receptacle spongy, hollow-dotted. Seeds ovate-oblong, smooth, pale straw-colour, tipped at each end with a small prominent rufescent point^a.

Native of Virginia and Canada. Cultivated in 1759 by Mr. Miller. It flowers in July and August^b.

2. Native of Peru^c.

3. This has the appearance of the first species. Stem winged with four membranes running down from the base of the petioles, simple, smooth, with a branchlet or two at top. Leaves two inches long, veined, unequally ferrate. Peduncles axillary, solitary, opposite, four-cornered, thickened at top. Calyx the length of the peduncle, with rounded mucronate segments. Corolla a little longer than the calyx^d.

Native of North America. Introduced in 1783, by Mr. William Malcolm. It flowers in July and August^e.

4. Stalk about three feet high, much branched, shrubby, round, the young wood green, with a tinge of purple towards the lower part of each joint, slightly viscid, as it becomes older changing to a light-brown colour, and discovering manifest fissures: branches alternately opposite, flower-bearing quite to the base. Leaves opposite, sessile, slightly connate, the bluntness at the end particularly apparent when contrasted with a leaf of the first species, toothed or slightly ferrate, smooth, veiny. Flowers inodorous, large, nearly twice the size of those of the ringens, uniformly pale orange, growing in pairs from the axils of the leaves, on peduncles that are about half the length of the calyx. Tube of the corolla within the calyx narrow, cylindrical, pale yellow, bent a little downwards, gradually spreading. Segments of the lips irregular, the

^a Gartner.

^b Hort. Kew.

^c Linn.

^d Vahl.

^e Hort. kew.

two uppermost very much so; at the base of the middle segment of the lower lip are two prominent ridges, of a somewhat deeper colour. Anthers deep orange, cruciform, within the flower. Stigma white, two-lipped, with the lips closed or expanded according to its age. Germ oblong, with a gland at the base of considerable size which secretes much honey. It flowers during most of the summer. Cultivated by Mr. Colvill, nursery-man in the King's-road near Chelsea in 1796¹.]

PROPAGATION AND CULTURE.

1. This plant is very hardy in respect to cold, but should have a loamy soft soil, rather moist than dry, and not too much exposed to the sun. It may be increased by parting the roots in autumn; but they should not be divided too small. It may also be propagated by seeds sown in autumn, soon after they are ripe; for those which are sown in the spring seldom grow the same year: they should be sown on a border exposed to the morning sun.

[The third sort may be increased in the same way; and the fourth by cuttings.

MIMULUS. See *Rhinanthus*.

MIMUSOPS. (From *μῦς* a monkey, and *ὤψις*, a face: so named on account of the form of its corolla.)

Lin. gen. n. 478. Reich. n. 512. Schreb. n. 644.

Gartn. t. 42. Juss. 152.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Holoraceæ*. *Sapotæ* Juss.

GENERIC CHARACTER.

CAL. Perianth eight-leaved, coriaceous: leaflets in a double row, ovate, acute, permanent.

COR. Petals eight, lanceolate, spreading, the length of the calyx.

STAM. Filaments eight, awl-shaped, hairy, very short. Anthers oblong, erect, the length of the calyx.

PIST. Germ superior, round, hispid. Style cylindric, the length of the corolla. Stigma simple.

PER. Drupe oval, acuminate. (Berry one-celled. G.)

SEED single (or two?) oval:—hard, shining. G.

OBS. Petals sixteen. Mant. Calyx four-leaved.

Petals four. Nectary sixteen-leaved. Syft.

veg. Calyx eight-parted, with acuminate

leaflets, alternately larger and smaller. G.

ESSENTIAL CHARACTER.

Cal. four-leaved, (eight-parted. G.) Pet. four. (eight Lin. many G.) Nect. sixteen-leaved. Drupe acuminate. (Berry one-celled. G.)

Or thus:

Cal. eight-parted in two rows. Cor. eight-parted, with the segments entire or three-parted. Appendixes eight, small, like scales. Drupe with one or two seeds. Jussieu.

SPECIES.

1. *Mimusops Elengi*.

Lin. spec. 497. Syst. 360. Reich. 2. 156. fl. zeyl.

n. 138. Gartn. fruct. 1. 198. Roxb. corom.

15. t. 14.

Prunus malibarica fructu calyculato. Raii hist. 1564. Burm. ind. 68.

Arbor zeylanica, floribus odoratis, faciem humanam referentibus. Burm. zeyl. 27.

Flos cuspidum. Rumph. amb. 2. 189. t. 63.

Kauki inodorum. Pluk. alm. 203. Breyn. cent. 20. t. 8. Raii app. 665.

Elengi. Rheed. mal. 1. 34. t. 20.

Leaves alternate remote, lanceolate, acuminate.

2. *Mimusops Kauki*.

Lin. spec. 497. Syst. 360. fl. zeyl. n. 137. Vahl symb. 1. 27.

Binectaria. Forsk. descr. 82.

Metrosiderops macassarensis. Rumph. amb. 3. 19. t. 8. Burm. ind. 86.

Leaves clustered.

3. *Mimusops hexandra*.

Roxb. corom. 16. t. 15.

Leaves alternate, obovate, emarginate.

¹ Curtis.

DESCRIPTIONS, &c.

1. This is a middle-sized tree, with petioled, oval, acute, quite entire, smooth leaves. Flowers axillary, on very many simple peduncles. Calyxes tomentose². Berry superior, ovate, defended at the base by the permanent calyx, having an obsolete groove on one side, shagreened all over with very minute callous dots, fleshy, thick. Seed one, fixed to the bottom of the cell, ovate-oblong, contracted near the base into a short thick point, compressed like a lens, or flattish at the sides, but keeled at the edge, very smooth, of a yellow-bay colour³.

Native of the East Indies, where it is much planted on account of its fragrant flowers, which come out chiefly in the hot season.

2. This is a tree with thicker branches, having small scars scattered all over them. Leaves at the ends of the branches only. Flowers like those of the preceding⁴.

Linneus, in his earlier works, having made no mention of the nectaries, Forskahl took this for a distinct genus, and named it *Binectaria*. He has described it well⁵.

Native of the East Indies, and Arabia.

Jussieu, from Commerçon's manuscripts, and after him Gmelin, made a distinct genus of this, under the name of *Imbricaria*, on account of its fruit having eight cells and as many seeds: but Commerçon observed that four or more of these were often abortive; and on the other hand Rumphius tells us that the *Mimusops* has often as many as three or four perfect seeds. It is probable therefore that the germ has eight cells and eight seeds, most of which are generally abortive⁶.

3. This is a large tree with an erect trunk, and covered with an ash-coloured bark. When old it has frequently large rotten excavations. Branches numerous, spreading; the extremities nearly erect, forming a large shady head. Leaves broad, wedge-form or inverse-hearted, deeply emarginate, very hard, deep shining green on both sides, three to five inches long, an inch and half or two inches wide. Petiole round, an inch or an inch and half long. Peduncles axillary, from one to six, erect or spreading, nearly as long as the petiole, clubbed, undivided, one-flowered. Flowers considerably smaller than in the first sort. Calyx six-leaved; three leaflets interior, three exterior and leathery. Corolla one-petalled: tube very short; border of two rows of segments, the exterior twelve, the interior six, all spreading. Nectary eight-leaved, conical, ragged, hairy near the base, inserted alternately with the filaments into the mouth of the tube, spreading, shorter and more deeply indented than in the first sort. Filaments six, spreading. Anthers oval. Berry ovate, the size and shape of an Olive, with generally one ovate, compressed, smooth, shining, chestnut coloured seed.

Native of the East Indies, in the mountainous uncultivated parts of the Circars. The wood being remarkably heavy, is much used by the washermen to beetle their cloth on⁷.

MINDIUM. See *Michauxia*.

MINT. See *Mentha*.

MINUARTIA. (So named from Minuartus an apothecary, restorer of botany in Spain; he constituted the genus *Cerviana*, now *Pharnaceum*, and is commended by Loesling.)

Lin. gen. n. 107. Reich. n. 114. Schreb. n. 140.

Juss. 300.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. Perianth five-leaved, upright, long: leaflets awl-shaped, somewhat rigid, permanent.

COR. none.

STAM. Filaments three, capillary short. Anthers roundish.

PIST. Germ three-cornered. Styles three, short, filiform. Stigmas thickish.

² Linn. zeyl.

³ Gartner.

⁴ Linn. zeyl.

⁵ Vahl.

⁶ Smith in Linn. trans. 3. 258.

⁷ Roxburgh.

PER. Capsule oblong, triangular, much shorter than the calyx, one-celled, three-valved.

SEEDS some, roundish, compressed.

OBS. *M. montana* has five petals; scarcely any; and commonly five stamens, like *Alfina*.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Caps. one-celled, three-valved. Seeds some.

SPECIES.

1. *Minuartia dichotoma*.

Lin. spec. 132. syst. 130. Reich. 1. 249. Aët. holm. 1758. t. 1. f. 4. Loeßl. it. 121. t. 1. f. 5. Flowers clustered dichotomous.

2. *Minuartia campestris*.

Lin. spec. 132. syst. 130. Reich. 1. 249. Loeßl. it. 122. Aët. holm. 1758. t. 1. f. 3. Flowers terminating alternate longer than the bracte.

3. *Minuartia montana*.

Lin. spec. 132. syst. 130. Reich. 1. 249. mant. 328. Loeßl. it. 122. t. 1. f. 4. Flowers lateral alternate shorter than the bracte.

DESCRIPTIONS, &c.

These are all annual plants, natives of Spain. Leaves opposite, clustered. Flowers in clusters, with five or three very small petals, like glandsⁿ.

1. This is a rigid, hard, tough little plant, commonly simple. Leaves bristle-shaped. Flowers sessile in cymes, forming a square head, closely dichotomous, fastigiate, commonly larger than the stem. Bractes bristle-shaped, longer than the flowers, with a straight tip. Seeds five to eight, roundish, kidney-form. Colour of the plant somewhat dusky.

Native of Spain^o.

2. Native of Spain, in the lower hills.

3. Stems several, diffused, a finger's length, subpubescent and hoary. Branches simple, lateral, very short, alternate. Leaves awl-shaped, pubescent, connate at the base, the length of the branches. Balls of flowers lateral, sessile, among the longer leaves. Calyx awl-shaped, erect, scarcely ever spreading. Petals five, so short as to be scarcely any. Stamens often five, like those of *Alfina*, very short. Styles three, white, recurved, blunt. Germ oblong. Linneus doubts whether it ought not to be referred to the genus *Alfina*^p, and recommends a comparison of it with *Alfina mucronata* in its native soil. The structure of that is similar to this, but it is loose, very much branched and diffused, whereas *M. montana* is contracted^q.

MIRABILIS AFFINIS. See *Bafella*.]

MIRABILIS. (So named from the wonderful diversity of colours in the flower. For the same reason it is called in English *Marvel of Peru*. Every thing from the New Continent was at first esteemed wonderful.)

Lin. gen. n. 242. Reich. n. 259. Schreb. n. 283. Gært. t. 127. Nyctago Juss. 90. Jalapa Tournef. t. 50.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Nyctagines* Juss.

GENERIC CHARACTER.

CAL. Perianth outer one-leaved, erect-ventricose, inferior, five-parted: segments ovate-lanceolate, sharp, unequal, permanent. Inner globular placed under the petal, with a contracted entire mouth, and permanent.

COR. one-petalled, funnel-form. Tube slender, long, thicker at top, placed on the inner calyx. Border from upright spreading, entire, bluntly five-cleft, plaited.

Nectary spherical, fleshy, surrounding the germ, with a five-toothed mouth: teeth very small, triangular, converging.

STAM. Filaments five inserted into the orifice of the nectary, and alternate with its teeth, within the inner calyx free, more slender, fastened at bottom to the tube of the corolla, filiform, the length of the corolla, inclining, unequal. Anthers twin, roundish, rising.

ⁿ Jussieu.

^o Linn. spec.

^p Linn. mant.

^q Linn. syst. and Aët. holm.

PIST. Germ turbinate, within the nectary. Style filiform, the length and situation of the stamens. Stigma globular, dotted, rising.

PER. none. The Inner Calyx incrusts the seed and falls with it.

SEED single, ovate-five-cornered.

OBS. Some toothlets of the nectary are commonly obsolete.

ESSENTIAL CHARACTER.

Cal. inferior. Cor. funnel-form, superior. Nect. globular, inclosing the germ.

SPECIES.

1. *Mirabilis Jalapa*. Common *Marvel of Peru*.

Lin. spec. 252. Reich. 1. 490. hort. cliff. 53. upf. 43. fl. zeyl. n. 85. Osb. it. 225. Thunb. jap. 91. Lour. cochinch. 101. Curt. magaz. 371. Rumph. amb. 5. 253. t. 89. Blackw. t. 404. Kniph. cent. 6. n. 61, 62. Knorr. del. 1. t. 3. Sabb. hort. 2. t. 11. Plenck. ic. t. 137.

Solanum mexicanum, flore magno. Baub. pin. 168.

Admirabilis peruana. Clus. hist. 2. 88.

Mirabilia peruviana. Ger. 272. emac. 343. Park. parad. 364. t. 361. f. 9. Raii hist. 398. Mor. hist. f. 15. t. 1. f. 1.

α. *Jalapa flore purpureo*. Tournef. inst. 129. Clus. hist. 2. t. 89.

Purple-flowered Marvel of Peru.

β. *J. flore flavo*. Tournef. inst. 129. Ger. emac. 343. *Yellow-flowered*.

γ. *J. flore exalbido*. Tournef. inst. 129. Clus. hist. 2. t. 90. Ger. emac. 343.

δ. *J. flore ex purpureo & luteo mixto*. Tourn. inst. 129. Ait. hort. kew. 1. 234.

Flowers heaped terminating erect.

2. *Mirabilis dichotoma*. Forked *Marvel of Peru*.

Lin. spec. 252. Reich. 1. 490. amoen. 4. 267. Plenck. ic. t. 139.

Jalapa officinarum. Mart. cent. 1. t. 1.

Solanum mexicanum flore parvo. Baub. pin. 168. prodr. 91. 4. Park. theat. 348. 8. Raii hist. 399.

Admirabilis Jasmin rosso. Clus. hist. 2. 90.

Flowers sessile axillary erect solitary.

3. *Mirabilis longiflora*. Sweet-scented *Marvel of Peru*.

Lin. spec. 252. Reich. 1. 491. Aët. holm. 1755. p. 176. t. 6. f. 1. amoen. 4. 268. Kniph. cent. 7. n. 59. Plenck. ic. 138. Gært. fruct. 2. 207.

Alzoyatl, Mirabilis mexicana. Hern. mex. 170. f. 2. Raii hist. 399.

Flowers heaped very long, somewhat nodding terminating, leaves subvillose.

[4. *Mirabilis viscosa*. Clammy *Marvel of Peru*.

Cavan. hisp. 13. n. 17. t. 19.

Flowers racemed, leaves cordate orbiculate-acute tomentose.

DESCRIPTIONS, &c.

Root tuberous. Stem herbaceous, round, often trichotomous. Leaves opposite. Flowers terminating, in a sort of corymb. Outer calyx bell-shaped-spreading, five-cleft: inner (which is the corolla of Tournefort and Linneus) large, petaloid, funnel-form, ventricose at the base, beyond that contracted, dilated above with a spreading border, almost entire or five-toothed. Germ half covered with an ambient gland (which is the tube of the filaments coalescing at the base, according to Adanson). Stamens inserted into the gland and glued to the calycine tube. Seed globular, covered with the coriaceous base of the inner calyx. This genus is allied to the *Amaranthi* and *Caryophyllæ* by its farinaceous seed; to the *Dipsacæ* in its habit and double calyx: it differs however in many marks, and it is difficult to assign it a place^a. Hence Linneus left it among the plants of doubtful rank, in his *Ordines Naturales*.

1. Flowers terminating, about six, close together without any leaflets between them, and not longer than the leaf^a.

It is a perennial plant, and the roots in their native country acquire a great size.]

Of this there are several varieties in the colour of the flowers (purple or red, white, yellow, variegated

^a Jussieu.

^a Linn. spec.

purple and white, and variegated purple and yellow.) These resolve themselves into two principal varieties; the first of which has purple and white flowers, which are variable; some are plain purple, others plain white, but most of them are variegated with the two colours, and all are found sometimes on the same plant: the second has red and yellow flowers, generally mixed, but sometimes distinct on the same plant; some plants have only plain flowers, others only variegated, and others again both plain and variegated: but plants raised from the seeds of the purple and white never produce red and yellow flowers, nor the contrary.

These varieties are very ornamental plants in the flower garden during the months of July, August and September, and if the season should continue mild, they often last till near the end of October. The flowers do not open till towards the evening, whilst the weather continues warm, but in moderate cool weather, when the sun is obscured, they continue open almost the whole day. They are produced so plentifully at the ends of the branches, that when they are expanded the plants seem entirely covered with them, and some being plain, others variegated on the same plant, they make a fine appearance.

[It is a native both of the East and West Indies, China, Cochin China and Africa, but was introduced into Europe first from Peru. It was cultivated here by Gerard many years, as he says, before the publication of his Herball in 1597. Parkinson is very diffuse in his description of this plant in his Paradisus, or Garden of pleasant flowers, published in 1629, and was well acquainted with its several varieties.

Thunberg informs us, that the Japanese ladies make a white paint from the meal of the seeds, for their complexions.

2. This resembles the preceding very much.¹] The stalks have thick swollen joints: the leaves are smaller; the flowers are not much more than half the size of the other, and do not vary in their colour from their natural purplish red; the fruit is very rough. It is a native of Mexico, but is very common in all the islands of the West Indies, where the inhabitants call it the Four o'clock flower, from the flowers opening at that time of the day.

Tournefort was informed by Plumier that the root of this plant is the officinal Jalap; but Dr. Houstoun was fully informed of the contrary in the Spanish West Indies, and brought over a drawing of the plant made by a Spaniard at Halapa or Xalapa, and carried some of the plants to Jamaica, where they were destroyed by hogs. He was however fully satisfied of its being a *Convolvulus*, as Mr. Ray had said many years before, upon what authority it does not at present appear. Mr. Miller, a few years after, (viz. in 1736) received three seeds of the Jalap from the Spanish West Indies, one of which grew, and became a large plant, having a bulbous (tuberous) root, as large as that of the Jalap commonly imported; but the plant produced no flowers in the three years it lived. The severe winter of 1739-40 killed it. The roots of Marvel of Peru are indeed purgative, like Jalap, given in a double dose, but it is now generally supposed that the true Jalap is a species of *Convolvulus*. [Loureiro however affirms that M. Jalapa produces the true Jalap. See *Convolvulus Jalapa*. It was introduced before 1728, by Charles Du Bois Esq.²]

3. The stalks of this sort fall on the ground, if they are not supported; they grow about three feet in length, and divide into several branches; they are hairy and clammy. The flowers come out at the ends of the branches, are white, have very long slender tubes, and a faint musky odour: as in the other species, they are shut during the day, and expand as the sun declines. The seeds are larger than those of the other species, and are as rough as those of the second.

[Gartner thus describes the parts of fructification. Floral involucre five-leaved, spreading bell-shaped. Calyx one-leaved, globular, toothless, continuous with the corolla, permanent, serving as an involucre to the seed. Corolla one-petalled, five-cleft. Stamens from

the bottom of the corolla, connate at the base. Germ within the calyx, placed on the receptacle of the stamens. Seed involucre with the hardened calyx, ovate-globular, smooth, the colour of honey or rufescent, marked on one side with a longitudinal fascia from the protuberant radicle of the embryo. Pericarp none, except the calyx be called so, which is hardened into a coriaceous ovate nut, contracted at the base, obscurely five-cornered, somewhat wrinkled, pubescent, clouded with ash-colour and brown, and marked within by five longitudinal bands, from the impression of the stamens³.

Native of Mexico. Cultivated in 1759 by Mr. Miller⁴:] who says, that the seeds were first sent him from Paris by Dr. Mounier, and afterwards from Madrid by Dr. Ortega. [It flowers, as the common sort does, from June to September.

4. Stems thick, round, swelling at the joints, with opposite branches, three or four feet high. The whole plant villose-glutinous. Leaves thick, glaucous, quite entire, with the border usually waving, a short nap on the upper surface, very villose underneath, the hairs terminated by a very small glutinous gland: petioles shorter than the leaf. Flowers in opposite axillary racemes. Calyx bell-shaped, inferior, half-five-parted, with the segments pressed close, whilst the corolla remains small, but after that falls increasing, and appearing at first yellow and five-cornered, but afterwards expanded into a flat smooth brown membranaceous five-cornered five-rayed pelta, with nerved rays in the centre of which is placed the fruit. Corolla superior, violet-coloured: tube short, marked externally with five awl-shaped, green lines: border spreading, ten-notched. Stamens three or four, violet, longer than the corolla, arched at top, inserted into the apex of the germ which is somewhat hollow under very small scales. Germ at the bottom of the calyx and below the corolla, ovate, five-streaked. Style longer than the stamens, arched. Stigma with many pedicelled mamillæ. Fruit a one-seeded nut in the centre of the expanded calyx, ovate, five-cornered, with longitudinal warted grooves.

Native of Huanuco in Peru. It flowered in the royal garden at Madrid from August to December⁵.

Cavanilles numbered three and sometimes four stamens in the cultivated plant: it should be enquired whether the case be the same in the wild plant.]

PROPAGATION AND CULTURE.

Sow the seeds on a moderate hot-bed in March. When the plants come up admit plenty of air to them, when the weather is mild. When they are two inches high transplant them on another very moderate hot-bed, or plant each in a small pot filled with light earth, and plunged into a hot-bed, whence they may be shaken out into the borders with more security.

When they are in the second hot-bed, they should be shaded till they have taken fresh root, after which they must have plenty of free air; and in May they must be gradually inured to the open air. The beginning of June, if the season be favourable, transplant them into the borders of the pleasure-garden, giving them proper room; and, after they have taken new root, they will require no farther care. If the seeds be sown in a warm border the beginning of April, they will grow very well, but the plants will be late in the season before they flower.

As the seeds ripen very well, there are not many persons who are at the trouble of preserving the roots: if these however be taken out of the ground in autumn, and laid in dry sand all the winter, secured from frost, and planted again in the spring, they will grow much larger, and flower earlier than the seedling plants: or if the roots be covered in winter with tanners bark to keep out the frost, they may remain in the borders, provided the soil be dry. If the roots which are taken out of the ground, be planted the following spring in large pots, and plunged into a hot-bed, under a deep frame, they may be brought forward, and raised to the height of four or five feet, and come earlier in the season to flower.

¹ Linn. spéc.

² Hort. kew.

³ Gartner.

⁴ Hort. kew.

⁵ Cavanilles.

In the choice of the seeds care should be taken not to save any from the plants with plain flowers; and in order to have variegated flowers, the plain flowers should be pulled off from those plants which are intended for seed.

The second sort is not quite so hardy as the first and third, so that unless the plants are brought forward in the spring, they will not flower till very late, and their seeds will not ripen.

MISSILTOE. See *Viscum*.

[MITCHELLA. (So named by Linneus from John Mitchell, M. D. a physician in Virginia, by whom there are thirty genera of Virginian plants in *Act. Nat. Cur.* for 1748. Published separately at Nuremberg in 1769.)

Lin. gen. n. 134. *Reich. n.* 140. *Schreb. n.* 174.

Juss. 208. *Chamaedaphne. Mitch.* 27.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Aggregateæ. Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. Flowers two sitting on the same germ. *Perianths* two distinct, four-toothed, erect, permanent, superior.

COR. one-petalled, funnel-form: tube cylindric: border four-parted, spreading, hirsute within.

STAM. Filaments four, filiform, erect, within the sinuses of the corolla. *Antthers* oblong, acute.

PIST. Germ twin, orbiculate, common to two, inferior. *Style* filiform, the length of the corolla. *Stigmas* four, oblong.

PER. Berry two-parted, globular, with separate navels.

SEEDS four, compressed, callous.

ESSENTIAL CHARACTER.

Corollas one-petalled, superior, two on the same germ. *Stigmas* four. Berry bifid, four-seeded.

SPECIES.

1. *Mitchella repens.* *Creeping Mitchella.*

Lin. spec. 161. *Reich. i.* 313. *amoen.* 3. 16.

Chamaedaphne. Mitch. gen. 27.

Lonicera foliis subovatis, germinibus bifloris, corollis interne hirsutis, stylo bifido. Gron. virg. 22.

Syringa baccifera, myrti subrotundis foliis, floribus albis gemellis. Pluk. amaltb. t. 444. *f.* 2. *Catesb. car. i. t.* 20.

Baccifera mariana, clematis daphnoides minoris folio. Pet. gaz. t. i. f. 13.

Native of Carolina, Maryland, and Virginia. Introduced about 1761, by Mr. John Bartram. It flowers in June.^a

MITELLA. (Dimin. from Mitra; the form of the fruit being somewhat like a mitre.)

Lin. gen. n. 561. *Reich. n.* 610. *Schreb. n.* 766.

Tournef. t. 126. *Juss.* 309. *Gartn. t.* 44.

Class. 10. 2. Decandria Digynia.

Nat. order of Succulentæ. Saxifragæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, half-five-cleft, bell-shaped, permanent.

COR. *Petals* five, multifid-capillary, twice as large as the calyx, and inserted into it.

STAM. Filaments ten, awl-shaped, inserted into the calyx, shorter than the corolla. *Antthers* roundish.

PIST. Germ roundish, bifid. *Styles* scarcely any. *Stigmas* blunt.

PER. Capsule ovate, one-celled, half-two-valved: valves flat, rolled back at top, equal.

SEEDS very many.

ESSENTIAL CHARACTER.

Cal. five-cleft. *Cor.* five-petalled, inserted into the calyx: petals pinnatifid. *Caps.* one-celled, two-valved: valves equal.

SPECIES.

1. *Mitella diphylla.* *Two-leaved Mitella.*

Lin. spec. 580. *Reich. 2.* 322. *hort. cliff.* 167.

Cold. noveb. 96. *Kniph. cent. i. n.* 59.

Cortusa americana altera, floribus minutim fimbriatis. Mentz. pug. t. 10.

C. amer. spicato flore, petalis fimbriatis. Herm. par. 130.

Sanicula f. Cortusa indica, flore spicato fimbriato.

Dodart mem. 299. *Raii hist.* 1085.

Scape two-leaved.

^a Hort. kew.

2. *Mitella nuda.* *Naked Mitella.*

Lin. syst. 415. *Reich. 2.* 323. *amoen. 2.* 352.

Gmel. fib. 4. 175. *t.* 63. *f.* 2. *Amim. in act. petrop.*

2. 352.

Scape naked.

DESCRIPTIONS, &c.

1. Root perennial, from which come out many heart-shaped angular leaves, some of which are obtuse, and others end in acute points; they are indented on their edges, of a lucid green, a little hairy, and stand upon pretty long foot-stalks. The flower-stalks arise immediately from the root, having two or three angular leaves towards the bottom, and about the middle of the stalk come out two small leaves with acute angles, placed opposite. The stalks rise eight or nine inches high, and are terminated by a loose spike of small whitish flowers, the petals of which are fringed on their edges. They appear the beginning of June. Native of most parts of North America, in woods.

2. This is of humbler growth, seldom rising more than five or six inches high. The leaves are not so angular as those of the first sort, the flower-stalks are always naked, the spikes of flowers shorter and more compact.

Native of the northern parts of Asia. Both these were cultivated by Mr. Miller in 1731.

PROPAGATION AND CULTURE.

These plants are increased by parting the roots in autumn. They love shade, and a soft loamy soil.

MITELLA. See *Bixa*, [and *Tiarella*].

MITHRIDATEA. (So named by Commerçon in memory of Mithridates, King of Pontus, famous in the old *Materia Medica*, and for his knowledge of poisons.)

Lin. gen. Schreb. n. 1706. *p.* 783. *Commerçon.*

Tambourissa. Sonnerat ind. 2. t. 134. *Gmel.*

syst. 16. *Ambora. Juss.* 401.

Class. 1. 1. Monandria Monogynia.

Nat. order of Scabridæ. Urticæ, Juss.

GENERIC CHARACTER.

CAL. Receptacle common one-leafed, fleshy, bell-shaped, four-cleft: clefts large, ovate, spreading, covered above with very numerous, immersed, very small florets. *Perianth* proper scarcely any.

COR. none.

STAM. Filament one, very short, upright. *Antther* erect, channelled, embracing the style.

PIST. Germ inferior. *Style* shorter than the stamen, within the excavation of the anther. *Stigma* simple.

PER. none. Common receptacle enlarged, more fleshy, the segments converging, turbinate, hollow in the middle, containing the seeds within its substance.

SEEDS solitary, ovate.

OBS. According to Jussieu, the flowers are monoecous.

The Male has the involucre at first ovate, converging, entire; afterwards four-parted, spreading, covered on the inside with very numerous anthers. The Female has the involucre ovate, hollow within, pervious at the navel at top. Germs numerous, immersed in the internal surface: styles and stigmas the same in number. Capsules the same number, in the enlarged thickened involucre; each one-seeded with a pulpy aril.

ESSENTIAL CHARACTER.

Cal. common four-cleft; enlarged, fleshy, containing the seeds. *Cor.* none. *Fruit* globular-depressed. *Seeds* solitary, arilled.

SPECIES.

1. *Mithridatea quadrifida.*

Lin. spec. ed. Willd. 27.

Tambourissa quadrifida. Sonnerat it. 2. 237. *t.* 134.

Tamboul, Bois Tambour.

Ambora. Madagascar.

DESCRIPTION, &c.

This is a milky tree. Leaves subopposite, entire, evergreen. Flowers in racemes; very seldom solitary, growing on the trunk and lower branches: females fewer mixed with the males^b. Branches opposite. Leaves petioled, opposite, elliptic, blunt, quite entire, veined. Flowers solitary, peduncled, four-cleft, lateral

^b Jussieu from Commerçon and Sonnerat.

on the older branches. Fruit fleshy, the size of an apple.—Native of the islands of Madagascar, Mauritius and Bourbon^c.

MITHRIDATE MUSTARD. See *Thlaspi*.
Bastard. See *Biscutella*.

MITRA. See *Helvella* and *Ophiorhiza*.

MITREOLA. See *Ophiorhiza*.

MNASIUM. (*Mnasion* is the name of an Egyptian plant in Theophrastus, eatable like Papyrus, and of a very sweet taste.)

Lin. gen. Schreb. n. 544. Rapatea. Aubl. t. 118. Juss. 44.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Ensatæ*. Junci, Juss.

GENERIC CHARACTER.

CAL. *Spathe* two-valved: valves ovate, terminated by a linear patulous leaflet.

Perianth one-leafed, three-parted: segments lanceolate, concave, acute, margined.

COR. one-petalled: tube very short: border three-parted; parts lanceolate, concave, acute.

STAM. Filaments six, very short, inserted into the tube. Anthers long, four-cornered, terminated by an ovate, excavated, acute leaflet.

PIST. Germ three-lobed, Style long, striated. Stigmas three, rolled spirally.

PER.

SEED.

ESSENTIAL CHARACTER.

Cal. one-leafed, three-parted. Cor. one-petalled, three-parted, with a very short tube. Anthers four-cornered, terminated by an ovate leaflet. Germ three-lobed. Stigmas three, spiral.

SPECIES.

1. *Mnasion paludosum*.

Gmel. syst. 533.

Rapatea paludosa. Aubl. guian. 1. 305. t. 118.

DESCRIPTION, &c.

This is a perennial plant, with a fibrose, woody root; the leaves are very long, narrow, sharp, smooth, striated, perfectly entire, sheathing at the base and mutually embracing each other, and are narrowed above the sheath. The stalks are several, naked, two feet high, striated, compressed, margined, gradually dilating towards the top, and springing from the bottoms of the radical leaves. The flowers are collected within an involucre, and are pedunculated: the peduncle is imbricated with squamules beneath the base of the calyx. The corolla is yellow.

Native of Guiana; growing in marshy woods.

MNEMOSILLA. See *Hypocoum*.

MNIARUM. (From *μνίαιρος*, muscosus, mossy.)

Lin. gen. Schreb. n. 19. & p. 816. suppl. 8. Forst. gen. 1. Juss. 441. Ditoca. Solandr.

Class. 1. 2. Monandria Digynia.

GENERIC CHARACTER.

CAL. Involucre four-leaved, two-flowered: leaflets ovate, acute; the two lowest united.

Perianth one-leafed, four-cleft.

COR. none.

STAM. Filament one, (two, Solandr.) capillary, erect, scarcely longer than the calyx, and inserted into the base of it. Anther roundish, grooved.

PIST. Germ inferior, oval, scarcely angular, hard, longer than the calyx. Styles two, filiform, gradually divaricating, the length of the calyx. Stigmas simple.

PER. none.

SEED one, oblong, very small, inclosed in the hardened bottom of the calyx.

ESSENTIAL CHARACTER.

Cal. four-parted, superior. Cor. none. Seed one.

SPECIES.

Mniarum biflorum.

Lin. suppl. 81. syst. 53. Willd. 30. Forst. prodr. n. 6. comm. got. 9. 19. t. 1.

DESCRIPTION, &c.

This plant resembles *Minuartia* so much in its appearance, that without examining the flower, it would be ranked with that genus. It is very smooth, dichotomous, covered all over with approximating, acrofe,

^c Willdenow.

connate leaves. Flowers terminating in pairs, subsessile, generally shorter than the leaves. Native of New Zealand and Terra del Fuego^d.

MNIUM. (Adopted from the Greek *μνιον* by Dillenius.)

Lin. gen. n. 1193. Reich. n. 1310. Dill. musc. 229.

Hedw. stirp. 1. 37.

Class. 24. 3. Cryptogamia Musci.

Nat. order of Mosses.

GENERIC CHARACTER.

Capsule with a lid. Calyptra smooth. Bristle from a terminating tubercle. Male flowers headed or discoid.

Or thus, from Withering.

Caps. with a veil: fringe with sixteen teeth; sometimes though rarely with four.

Male. Bud circular, rarely knob-like, mostly on a separate plant.

In the 14th edition of *Systema Vegetabilium* twenty species of *Mnium* are enumerated. Dr. Withering has twenty-four British species, besides many varieties, in the third edition of his *Botanical Arrangement*. Figures of these may be seen in Dillenius, Hedwig, Vaillant, Micheli, Morison, Dickson, &c.

Of these one of the most remarkable is *Mnium hygrometricum*. If the fruit-stalk be moistened at the bottom, the head makes three or four turns; and if the head be moistened, it turns the contrary way. By some authors this is ranged with the Bryums; and Hedwig makes it a *Koelreuteria*. In Schreber's edition of Linneus's genera, this genus wholly disappears, being immersed in those of Bryum, Tetraphis, Dicranum, Tortula, Funaria, Meesia, &c.

MODECCÆ. See *Convolvulus*.

MODIRA-CANIRAM. See *Strychnos*.

MODIRA-CANNI. See *Hugonia*.

MOEHRINGIA. (So named by Linneus from Paul-Henry Gerard Moehring, a physician, author of *Hortus proprius*, 1736.)

Lin. gen. n. 494. Reich. n. 536. Schreb. n. 676.

Juss. 300. Gartn. t. 129.

Class. 8. 2. Octandria Digynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved: leaflets lanceolate, spreading, permanent.

COR. Petals four, ovate, undivided, spreading, shorter than the calyx.

STAM. Filaments eight, capillary. Anthers simple.

PIST. Germ globular. Styles two, erect, the length of the stamens. Stigmas simple.

PER. Capsule subglobular, one-celled, four-valved.

SEEDS very many, roundish, convex on one side, angular on the other.

ESSENTIAL CHARACTER.

Cal. four-leaved. Pet. four. Caps. one-celled, four-valved.

SPECIES.

1. *Moehringia muscosa*.

Lin. spec. 515. syst. 376. Reich. 2. 202. Gartn.

fruct. 2. 226. Jacqu. austr. 5. 24. t. 449. Scop.

carn. n. 446. Pallas it. 2. 219. Krock. files.

n. 602. Hall. helv. n. 860. (Alfine).

Alfine muscosa. Bauh. pin. 365.

A. montana capillaceo folio. Bauh. pin. 251. Scheuch.

alp. 503. t. 6. Pluk. phyt. t. 75. f. 1. Raii hist.

1025.

A. saxifraga angustifolia minima montana. Col. ecphr.

1. 292. t. 290.

A. saxatilis. Lindern. hort. t. 2.

β. A. tenuifolia muscosa. Bauh. pin. 251. Mor. hist.

2. 551. f. 5. t. 23. f. 12. Seguier veron. t. 5.

f. 1. Pluk. phyt. t. 74. f. 3.

DESCRIPTION, &c.

This is an annual plant, with a very slender root. Stem filiform, eight, ten or twelve inches long, upright, very much branched; covered with linear, very narrow, opposite leaves, dilated at the base, as it were perfoliate, oblong. Flowers axillary, erect, on slender, one-flowered peduncles. Calyx spreading, greenish. Petals narrow, milk white. Stigmas converging. Capsules

^d Linn. suppl.

ovate-

ovate-conical, yellowish when ripe, containing eight or ten seeds, first white and finally black, kidney-form, shining, fixed by a pedicel to the receptacle^c.

Native of the mountains of France, Italy, Switzerland, Austria, Silesia; among moss on rocks, by the trunks of trees, or springs or little rills of water. Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in June and July^f.]

MOLDAVICA. See *Dracocephalum*.

MOLINÆA. See *Cupania*.

MOLLE. See *Schinus*.

MOLLIA. See *Imbricaria*.]

MOLLUGO (of Pliny. *From the softness of the plant.*)

Lin. gen. n. 106. Reich. n. 113. Schreb. n. 139.

Gartn. t. 130. Juss. 300.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: *leaflets* oblong, from upright spreading, coloured within, permanent.

COR. None.

STAM. *Filaments* three, bristle-shaped, shorter than the corolla, approximating to the pistil. *Anthers* simple.

PIST. *Germ* superior, ovate, three-grooved. *Styles* three, very short. *Stigmas* blunt. (Or, *Style* one, trifid at top. G.)

PER. *Capsule* ovate, three-celled, three-valved.

SEEDS numerous, kidney-form.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. none. Caps. three-celled, three-valved.

SPECIES.

[1. *Mollugo oppositifolia*. *Opposite-leaved Mollugo*.

Lin. spec. 131. syst. 129. Reich. 1. 248. Willd.

491. fl. zeyl. n. 52. Pluk. phyt. t. 75. f. 6. (Alfine).

Leaves opposite lanceolate, branches alternate, peduncles lateral clustered one-flowered.

2. *Mollugo stricta*. *Upright Mollugo*.

Lin. spec. 131. syst. 129. Reich. 1. 248. Willd.

491. Thunb. jap. 56. Pluk. phyt. t. 256. f. 2. Burm. zeyl. 13. t. 7. (Alfine).

Leaves commonly in fours lanceolate, flowers panicled nodding, stem erect angular.

3. *Mollugo hirta*. *Hairy Mollugo*.

Lin. spec. ed Willd. 492. Thunb. prodr. cap. 24.

Leaves in fours obovate villose, stem decumbent.

4. *Mollugo pentaphylla*. *Five-leaved Mollugo*.

Lin. spec. 131. syst. 129. Reich. 1. 248. Willd.

492. Burm. zeyl. 13. t. 8. f. 1, 2. (Alfine).

Leaves in fives obovate equal, flowers panicled.]

5. *Mollugo verticillata*. *Whorl-leaved Mollugo*.

Lin. spec. 131. syst. 129. Reich. 1. 248. Willd.

492. hort. ups. 24. Gartn. fruct. 2. 235. Mill.

illustr. ic. Kniph. orig. 8. n. 71. Gron. virg. 14.

Brown. jam. 139. 1. Pluk. mant. t. 332. f. 5.

Ehret. pict. t. 6. f. 3. (Alfine).

Leaves in whorls wedge-form acute, stem subdivided decumbent, peduncles one-flowered.

[6. *Mollugo triphylla*. *Three-leaved Mollugo*.

Lour. cochinch. 62.

Leaves in threes lanceolate, flowers dichotomous.

DESCRIPTIONS, &c.

1. This is an annual herb (as indeed all the rest are) with long diffused smooth alternate branches. Leaves smooth, ending in petioles. Peduncles several, equal, capillary, one-flowered from the axils.

Native of Ceylon^g.

2. Root fibrous. Stems three or four, stiff, even. Leaves in whorls, frequently in fours, stiff, acuminate, even. Panicles, longer than the leaves, the first and second divisions forked, then racemed. Flowers nodding, white, very much resembling those of *M. verticillata*^h.

The stem is sometimes diffused with upright branches, sometimes upright, always angular, smooth, dichotomous. Branches divaricating, and like the stem. Leaves in fours, unequal, two being commonly larger, sessile, attenuated below, lanceolate, entire, smooth.

^c Krocke.

^f Hort. kew.

^g Lin. zeyl.

^h Linn. spec. and syst.

Panicle axillary, first dichotomous, then branched, divaricating. Peduncles and pedicels capillaryⁱ.

Native of Africa, Ceylon, Japan.

3. Native of the Cape of Good Hope^k.

4. Root-leaves oblong, narrowed at the base, blunt at the end. Stems decumbent, branching immediately from the ground, with four or five leaflets at each ramification, one-third only of the size of the others. From the axils of these spring very long peduncles, having the flowers collected at top in an umbel (or rather panicle.) They are white, and are succeeded by a very thin, smooth, membranaceous capsule, containing very small blackish seeds.

Native of Ceylon^l. The other Alfine figured by Burman in the lower part of the same plate seems to be only a larger variety of this.]

5. This is a trailing plant, spreading out eight or nine inches every way, and having six or seven small leaves at each joint, spreading out in form of a star. Flowers small, like those of Chickweed, one on each footstalk; succeeded by oval capsules, filled with small seeds.

[Browne remarks, that the leaves and branches are very small; that the stalk seldom runs above six or eight inches from the root; that the flowers are generally four or five together, and grow in single tufts on the sides of the whorls.

Capsule ovate, rounded-three-cornered, thin, pustuled with the protuberant seeds, and at the same time elegantly scored with arched streaks in the pustules themselves. Partitions inserted in the middle of the valves. Seeds about twelve in each cell, subglobular, beaked, marked on the back with three acute prominent lines, very smooth, shining, ferruginous or deep chestnut, fastened to the central angle of the cells by umbilical chords^m.

Native of Virginia and Jamaica, where it is pretty common in the dry savannas of Liguanea. Cultivated by Mr. Miller, in 1759ⁿ.

6. Stem herbaceous, annual, diffused, four-cornered, half a foot high, with ternate branches. Leaves stellate-tern, smooth, quite entire, sessile. Flowers apetalous lateral and terminating, on long dichotomous peduncles, racemed at top. Stigmas three sessile subovate unequal. Capsule ovate, three-lobed, containing many kidney-form seeds.

Native of China near Canton^o.]

PROPAGATION AND CULTURE.

If the seeds be permitted to scatter, the plants will sometimes come up the following spring; but if they are sown on a hot-bed, they will come up more certainly and the plants will be forwarder and stronger.

[MOLLUGO. See *Galium*, *Oldenlandia*, *Pharnaceum*, *Polycarpon*, *Queria*.

MOLUCCA, and MOLUCCA BAUM. See *Moluccella*.]

MOLUCCELLA. (*Dimin. from the Molucca islands, of which one of these plants is a native.*)

Lin. gen. n. 724. Reich. n. 782. Schreb. n. 979.

Gartn. t. 66. Juss. 115.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatae*. *Labiatae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, very large, turbinate, gradually finishing in a very wide, bell-shaped, tooth-spiny, incurved, permanent border.

COR. one-petalled, ringent, less than the calyx. *Tube* and *Throat* short. *Upper lip* upright, concave, entire. *Lower lip* trifid: the middle segment more produced, emarginate.

STAM. *Filaments* four, under the upper lip, of which two are shorter. *Anthers* simple.

PIST. *Germ* four-parted. *Style* the size and situation of the stamens. *Stigma* bifid.

PER. none. *Fruit* turbinate, truncate, in the bottom of the open calyx.

SEEDS four, convex on one side, angular on the other, at top wide and truncate.

OBS. *M. spinosa* has the calyx with seven long spines.

M. laevis has five small spines to the calyx.

ⁱ Thunb. jap.

^k Thunb. cap.

^l Burman.

^m Gartner.

ⁿ Hort. kew.

^o Loureiro.

M O L

M. frutescens has twelve spreading spines to the calyx.

The calyx in some is longer, in others shorter than the corolla.

ESSENTIAL CHARACTER.

Cal. bell-shaped, widening, broader than the corolla, spiny.

SPECIES.

1. *Moluccella laevis*. Smooth *Molucca* Baum.
Lin. spec. 821. *syft.* 540. *Reich.* 3. 74. *hort. upf.* 172. *Gärtn. fruct.* 1. 320. *Gron. orient.* 75. *Kniph. cent.* 11. n. 77. *Sabb. hort.* 3. t. 45.
Molucca laevis. *Dod. pempt.* 92. *Riv. mon. t.* 64.
Molucca. *Baub. hist. Raii hist.* 568.
Melissa moluccana odorata. *Baub. pin.* 229.
M. Molucca laevis. *Ger.* 559. 3. *emac.* 691. 5. *Park. theat.* 42. 5.
Calyxes bell-shaped commonly five-toothed, toothlets equal.
2. *Moluccella spinosa*. Prickly *Molucca* Baum.
Lin. spec. 821. *syft.* 540. *Reich.* 3. 74. *hort. upf.* 172. *Sabb. hort.* 3. t. 46.
Molucca spinosa. *Dod. pempt.* 92. *Ger.* 559. 4. *emac.* 691. 6.
M. asperior foetida. *Baub. hist. Raii hist.* 568.
Melissa moluccana foetida. *Baub. pin.* 229.
Calyxes ringent eight-toothed.
- [3. *Moluccella frutescens*. Shrubby *Molucca* Baum.
Lin. spec. 821. *syft.* 540. *Reich.* 3. 74. *Allion. pedem. n.* 122. t. 2. f. 2.
M. perfica. *Burm. ind.* 128. t. 38. f. 2.
Scordium spinosum, *floris labio superiore f. galea lanuginosa f. villosa*. *Raii suppl.* 311.
Calyxes funnel-form five-cleft, corollas longer than the calyx.]

DESCRIPTIONS, &c.

1. Root annual. Stem three feet high, spreading out into many branches, which are smooth, and come out by pairs. Leaves roundish, deeply notched on their edges, opposite, on long petioles, smooth, light green on both sides. At the base of the petioles the flowers come out in whorls. Immediately under the calyx come out two bunches of pretty long spines, one on each side, each bunch consisting of five or six spines arising from the same point. Corolla small, and being placed at the bottom of the large calyx is not visible at a distance: it is white with a cast of purple.

[The four seeds lie within the calyx, which is unchanged: they are short, thick, three-sided, smooth, bay-coloured^p. — Native of Syria. Cultivated in 1570, by Matthias de L'Obel. It flowers in july and august^q.]

2. Root annual. Stems smooth, purplish, four feet high, branching out in the same manner with the first. Leaves smaller, on shorter foot-stalks, deeper and more acutely indented on their edges. Calyx not so large, and cut into eight segments, each terminated by an acute spine. Flowers and seeds like those of the preceding.

[Whorls six-flowered, sessile. Involucre with four ternate linear spreading thorny spines. Upper lip of the calyx larger, acuminate-thorny: lower rounded, entire, with seven spines. Corolla longer than the calyx; whereas in the preceding the calyx is much longer than the corolla^r.

Native of the Levant. Cultivated in 1739, by Mr. Miller. It flowers in july and august^r. Commonly said to be a native of the Molucca islands.

3. This is a small shrub with dichotomous branchlets. Leaves ovate, an inch long, pubescent with hairs thinly set, having two or three deep serratures on each side, petioled. Spines axillary, solitary on each side, ternate as in the Barberry, but only at the whorls of flowers. Calyxes funnel-form, small, ten-cornered, regular with a five-cleft border, and ten terminating spines. Corolla like that of *Cardiaca*, twice as long as the calyx, with a woolly helmet. It seems to form the link between *Ballota Leonurus* and *Moluccella*^r.

Allione thus describes the Italian plant. It is a small shrub, very much branched dichotomously; the stems

^p Gærtner.

^q Hort. kew.

^r Linn.

^s Hort. kew.

^t Linn. spec.

M O M

and branches round, striated and woody: the whole branches are covered with flowers, of which there are from two to six in each whorl. There are four spines at the origin of the leaves, two on each side. Leaves on short petioles, oval, either entire, or with three or five blunt teeth; they are nerved, veined, and have short hairs on them. Calyxes ten-streaked, tubular, smooth, with a five-cleft spreading mouth: the larger streaks divide the segments of the calyx, the intermediate smaller ones reach as far as the interstices of the segments of the calyx. The larger streaks always end in spines. Tube of the corolla almost equal to the tube of the calyx: helmet a little arched, and covered with a long thick pile: middle segment of the beard cordate-square, emarginate, and slightly bent back on each side. Anthers dusky-purple. Seeds oblong, acuminate, not rough.

Native of Persia, whence it has migrated into Italy. Observed by Sherard between Tende and Braille in Piedmont.

In the Persian plant the leaves are more pubescent, with sharper serratures. The segments of the calyx are obovate, membranaceous, sharper, and have about three teeth. It is however certainly the same plant.]

PROPAGATION AND CULTURE.

The two first are annual plants, which decay soon after the seeds are ripe, and being natives of warm countries, seldom perfect their seeds in England, when they are sown in the spring. They should be raised therefore in autumn, and planted in small pots, placed under a hot-bed frame in winter, where they may have free air in mild weather, by taking off the glasses; but they must be covered in frosty weather, observing to keep them pretty dry, otherwise they are very subject to rot. In the spring the plants may be turned out of the pots, with all the earth about their roots, and planted in a warm border, defended from strong winds, giving them a little water to settle the earth to their roots; after this, they will require no other care but to keep them clean from weeds, and to support them with stakes to prevent their being broken by the winds. The plants thus preserved through the winter, will flower at the end of june, and good seeds may be expected from them.

MOLY. See *Allium*.

MOMBIN. See *Spondias*.

MOMORDICA. (From mordeo, the seeds having the appearance of being bitten.)

Lin. gen. n. 1090. *Reich. n.* 1191. *Schreb. n.* 1477.

Gärtn. t. 88. *Tournef. t.* 29, 30. *Juss.* 395.

Luffa. Tournef. mem. par. 1709. *Dill. gen.* 11.

elth. 163. *Elaterium. Boerb.*

Class. 21. 9. *Monoecia Syngenesia.*

Nat. order of Cucurbitaceæ, Lin. & Juss.

GENERIC CHARACTER.

* Male Flowers.

CAL. *Perianth* one-leaved, concave, five-cleft: segments lanceolate, spreading.

COR. five-parted, fastened to the calyx, more spreading, large, veined, wrinkled.

STAM. *Filaments* three, awl-shaped, short. *Anthers* on two filaments bifid, eared at the sides; on the third simple, one-eared only, consisting of a compressed body and a fariniferous line once reflex.

* Female Flowers on the same plant.

CAL. *Perianth* as in the male, superior, deciduous.

COR. as in the male.

STAM. *Filaments* three, very short, without anthers.

PIST. *Germ* inferior, large. *Style* single, round, trifid, columnar. *Stigmas* three, gibbous, oblong, pointing outwards.

PER. *Pome* dry, oblong, opening elastically, three-celled: cells membranaceous, soft, distant.

SEEDS several, compressed.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. five-parted.

MALE. *Filaments* three.

FEM. *Style* trifid. *Pome* opening elastically.

SPECIES.

1. *Momordica Balsamina*. *Common Momordica* or *Male Balsam Apple*.
Lin. spec. 1433. *fyst.* 868. *Reich.* 4. 200 *hort. cliff.* 451. *upf.* 293. *Gertn. fruct.* 2. 48. *Blackw. herb. t.* 539. *a. b.* Ludw. *est. t.* 127. *Kniph. cent.* 7. n. 60. *Knorr. del. i. t. B.* 3. *Zorn. ic. t.* 45. *Hasselqu. itin. engl. ed.* 255.
Balsamina rotundifolia repens f. mas. *Baub. pin.* 306. *Seba mus.* 2. t. 3. f. 1.
B. mas fructu puniceo, & luteo rubescente. *Besl. cyst. autumn.* 1. t. 4. f. 2, 3.
Pomes angular tubercled, leaves smooth spreading-palmate.
2. *Momordica Charantia*. *Hairy Momordica*.
Lin. spec. 1433. *fyst.* 868. *Reich.* 4. 200. *hort. cliff.* 457. *fl. zeyl. n.* 351. *Lour. cochinch.* 589. *Mill. illustr.*
M. Charantia & zeylanica. *Mill. dict. n.* 2, 3.
Balsamina cucumerina indica, fructu majore flavescente. *Comm. hort.* 1. 103. t. 54.
Amara indica. *Rumph. amb.* 5. 410. t. 151.
Pandi-pavel. *Rheed. mal.* 8. 17. t. 9.
β. Pavel. *Rheed. mal.* 8. 18. t. 10. *Sabb. hort.* 1. t. 61.
Pomes angular tubercled, leaves villose longitudinally palmate.
- [3. *Momordica operculata*. *Lidded Momordica*.
Lin. spec. 1433. *Reich.* 4. 301.
M. americana fructu reticulato sicco. *Comm. rar.* t. 22.
Pomes angular-tubercled having a lid from the falling of the top, leaves lobed.
4. *Momordica Luffa*. *Egyptian Momordica*.
Lin. spec. 1433. *Reich.* 4. 201. *hort. cliff.* 451. *upf.* 293. *fl. zeyl. n.* 352. *Hasselqu. it.* 487. *ed. angl.* 255. *Fabric. helmst.* 352. *Kniph. cent.* 9. n. 69. *Sabb. hort.* 1. t. 62. *Lour. cochinch.* 590.]
Luffa ægyptiaca. *Mill. dict.—arabum.* *Tourn. mem. acad.* 1706. *Dill. gen.* 157.
[Cucumis ægypticus reticulatus f. Luffa arabum. *Vest. ægypt.* 199. t. 58, 59. *Mor. hist.* 2. 35. f. 7. t. 7. f. 1, 2. *Raii hist.* 640.
Petola. *Rumph. amb.* 5. 405. t. 148.
Pomes oblong, grooves like a chain, leaves gashed.
5. *Momordica cylindrica*. *Long-fruited Momordica*.
Lin. spec. 1433. *Reich.* 4. 201. *Lour. cochinch.* 590.
Pepo indicus reticulatus, seminibus nigris. *Herm. lugdb.* 482.
P. retic. & fulcatus, sem. nigro. *Herm. par. app.* 11. *Raii suppl.* 332.
Pomes cylindric very long, leaves with acute angles.
6. *Momordica trifolia*. *Three-leaved Momordica*.
Lin. spec. 1434. *Reich.* 4. 201.
Poppya sylvestris. *Rumph. amb.* 5. 414. t. 152. f. 2.
Pomes ovate muricate, leaves ternate toothed.
7. *Momordica pedata*. *Pedate-leaved Momordica*.
Lin. spec. 1434. *Reich.* 4. 202. *Feuill. peruv.* 1. 754. t. 41.
Pomes striated, leaves pedate ferrate.]
8. *Momordica Elaterium*. *Elastic Momordica*.
Lin. spec. 1434. *Reich.* 4. 202. *hort. cliff.* 451. *upf.* 294. *mat. med.* 208. *Woodv. med. bot.* 121. t. 43. *Kniph. cent.* 8. n. 72. *Sabb. hort.* 1. t. 64. *Gron. orient.* 300.
Cucumis sylvestris. *Cam. epit.* 946.—*aspinus dictus.* *Baub. pin.* 314.—*f. aspinus.* *Baub. hist. Raii hist.* 647.
C. aspinus. *Ger.* 766. *emac.* 912.
C. agrestis. *Blackw. t.* 108.—*f. aspinus.* *Park. theat.* 161. *ic.* 162.
Pomes hispid, tendrils none.

DESCRIPTIONS, &c.

[Peduncles one-flowered or many-flowered. *Momordica* of Tournefort has the fruit warted, bursting open at the side; seeds arilled, engraved on the surface, and irregular at the edge. *Luffa* of Tournefort has the fruit smooth, bursting at top, netted-spongy within with pulp that soon disappears; seeds entire at the edge and not arilled. *Elaterium* of Tournefort

has the fruit smaller, rough, bursting from the peduncle with a spring, and at the same time emitting the seeds through the hole. This species also does not climb or creep, and has no tendrils^a. They are all annual plants, except the last.]

1. Stems trailing, like those of the Cucumber and Melon, extending three or four feet in length, and sending out many side branches, which have tendrils. Leaves shaped like those of the vine, smooth, deeply cut into several segments, and spreading open like the hand.

[The fruit, which is called a Pome by Linneus, a Berry by Gærtner, is fleshy, ovate, drawn to a point at each end, obscurely angular, remotely tubercled in longitudinal rows, smooth in the other parts, red when ripe, one-celled, inflated, bursting irregularly, and dispersing the seeds with a spring. Seeds fixed to the inside of the fruit in three longitudinal rows, and in such a manner that the umbilicus alternately points to the right and left of the same row; they are ovate, flattened a little, horizontal, bluntly notched at the edge and marked with rising serpentine lines, but on the disk rugged with raised dots; their colour is pale brown, and they are covered with a membranaceous, thin, red aril^b.

Native of India. Cultivated here in 1568, as appears from Turner's herbal. It flowers in June and July^c.

This plant is famous in Syria for curing wounds. They cut open the unripe fruit, and infuse it in sweet oil, exposed to the sun for some days, until the oil is become red. It is applied to a fresh wound dropped on cotton. The Syrians esteem this next to Balsam of Mecca. The leaves and stems are also used for arbours or bowers^d.

2. Stem round, slender, branched, climbing by lateral tendrils. Leaves sinuate-palmate, wrinkled, smooth, toothed, spread out into a ring, having the nerves pubescent; they are alternate and petioled. Flowers sometimes hermaphrodite, on long, axillary, one-flowered peduncles. Corolla yellow, usually five-parted, but sometimes six-parted. Stamens three, connected. Fruit oblong, bluntly angular, tubercled, drawn to a point at each end, white yellow or green on the outside, within very red and fleshy, one-celled; it bursts elastically. Seeds ovate, flat, bitten at the edge^e.

Linneus observes, that the cordate embracing involucre marks a great affinity between this and the preceding; but in this it is quite entire, in that toothed.]

Mr. Miller, following Tournefort, makes two species of this, with a longer and with a shorter fruit. The first (n. 2.) has the leaves extended more in length, and hairy; the fruit is much longer than that of *M. Balsamina*, and not so deeply channelled; the tubercles are scattered all over the surface, and are not sharp; the colour when ripe is yellow.

The second, which he names *M. Zeylanica*, has the fruit short and pointed, like that of *M. Balsamina*, but does not swell so large in the middle, the angles are not deep, and the whole surface is closely set with sharp tubercles, when ripe it is of a deep orange colour.

[Native of the East Indies. Cultivated in 1731, by Mr. Miller. It flowers in June and July^f.

3. Fruit green, the top falling off when it is ripe, like a lid; within it has no pulp, but is dry, and filled with netted fibres, very much interwoven, and is three-celled. Seeds compressed, black.

Native of America^g.

4. Stem angular, very much branched, climbing by bifid spiral tendrils. Leaves having five or seven sharp angles, the middle one double the length of the others, unequally serrate, veined, wrinkled, on long alternate petioles. Male flowers several together, terminating: corolla six-parted, wrinkled, spreading. Females lateral, solitary: corolla five-parted, reflex. Pome a foot long, two inches thick, roundish, usually drawn to a point at each end, hairy, three-celled,

^a Jussieu. ^b Gærtner. ^c Hort. kew. ^d Hasselquist.
^e Loureiro. ^f Hort. kew. ^g Linn.

with a white, flaccid, esculent pulp, of an insipid flavour. Seeds oblong, compressed, smooth^b.

Linneus remarks, that the seeds are whitish; the flowers polyadelphous, five-stamened; the tendrils as it were umbelled at top with several smaller tendrils.

The Arabians call this plant Liff or Luff; they cultivate it, and it climbs up the Palm trees, covering and elegantly adorning their trunksⁱ. It is also cultivated largely in China and Cochinchina, &c.]

The fruit, when young, is made into a pickle, like the Mango, but it has a disagreeable taste, and is not accounted very wholesome. Mr. Miller, following Tournefort, has made it a distinct genus from *Momordica*, but does not separate this species from the next succeeding.

[Native of the East Indies. Cultivated in 1739 by Mr. Miller. It flowers in July and August^k.

5. Stem five-angled. Leaves like those of the Cucumber, serrate-toothed at the base, the middle angle more lengthened, the sinuses not widened as in the preceding, but with straight angles. Pomes a foot long, subvillose, cylindric. Seeds black. Tendrils from the axils^l.

Stem climbing by tendrils, long, branched. Leaves cordate, nine-angled, with the angles intrant rounded, toothletted, rugged. Flowers on long many-flowered peduncles. Pomes two feet long and more, straight, pendulous, blunt, netted-wrinkled, eatable but insipid. Anthers in the male flowers linear, creeping, three separate. Seeds compressed, oblong, smooth, black.

This and the preceding species have not elastic fruit, nor are they capable of opening with a spring, for they consist, as Rumphius observed, of very tough intricate fibres that can hardly be torn asunder. The two first species have none of these fibres, but either burst or rot whole, without in either case leaving any fibres^m.

Native of Ceylon and China.

6. Native of the East Indies.

7. Native of Peruⁿ.]

8. This has a large fleshy perennial root, somewhat like that of Bryony. Stems thick, rough, trailing, dividing into many branches, and extending every way two or three feet. Leaves thick, rough, almost heart-shaped, gray, on long foot-stalks. Flowers axillary, much less than those of the common Cucumber, of a pale yellow colour, with a greenish bottom: the male flowers stand on short thick peduncles; but the female flowers sit on the top of the young fruit, which grows to an inch and half in length, swelling like a Cucumber, of a gray colour like the leaves, and covered with short prickles. The fruit does not change its colour, but when ripe quits the peduncle, and casts out the seeds and juice with great violence: so that the seeds are scattered round to a considerable distance, and plenty of plants will come up the following spring.

But when this fruit is designed for medicinal use, it should be gathered before it is ripe, otherwise the greatest part of the juice, which is the only valuable part, will be lost; for the expressed juice is not to be compared with that which runs out of itself; and the *Elaterium* made from the clear juice is whiter and will keep much longer than that which is extracted by pressure.

[All parts of the plant are bitter and strongly purgative; but the dried juice or *fæculæ* of the fruit, known in the shops by the name of *Elaterium*, is the only part now medicinally employed. The method directed in the London Pharmacopœia for preparing this medicine is: to slit the ripe fruit, and pass the juice (very lightly pressed) through a very fine sieve into a glass vessel; then to set it by for some hours, until the thicker part has subsided; to pour off the thinner part swimming at the top, and separate the rest by filtering; to cover the thicker part which remains after filtration with a linnen cloth, and to dry it with a gentle heat.

The sensible qualities of this inspissated juice are not remarkable either to the smell or taste: it is inflam-

mable, and dissolves readily in watery or spirituous menstrua. *Elaterium* is a very powerful cathartic, and was frequently employed as such, both by the Greek and Arabian physicians; and its use has since been much commended in hydropic cases, particularly by Pauli, Sydenham and Lister. It is undoubtedly the most violent purgative in the *Materia Medica*, and ought therefore to be administered with great caution, and only where milder cathartics have proved ineffectual. The dose is from half a grain to three grains: the most prudent and effectual way in which dropsies are now treated by this remedy, is by repeating it at short intervals in small doses^o.

Native of the South of Europe. Cultivated by Gerard in 1596. Called in English, Wild, Spirting, Squirting, or Asses Cucumber. In French, *Concombre sauvage ou d'âne*.]

PROPAGATION AND CULTURE.

1 to 7. Sow the seeds on a hot-bed the beginning of March; and when the plants come up prick them into a fresh hot-bed, letting them have fresh air in warm weather, and refreshing them frequently with water. When the plants have four or five leaves, plant them out into the hot-bed where they are to remain, putting one or two plants into each light; watering and shading them until they have taken root. After this, treat them as Melons or Cucumbers, permitting their branches to extend in the same manner, and keeping them clean from weeds. With this management, if they have not too much wet, and are not too much exposed to the open air, they will produce fruit in July, and the seeds will ripen in August and September: when it must be gathered as soon as it opens, otherwise the seeds will be cast abroad, and with difficulty gathered up again.

When the plants spread so as to fill the frames, they may be raised on bricks, and the ends of the plants drawn out; for when these are vigorous, they will spread eight or ten feet, and if they are confined will become so thick, that the tender branches will rot, and no fruit will be produced.

These plants may also be set in pots, placed in the stove, and the vines fastened to stakes. And thus, when they are skilfully managed, they will produce their fruit tolerably well; and in this way they make a better appearance, than when the Vines spread on the ground like Cucumbers and Melons. But when the plants spread on the ground, which is their natural way of growing, they thrive much better, and produce more fruit, than when they are supported; for though these plants have clasps, yet these are not formed for climbing, but merely to fasten themselves about any neighbouring support, to secure them from being raised by the wind and broken; which would often happen, where they grow in the open air and are fully exposed, were it not for this security.

The eighth sort is easily propagated by seeds, which if permitted to scatter, will come up the following spring; or if the seeds are sown upon a bed of light earth, the plants will come up in about a month after, and may be transplanted to an open spot of ground, in rows at three or four feet distance, and almost as far asunder in the rows; if these are carefully transplanted while young, there will be little hazard of their growing; and after they have taken new root, they will require no farther care, but to keep them clear from weeds. If the ground is dry in which they are planted, the roots will continue three or four years, unless the winter should prove very severe.

MONARDA. (So named from Nic. Monarda or Monardes, a physician of Seville in the sixteenth century.)

Lin. gen. n. 37. Reich. n. 40. Schreb. n. 48. Gertn. t. 66. Juss. III.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Verticillatæ*. *Labiatæ* Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, cylindric, striated, with a five-toothed equal mouth, permanent.

COR. unequal. Tube cylindric, longer than the calyx. Border ringent: upper lip straight, narrow, linear, en-

^b Loureiro. ⁱ Hasselquist. ^k Hort. kew. ^l Linn.
^m Loureiro. ⁿ Linn.

^o Woodville.

tire: lower lip reflex, broader, trifid; middle segment longer, narrower, emarginate: lateral blunt.

STAM. Filaments two, bristle-shaped, the length of the upper lip, in which they are involved. Anthers compressed, truncate at top, convex below, erect.

PIST. Germ four-cleft. Style filiform, involved with the stamens. Stigma bifid, acute.

PER. none. Calyx containing the seeds at the bottom.

SEEDS four, roundish.

OBS. *M. didyma* has four stamens, two of which are castrated.

ESSENTIAL CHARACTER.

Cor. irregular; the upper lip linear involving the filaments. Seeds four.

SPECIES.

1. *Monarda fistulosa*. Purple *Monarda*.
Lin. spec. 32. syst. 68. Reich. 1. 59. Willd. 124.
vir. cliff. 5. hort. cliff. 11. upf. 12. mat. med. 59.
Gartn. fruct. 1. 318. Mill. fig. 183. f. 2. Curt.
magaz. 145. Kniph. orig. cent. 2. n. 47. Fabric.
helmst. 95. Riv. mon. 58.

Origanum fistulosum canadense. Corn. canad. 13.
t. 14.

- β. *Monarda mollis*. Amoen. acad. 3. 399.

Clinopodium majus virginianense, foliis minus hirtis acutioribus, floribus fistulosis. Mor. hist. 3. 474.

Leaves oblong-lanceolate cordate villose flat.

- [2. *Monarda oblongata*. Long-leaved *Monarda*.

Ait. hort. kew. 1. 36. Lin. spec. ed. Willd. 125.

Leaves oblong-lanceolate, rounded-attenuate at the base villose flat.]

3. *Monarda didyma*. Scarlet *Monarda* or Oswego Tea.

Lin. spec. 32. syst. 68. Reich. 1. 59. Willd. 125.
hort. cliff. 495. Mill. fig. t. 183. f. 1. Kniph.
orig. cent. 2. n. 46. Cold. noveb. 7. Buttn.
cur. 226. Trew. ebret. 32. t. 66. Mill. illustr.
Plenck, ic. 23.

Leaves ovate smooth, heads in whorls, flowers subdidynamous, stem acute-angled.

- [4. *Monarda rugosa*. White *Monarda*.

Ait. hort. kew. 1. 36. Lin. spec. ed. Willd. 125.

Leaves ovate-lanceolate cordate smooth wrinkled.

5. *Monarda clinopodia*.

Lin. spec. 32. Reich. 1. 59. Willd. 125. Gron.
virg. 9.

Leaves ovate-lanceolate rounded at the base unequal smooth.]

6. *Monarda punctata*. Spotted *Monarda*.

Lin. spec. 32. syst. 68. Reich. 1. 60. Willd. 126.
hort. cliff. 495. upf. 12. Gron. virg. 9. Abbot.
Georg. t. 24. Sabb. hort. rom. 3. t. 86, 87.
Mor. hist. 3. 375. f. 11. t. 8. f. 8. Pluk. phyt.
t. 24. f. 1. (Clinopodium).

Flowers in whorls, corollas dotted, bractes coloured.

7. *Monarda ciliata*.

Lin. spec. 33. Reich. 1. 60. Willd. 126. Gron.
virg. 9. Mor. 3. 374. f. 11. t. 8. f. 6. Pluk.
phyt. t. 164. f. 3.

Flowers in whorls, corollas longer than the involucre.]

DESCRIPTIONS, &c.

1. Root perennial, composed of many strong fibres, and spreading far on every side. Stems near three feet high, are hairy and obtuse-angled; they send out two or four small side branches towards the top. Leaves oblong, broad at the base but terminating in acute points, hairy, a little indented on their edges, on short hairy foot-stalks. Stem and branches terminating by heads of purple flowers, which have a long involucre, composed of five acute-pointed leaves. [Seeds small, subovate, turgidly lenticular, rufescent, with two very small umbilical excavations, lying within the calyx, which is closed at the mouth with hairs converging into five scalelets^p.

Native of Canada. Cultivated in 1656, by Mr. John Tradescant, jun. It flowers from June to August^q.

2. This differs from the preceding in having the leaves ovate at the base and a little attenuated, and

more villose underneath; the calyxes shorter and more villose at the edge, and the corollas smaller^r.

Native of North America. Cultivated in 1761, by Mr. James Gordon. It flowers from July to September^s.]

3. Root perennial. Stems about two feet high, smooth, acute-angled. Leaves indented on the edges, on very short foot-stalks; when bruised they emit a very grateful refreshing odour. Towards the top of the plant come out two or four small side branches, with smaller leaves of the same shape. The flowers are produced in large heads or whorls at the top of the stalk, and there is often a smaller whorl at a joint below the head; and out of the head arises a naked peduncle, sustaining a small head or whorl. The flowers are of a bright red colour; many of them have two shorter stamens without anthers, besides the two longer fertile ones. They come out in July, and in a moist season, or when the plants grow in a moist soil, they continue till the middle or end of September.

[Linneus remarks, that the upper leaves are canescent.—Native of North America. Introduced in 1755, by Peter Collinson, Esq.^t

4. This resembles the next following species, but the leaves are longer, smooth, wrinkled a little like those of sage, and the flowers white^u.—Native of North America. Cultivated in 1761, by Mr. James Gordon. It flowers from July to September^x.

5. Root creeping. It has the appearance of the third sort as to its stature, but has the leaves of *Clinopodium incanum*; nor is the spike red, but purple, nor have the flowers four stamens. It is distinct from the first by the great smoothness of the leaves; which are ovate-oblong, acuminate, deeply serrate, petioled, smooth and even on both sides. Stem more sharply quadrangular than the first, but less so than the third. Flowers in a head radiated with bractes, pale.—Native of Virginia^v.]

6. Stems about two feet high, branching out from the bottom to the top. Leaves lanceolate, coming out in clusters at each joint, where there are two larger leaves, and several smaller ones on each side: the larger leaves are two inches and a half long, three quarters of an inch broad, and slightly indented on their edges. Towards the upper part of the stem the flowers come out in large whorls, with an involucre to each whorl composed of ten or twelve small lanceolate leaves, of a purplish red colour on their upper side: [four larger, and four smaller, besides the leaves of the whorls:] the flowers are pretty large, of a dirty yellow colour spotted with purple. It is a biennial plant, and probably in North America, its native country, it may be annual, for the roots perish here, after the plants have perfected their seeds.

[It is a native of Maryland and Virginia, and flowers here from June to October. Mr. Thomas Fairchild cultivated it in 1714^w.

7. Root creeping. Stem hairy, thickish, a foot high and more, with few joints; from the lower of these the leaves are roundish, an inch long, notched, petioled; from the two upper ones the leaves are long and narrower, crenate, sessile. The three or four upper joints have large whorls of flowers, with about ten short, broadish leaflets under them. Flowers large, blue, elegantly marked with dark purple spots. Found in Virginia by Banister^a.]

PROPAGATION AND CULTURE.

1 to 5. These sorts may be propagated by parting their roots; the first does not multiply so fast as the third, but as that produces plenty of seeds, so it may be easily propagated that way. If the seeds are sown in the autumn soon after they are ripe, the plants will come up the following spring; but if they are not sown till spring, the plants seldom rise till the next year. When the plants are come up and are fit to remove, they should be transplanted into a shady border about nine inches distance, and when they have taken new root, they will require no other care but to keep them

^p Gærtner.

^q Hort. kew.

^r Willdenow.

^s Hort. kew.

^t Ibid.

^u Willdenow.

^v Linn.

^w Hort. kew.

^x Morison.

clean from weeds till the autumn, when they should be transplanted into the borders where they are to remain. The following summer they will flower and produce ripe seeds, but the roots will continue several years, and may be parted every other year to increase them. This loves a soft loamy soil, and a situation not too much exposed to the sun.

The third sort seldom ripens seeds in England, but it increases fast enough by its creeping roots, as also by slips or cuttings, which, if planted in a shady border in May, will take root in the same manner as Mint or Balm; but as the roots multiply so fast, there is seldom occasion to use any other method to propagate them.

This sort loves a moist light soil, and in a situation where the plants have only the morning sun, they will continue longer in flower than those which are exposed to the full sun. This is a very ornamental plant in gardens, and the scent of the leaves is very refreshing and agreeable to most people, and some are very fond of the tea made with the young leaves.

6. This is propagated by seeds, sown on a border of light earth exposed to the east. When the plants are fit to remove, they may be transplanted into a shady border; and if they should shoot up stalks to flower, they should be cut down to strengthen the roots, that they may put out lateral buds, for when they are permitted to flower the first year, the roots seldom live through the winter. In autumn the plants may be removed into the open borders of the pleasure garden, where they will flower the following summer; and if the season should prove dry they should be duly watered.

[MONARDA. See *Ballota*.]

MONBIN. See *Spondias*.

[MONETIA. (So named by L'Heritier in honour of his friend Jean Baptiste Pierre Antoine de Monet, knight of Lamarck, of the Academy of Sciences at Paris, author of *Flora Gallica* and of the *Botanic Encyclopædia*.)

L'Herit. stirp. nov. t. 1. Lin. gen. Schreb. n. 198.

Azima. Lamarck. Juss. gen. 425.

Class. 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, ventricose, four-toothed, two of the divisions deeper; *segments* lanceolate, acute, reflex; permanent.

COR. *Petals* four, linear, acute, recurved, longer than the calyx.

STAM. *Filaments* four, erect, inserted into the receptacle, almost the length of the corolla. *Anthers* ovate, incumbent.

PIST. *Germ* superior, slightly four-cornered, ending in a thickish, conical style, shorter than the stamens. *Stigma* acute.

PER. *Berry*? juiceless, globular, with a little point, surrounded by the calyx, two-celled?

SEEDS solitary, flat on one side, convex on the other.

OBS. *Flowers* sometimes trifid or bifid.

ESSENTIAL CHARACTER.

Cal. four-cleft. *Pet.* four. *Berry*? two-celled. *Seeds* solitary.

SPECIES.

1. *Monetia barlerioides*. *Four-spined Monetia*.

L'Herit. stirp. nov. t. 1. Ait. hort. kew. 1. 160.

Thunb. prodr. cap. 28.

Lycium indicum, spinis quaternis ad foliorum singulorum exortum. *Seba. thes. 1. 21. t. 13. f. 1. (sec. L'Herit. v. Barleriam Hystricem.)*

DESCRIPTION, &c.

This is a middle-sized, prickly shrub, with the habit of *Barleria Hystrix*. Stem upright, full of chinks, ash-coloured. Branches opposite, diffused, dense, ash-coloured. Branchlets prickly, bent down, four-cornered, green at first, afterwards ash-coloured. Shoots green, pubescent in their natural soil, but in gardens naked. Prickles four, in whorls, decussated, horizontal, axillary, a pair from each axil, awl-shaped, pungent, green, mortified at top, having one streak on the inner side, the length of half the leaf. Leaves opposite, spreading, ovate or ovate-lanceolate, entire, acuminate; the point thorny, sharp, mortified, reflex; they have one nerve, scarcely prominent underneath,

with few, hardly visible veins, of the same colour on both sides, either flat or converging a little on the sides, permanent, an inch and half long and eight lines wide. Petiole very short, obsoletely twisted, gibbous on one side, flat on the other. Flowers axillary on the shoots, few, in clusters, in threes at the top, sometimes solitary; sessile, herbaceous, two lines wide. Bractes two-leaved, opposite, pressed to the flowers laterally, very narrow, acute, changing into prickles^b.

Native of the East Indies and the Cape of Good Hope. Cultivated in 1758, by Mr. Miller. It flowers in July^c.

MONEY-WORT. See *Anagallis*, and *Sibthorpia*.

MONIERA. See *Gratiola*.

MONILIFERA. See *Osteospermum*.

MONKEY-FLOWER. See *Mimulus*.

MONKEY'S-BREAD. See *Adansonia*.

MONK'S-HOOD. See *Aconitum*.

MONK'S-RHUBARB. See *Rumex*.

MONNIERIA. (So named from Mons. Monnier of Paris.)

Lin. gen. n. 850. Reich. n. 918. Schreb. n. 1152.

Loefl. it. 179. Aubl. 293. Juss. 421.

Class. 17. 1. Diadelphia Pentandria.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, permanent: upper segment linear, long, curved in, covering the corolla, the outer lanceolate and shorter by half; the rest blunt, short.

COR. tubular, ringent: tube cylindric, more contracted in the middle, curved: border two-lipped: upper lip undivided, blunt, ovate: lower lip four-cleft, straight: segments oblong, blunt.

Nectary an ovate scalelet at the base of the germ below the lower base.

STAM. *Filaments* two, flat, membranaceous: upper concave, bifid at top: lower flat, trifid. *Anthers* on the upper filament two, connate, hirsute within, including the stigma: on the lower filament three, round, very minute.

PIST. *Germ* roundish, five-lobed, five-cornered. *Style* solitary, filiform. *Stigma* headed, oblong, flat within, orbicular, with a sharp edge.

PER. *Capsules* five, ovate, compressed, two-valved along half the future.

SEEDS solitary, ovate, with the inner margin straighter, blunter, inclosed in a two-valved, dry, deciduous *Aril*.

ESSENTIAL CHARACTER.

Cal. five-parted, with the upper segment long. *Cor.* ringent. *Stam.* two, the upper with two anthers, the lower with three. *Caps.* five, one-seeded.

SPECIES.

1. *Monnieria trifolia*.

Lin. spec. 986. Syst. 636. Reich. 3. 376. Loefl. it.

197. Aubl. guian. t. 293.

DESCRIPTION, &c.

This is an annual plant, with a dichotomous stem, ternate leaves, and white flowers in a bifid spike^d.

Native of America.

MONOPHYLLON. See *Convallaria*.

MONORCHIS. See *Ophrys*.

MONOSPERMALTHÆA. See *Walteria*.

MONOTRŌPA. (From *μονος*, alone, and *τροπος* to turn.)

Lin. gen. n. 536. Reich. n. 583. Schreb. n. 737.

Juss. 430. Orobanchoides Tournef. mem. acad.

170. Hypopitys. Dill. gen. 7.

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. none, unless the five outer petals be taken for a coloured calyx.

COR. *Petals* ten, oblong, parallel-erect, ferrate at the tips, deciduous, of which the alternate outer ones are gibbous at the base, inwardly concave melliferous.

STAM. *Filaments* ten, awl-shaped, erect, simple. *Anthers* simple.

PIST. *Germ* roundish, acuminate. *Style* cylindric, the length of the stamens. *Stigma* blunt-headed.

^b L'Heritier.

^c Hort. kew.

^d Linn.

PER.

PER. Capsule ovate, five-cornered, blunt, five-valved.
SEEDS numerous, chaffy.

OBS. Such is the terminating flower: but if there be any lateral flowers, they exclude a fifth part of the number, in all parts of the fructification.

ESSENTIAL CHARACTER.

Cal. none. Pet. ten, the five outer hollowed-melliferous at the base. Caps. five-valved. A fifth part excluded in some.

SPECIES.

1. *Monotropa Hypopithys*. Yellow Bird's-nest.

Lin. spec. 555. syst. 402. Reich. 2. 280. fl. suec. n. 351. Hudf. angl. 175. Wither. arr. ed. 3. 398. Lightf. scot. 214. Engl. bot. 69. Sibth. oxon. n. 398. Gmel. fib. 4. 177. Willich obs. 70. Pollich pal. n. 393. Kniph. cent. 10. n. 63. Fl. dan. t. 232. Allion. pedem. n. 1022. Villars dauph. 3. 582. Krock. files. n. 622.

Hypopithis multiflora. Scop. carn. n. 178. Hall. belv. n. 1002. Riv. tetr.—lutea. Dill. giff. 99. app. 134. t. 7. Raii syn. 317.

Orobanche quæ Hypopithys dici potest. Bauh. pin. 88. prodr. 31.

O. *Hypopithys lutea*. Mentz. pug. 3. f. 5.

O. flore brevior duplici, verbasculi odore. Mor. hist. 3. 504. f. 12. t. 16. f. 20.

O. verbasculi odore. Plot oxf. 146. t. 9. f. 6. Pluk. phyt. t. 209. f. 5.

Lateral flowers eight-stamened, terminating flower ten-stamened.

2. *Monotropa uniflora*.

Lin. spec. 555. syst. 402. Reich. 2. 280. Gron. virg. 41.

Orobanche monanthos virginiana flore majore pentapetalo. Mor. 502. f. 5.

O. *virginiana*, flore pentapetalo cernuo. Pluk. phyt. t. 209. f. 2. Catesb. car. 1. t. 36.

Stem one-flowered, flower ten-stamened.

DESCRIPTIONS, &c.

1. Root composed of imbricate scales, and parasitical, the radical fibres adhering to the roots of the trees under which it grows. Stem from five to seven inches high, upright, not branched, smooth and shining, round, having no leaves, but only ovate, blunt, alternate scales, yellowish white when young, but rusty black in the maturity of the plant, terminated by a loose spike of flowers that nods, but in the seeding state becomes erect. Flowers peduncled, each supported by its whitish scalelet or bracte; they are eight lines in length, and four in diameter. Calyx or outer petals smooth, whitish and shining, very slightly ciliated at the edge. Corolla or inner petals of the same colour. Pollich reckoned about nine flowers in a raceme. Linneus remarks, that the whole plant smells sweet, and is of a pale yellow colour, which peculiarity is generally confined to parasitical plants, and such as grow in very shady situations. The smell is described as being like that of Primrose or Beans in blossom.

Willich observes that the number of parts varies too much in this plant, to admit of the rule which Linneus lays down respecting it being general. In a specimen which he had before him the terminating flower, besides the four scales under it, had twelve petals, as many stamens, a stigma with five lines, and a five-celled fruit: but the lateral flowers had four, six, seven, eight, ten petals, six, eight, nine, ten, eleven, twelve stamens, four and five lines on the stigma, and the fruit four or five-celled.

This plant is nearly allied to *Orobanche* in its habit and appearance, but the structure of the flowers is different.

In Sweden it is given dry to sheep that are affected with a cough.

Native of many parts of Europe, as Sweden, Denmark, Germany, France, Italy, Britain, also in Canada; in woods, especially fir woods, and where the ground is covered with rotten leaves, at the roots of fir, pine, beech, oak, &c. With us in Oxfordshire, in Stokenchurch woods and between Nettlebed and

Henley, Bedfordshire, Buckinghamshire, Berkshire, frequent; Maidstone in Kent; Tring in Hertfordshire; in the beech woods of Sussex; in Selborne-hanger, Hampshire; Uley in Gloucestershire; Enville, in Staffordshire; Shottisham and Stoke in Norfolk. In Scotland, but not common.

2. Stem single, fleshy, the size of a straw, a long span in height. Leaves broadish, pointed, fattish. Flower one, terminating, an inch in diameter, composed of five petals, a quarter of an inch wide. Capsule turgid, oblong, ending in a point, the size of a hazel nut.

Native of North America: whence it was sent by Banister. Morison's figure is bad, and Catesby's good. MONSONIA. (So named in honour of Lady Ann Monson. See Thunberg's travels, vol. 2. 132. Engl. edit.)

Lin. gen. Reich. n. 973. Schreb. n. 1120. Cavan. diff. 3. 179. 4. 193. Juss. 269.

Class. 16. 5. Monadelphia Dodecandria.

Nat. order of *Gruinales*. *Gerania*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets lanceolate, awned, equal, permanent.

COR. Petals five, obovate, præmorse-toothed, longer than the calyx, inserted into the base of the pitcher of stamens.

STAM. Filaments fifteen, united in five bodies, three in each, all connected at the base and forming a very short pitcher. Anthers oblong.

PIST. Germ five-cornered, short. Style awl-shaped. Stigmas five, oblong.

PER. Capsule five-cornered, five-celled: each cell fixed to a very long, twisted, terminating tail.

SEEDS solitary.

OBS. Allied to *Geranium*.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled. Stam. fifteen, united into five filaments. Style five-cleft. Caps. five-grained.

SPECIES.

1. *Monsonia speciosa*. Fine-leaved *Monsonia*.

Lin. syst. 697. Reich. 3. 584. mant. 105. suppl. 342. Curt. magaz. 73. Ait. hort. kew. 3. 100.

M. *grandiflora*. Burm. prodr. 23.

Geranium folio tenuissime dissecto, flore singulari amplissimo. Breyn. prodr. 3. app. 31. t. 21. f. 2.

Leaves quinate, leaflets bipinnate.

2. *Monsonia lobata*. Broad-leaved *Monsonia*.

Lin. syst. 697. Montin in act. gothob. 2. p. 1. t. 1. Ait. hort. kew. 3. 100. Curt. magaz. 385.

M. *filia*. Lin. syst. 696. suppl. 341. Cavan. diff. 3. 180. t. 74. f. 2.

Leaves cordate lobed toothed.

3. *Monsonia ovata*. Undulated *Monsonia*.

Cavan. diff. 4. 193. t. 113. f. 1. Ait. hort. kew. 3. 100.

Leaves oblong, subcordate, crenate, waved.

DESCRIPTIONS, &c.

1. Leaves radical, petioled, several, bipinnate-quinat: leaflets linear, pinnate: pinnae sub lanceolate. Scapes two or three, one-flowered, a span high, twice as long as the leaves, having in the middle a small six-leaved involucre, with lanceolate leaflets. Flower handsome. In habit and fructification it bears great affinity to *Geranium*, but is distinguished from it by its appearance like *Anemone*, and by the difference in the stamens and style.

2. According to the younger Linneus, this is very like the preceding, differing in no respect from it in the scape, involucre, calyx, petals, stamens, pistil, and even the very singular crown of the germ. But the leaves are simple, bluntly seven-lobed, crenate, blunt, subpubescent, (as indeed the whole herb is) entirely resembling those of *Geranium vitifolium*. The fruit has a beak to it, with a very long point, as in *Geranium ciconium*. Capsule retuse and as it were crowned.

Mr. Curtis adds, that it differs from *speciosa* principally in its foliage, which is undivided; and that the flowers are smaller, more handsome in bud than when

* Lightf. Pollich, Krock. f Villars. z Linn. suec.

^h Morison.

ⁱ Linn. mant.

^k Linn. suppl.

open, and more frequently produced, but requiring the influence of the sun to make them expand fully.

Cavanilles seems to think it perfectly distinct from the preceding.

3. The stem of this species is herbaceous, columnar and filiform: the leaves opposite, about equal in length to the footstalks, ovate, crenated, about half an inch long, with some hairs: the stipules are two on each side, subulate: flowers axillary, on very long footstalks; about the middle of the length of the footstalk are two stipules: the footstalk of the flowers is upright: when bearing the fruit it is declinate-erect from the stipules, one-flowered. Calyx consists of five ovate-oblong, sharp, awned leaflets. Corolla of five petals with very narrow claws, gradually dilating towards the tip, and there crenate-præmorse, whitish-yellow, with three longitudinal streaks. The crown or urceolus of stamens surrounding the germ is monophyllous, reddish, parted into five segments, each of which is terminated by three filaments: the anthers are ovate-oblong. The germ is pentagonal, top-shaped, villose: style simple; stigmas five. Fruit five capsules, monospermous, oblong, acute at their base, and terminated by a tortile awn of about an inch and half in length¹.

They are all natives of the Cape of Good Hope, and were introduced here in 1774, by Mr. Francis Masson. The two first are perennial, and flower in april and may. The third is biennial and flowers in august^m.

PROPAGATION AND CULTURE.

1. This plant rarely or never ripening its seeds with us, may be increased by cuttings of the root planted in pots of good mould, and plunged in a tan-pit, watering them occasionally: in due time buds appear on the tops of the cuttings left out of the ground. It may be treated as a hardy greenhouse plant, and may be sheltered even under a frame in winterⁿ.

The second sort may be raised in the same way, and the third from seeds.

MONTANA. See *Rhododendron*.

MONTIA. (So named by Micheli, in honour of Joseph Monti, Doctor of Philosophy, Professor of Botany, and Prefect of the Medical Garden at Bologna. Author of *Agri Bononiensis stirpium Catalogi Prodrromus* 1719. qu.)

Lin. gen. n. 101. Reich. n. 107. Schreb. n. 133.

Mich. 13. Juss. 313. Gartn. t. 129. Cameraria.

Dill. gen. 6. Alfinoides. Vaill. bot. par.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Portulacæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth two-leaved: leaflets ovate, concave, blunt, erect, permanent.

COR. one-petalled, five-parted, three of the segments alternate, smaller, staminiferous.

STAM. Filaments three, capillary, the length of the corolla, into which they are inserted. Anthers small.

PIST. Germ turbinate. Styles three, villose, spreading. Stigmas simple.

PER. Capsule turbinate, blunt, covered, one-celled, three-valved.

SEEDS three roundish.

OBS. The calyx often varies with three leaflets, and then it often produces five stamens.

ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. one-petalled, irregular. Caps. one-celled, two-valved.

SPECIES.

1. *Montia fontana*. Water Chick-weed.

Lin. spec. 129. Juss. 128. Reich. 1. 244. Willd.

487. fl. lapp. n. 51. Juss. n. 115. Gartn. fruct.

1. 220. Cyrill. neap. 31. t. 11. f. 1. Hudf.

angl. 60. Wither. arr. ed. 3. 175. Curt. lond.

3. 8. 188. Relb. cant. n. 109. Hall. helv. n. 301.

Fl. dan. t. 131. Pollich pal. n. 134. Gunn.

norv. n. 80. Hoffm. germ. 1. 50. 2. 158. Allion.

pedem. n. 290. Krock. filef. n. 196. Villars

dauph. 3. 651.

¹ Cavanilles.

^m Hort. kew.

ⁿ Curtis.

M. aquatica minor. Mich. gen. 18. t. 13. f. 2.

Cameraria arvensis minor. Dill. giff. 46.

Alfineformis paludosa tricarpos. Pluk. phyt. t. 7. f. 5.

Alfine palustris; portulacæ aquaticæ similis. Raii hist.

1035. syn. 352. Pet. brit. t. 10. f. 12.

Portulaca arvensis. Baub. pin. 288.

β. *Montia aquatica major*. Mich. gen. 15. t. 13. f. 1.

Anagallis aquatica subrectior. Baub. hist. 3. 186.

Alfine palustris minor, folio oblongo. Baub. prodr.

118.

Alfinoides annua verna. Vaill. par. t. 3. f. 4.

DESCRIPTION, &c.

Root annual, fibrous. Stalks numerous, round, smooth, succulent, reddish, spreading on the ground, and sometimes striking root, two or three inches in length, branched and jointed. Leaves opposite, sessile, oblong, somewhat pointed, narrowed near the base, rather fleshy, smooth and of a pale green colour. Peduncles generally growing three together, each supporting one flower, proceeding from a little scale in the bosom of the leaves, as soon as the flowering is over hanging down, afterwards becoming upright and longer than the leaves. Corolla white. Filaments shorter than the corolla to which they are connected. Germ large at top, small at bottom, and somewhat triangular. The permanent and encreasing calyx, truncated at top invests the capsule^o, which is subglo-bular, and contains three seeds, which are turgidly lenticular or subglo-bular, beaked, rugged with very close tubercles, black, fixed by a very short umbilical chord to the bottom of the capsule^p.

The flowers usually appear in a half-opened state, whence one of the English names *Blinks*, but when the sun shines on them they expand^q. Stamens three or five. Capsules subtriquetrous, the valves bursting elastically^r.

Cyrillo has figured a raceme of this plant with four or five flowers, which is an unusual luxuriance.

Allione remarks, that the larger variety grows in bogs, the smaller one where water has stood in winter; that at first sight they appear to differ, the larger having fewer flowers and on longer peduncles from the axils; in the smaller the flowers are rather more abundant on the top of the plant, besides the axillary ones, the leaves are also much smaller.

Native of many parts of Europe, flowering in may, and ripening its seed at the beginning of june. With us it is not uncommon, as on Blackheath, Hampstead-heath, Hanging-wood Charlton, about Streatham and Sydenham, Harefield-common, wet heaths in Norfolk, Hill of Health and Gamlingay-heath, Cambridgeshire, Badby in Northamptonshire, Bridgeford in Nottinghamshire, Hockley Pool Grate near Birmingham, Shotover-hill and South Leigh-heath in Oxfordshire, Marazion-marsh in Cornwall.]

MONTIA. See *Heliocarpus*.

[MONTINIA. (In memory of Laurence Montin, a very acute Swedish botanist.)

Lin. gen. Schreb. n. 1506. suppl. 65. Thunb. nov.

gen. 27. Gartn. t. 33. Juss. 318.

Class. 22. 4. Dioecia Tetrandria.—Tetrandria Monogynia. Smith.

Nat. order of *Calycanthemæ*. Onagra, Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth four-toothed, very short, erect.

COR. Petals four, ovate, very blunt, spreading, inserted into the calyx.

STAM. Filaments four.

* Female.

CAL. superior—as in the male.

COR. as in the male.

STAM. Filaments four, within the teeth of the calyx, very short. Anthers none.

PIST. Germ inferior, concave-plane, smooth. Style cylindrical, thick, bifid, shorter than the corolla. Stigmas kidney-form.

PER. Capsule ovate-oblong, two-celled, gaping longitudinally. Partition thick, two-lobed.

^o Curtis.

^p Gartner.

^q Curtis.

^r Krock.

SEEDS very many, imbricate, ovate, compressed, winged at the edge.

OBS. Male flowers sometimes five-cleft, five-stamened.

ESSENTIAL CHARACTER.

Cal. four-toothed, superior. Pet. four.

FEM. Filaments barren. Style bifid. Caps. oblong, two-celled.

SPECIES.

1. *Montinia acris*. Glaucous *Montinia*.
Lin. syst. 883. suppl. 427. Thunb. prodr. cap. 28.
- M. caryophyllacea*. Thunb. in act. lund. p. 1. 108.
Ait. hort. kew. 3. 395. Smith spicil. 14. t. 15.
Burm. afr. t. 90. f. 1, 2. Pluk. mant. t. 333. f. 3.
& phyt. t. 174. f. 7.
- M. fruticosa*. Gært. fruct. 1. 170.

DESCRIPTION, &c.

Root woody. Stem shrubby, angular, branched, smooth, a foot high. Branches alternate, little divided, glaucous, scarred with the residue of the petioles. Leaves alternate, oblong-oval, blunt, nerved, veined, quite entire, smooth, thickish, erect. Petioles very short, subdecurrent, falling off above the base. Flowers terminating, solitary, sometimes but seldom five-cleft, white. Fruit with an acrid flavour*. It is an inferior capsule, crowned with the four very spreading toothlets of the calyx, two-valved: partition very thin, contrary to the valves, arising from the receptacle. Seeds in each cell six or eight, rather large, leafy-compressed, concave, slightly emarginate at the navel, with a broad entire membrane about the edge, bay-coloured†.

Native of the Cape of Good Hope, on sandy hills; found by Sparrman, Thunberg, &c. Introduced here by Masson in 1774.

MOON-SEED. See *Menispermum*.

— TREFOIL. See *Medicago*.

— WORT. See *Osmunda*.]

MORÆA. (So named by Mr. Miller in honour of Robert More, Esq. of Shrewsbury.)

Lin. gen. n. 60. Reich. n. 66. Schreb. n. 80.

Gært. t. 13. Juss. 58.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Ensatæ*. Irides, Juss.

GENERIC CHARACTER.

CAL. Spathes two-valved.

COR. six-petalled: three inner parts spreading; the rest as in Iris.

STAM. Filaments three, short. Anthers oblong.

PIST. Germ inferior. Style simple. Stigmas three, bifid.

PER. Capsule three-cornered, three-grooved, three-celled.

SEEDS very many, round.

ESSENTIAL CHARACTER.

Cor. six-petalled, the three inner parts spreading, narrower. Stigma trifid.

SPECIES.

* Scape ancipital.

- [1. *Moræa melaleuca*. Dark-flowered *Moræa*.
Thunb. diff. n. 1. t. 1. f. 3. prodr. 10. Lin. spec. Willd. 240.
M. lugens. Lin. syst. 93. suppl. 99. Ait. hort. kew. 1. 75.
Scape ancipital, leaves subfalcate, flower subsolitary.
2. *Moræa spiralis*. Spiral-flowered *Moræa*.
Lin. syst. 93. Willd. 240. suppl. 99. Thunb. diff. n. 2. prodr. 10.
Scape compressed jointed, leaves erect, flowers alternate mostly directed one way.
3. *Moræa pusilla*. Dwarf *Moræa*.
Thunb. diff. n. 4. prodr. 11. Lin. spec. Willd. 241.
Scape ancipital, leaves distich, flower subsolitary.
4. *Moræa magellanica*. Magellanic *Moræa*.
Lin. spec. Willd. 241.
Ixia? *pumila*. Forst. in comm. goett. 9. p. 20. t. 2.
Galaxia obscura. Cavan. diff. 6. 341. t. 189. f. 4.
Tapeinia. Juss. gen. 59.
T. magellanica. Gmel. syst. 108.
Stem ancipital leafy, leaves distich sickle-shaped, flower terminating solitary.

* Linn. suppl.

† Gartner.

5. *Moræa gladiata*. Sword-leaved *Moræa*.
Thunb. diff. n. 8. prodr. 11. Lin. syst. 93. Willd. 241.

Ixia gladiata. Lin. suppl. 93.

Scape and leaves compressed, spike lateral solitary, involucre only half the length of it.

6. *Moræa aphylla*. Leafless *Moræa*.
Lin. syst. 93. Willd. 242. suppl. 99. Thunb. diff. n. 9. t. 2. f. 1. prodr. 11.

Scape and leaves compressed, spike lateral solitary, involucre many times shorter.

7. *Moræa filiformis*. Filiform *Moræa*.
Lin. syst. 93. Willd. 242. suppl. 100. Thunb. diff. n. 10. t. 1. f. 2. prodr. 11.

Scape and leaves compressed subfiliform, flower solitary terminating.

** Scape round.

8. *Moræa spathacea*. Sheathy *Moræa*.
Lin. syst. 92. Willd. 242. suppl. 99. Thunb. diff. n. 11. t. 1. f. 1. prodr. 11.

Bobartia indica. Lin. spec. 78. fl. zeyl. n. 41. amoen. 1. 388. Schum. in act. hafn. 3. 8. t. 1.

Scape and leaves round hanging down, spikes lateral aggregate.

9. *Moræa flexuosa*.
Lin. syst. 93. Willd. 243. suppl. 100. Thunb. diff. n. 12. prodr. 11.

Ixia longifolia. Jacqu. hort. 3. 47. t. 90.

Scape round jointed, leaf reflex somewhat waved nerved.

10. *Moræa polyanthos*.
Lin. syst. 92. Willd. 243. suppl. 99. Thunb. diff. n. 14. prodr. 11.

Scape round, leaves flexuose-erect, alternate segments of the corolla smaller.

11. *Moræa cærulea*.
Lin. spec. Willd. 243. Thunb. diff. n. 15. t. 2. f. 2. prodr. 11.

Gladiolus capitatus. Lin. spec. 53. Diet. n. 18.

Scape round, leaves distich, heads of flowers alternate, spathes membranaceous entire.

12. *Moræa plicata*.
Lin. spec. Willd. 243. Swartz descr. 82.
M. palmifolia. Jacqu. ic. 2. t. 227. collect. 3. 192.
Sisyrinchium latifolium. Swartz prodr. 17. H. R. monsp. 185.

S. palmifolium. Cavan. diff. 6. 348. t. 191. f. 1.

Ferraria parviflora. Salisb. hort. 43.

Ixia fol. ensiformibus plicatis glabris, caule ramoso.
Plum. amer. 35. t. 46. f. 2.

Bermudiana palmæ folio, radice bulbosa. Tournef. inst. 388.

Scape round, leaves petioled oblong nerved plaited, racemes bifid.

13. *Moræa umbellata*.
Lin. spec. Willd. 244. Thunb. diff. n. 16. prodr. 11.
Scape round striated, spikes of flowers umbel-panicled, involucre two-leaved very long.

14. *Moræa crispa*.
Lin. spec. Willd. 244. Thunb. diff. n. 17. prodr. 11.
Scape round jointed, leaf convoluted curled reflex.]

15. *Moræa iriopetala*.
Lin. suppl. 100. spec. Willd. 244.
Iris plumaria. Lin. syst. 89. Thunb. diff. n. 16. prodr. 11.

I. lugubris. Salisb. hort. 42.

α. With the scales of the bulb distinct at the base.

M. juncea. Lin. spec. 59. Mill. dict. n. 2. Gært. fruct. 1. 39.

β. With the scales of the bulb connected at the base.

M. vegeta. Lin. spec. 59. Mill. dict. n. 1. fig. 159. t. 238. f. 1, 2.

Scape round, leaves linear, stigma multifid.

- [16. *Moræa iridioides*.
Lin. syst. 93. Willd. 244. mant. 28. Thunb. diff. n. 18. Giseck. ic. fasc. 1. t. 3. Gært. fruct. 1. 40. Mill. fig. 159. t. 239. f. 1. Till. pis. 89. t. 33. (Iris).

Scape round, leaves distich linear, flower subsolitary terminating.

17. *Moræa chinensis*.
Lin. syst. 93. Willd. 245. Thunb. diff. n. 19. fl. jap. 34.]

Ixia chinensis. *Lin. spec.* 52. *hort. upf.* 16. *Trew. Ebr.* 23. t. 52. *Mill. dict.* 1. *Curt. magaz.* 171. *Dict. nostr.* n. 38.

DESCRIPTIONS, &c.

[Linneus remarks that the flower of *Moræa* differs from that of *Iris*, in having all the six petals equally spreading. This being the chief difference, Gærtner is of opinion that *Moræa* is too artificial a genus, and might more properly be mixed partly with *Iris* and partly with *Ixia*. *Moræa*, according to Willdenow differs from *Sisyrinchium* as *Ixia* does from *Galaxia*, in having the stamens not monadelphous. For this reason he refers *Moræa ixioides* and *collina* of Thunberg, and *ferrariola* of Jacquin to the genus *Sisyrinchium*. But several of these genera border so close upon each other, that it is sometimes not easy to determine which of them some species belong to. The *Sisyrinchia* certainly have the same habit and flowers with the *Moræas*.

1. Petals alternate, the three outer white, the three inner smaller and black. Stigma many-parted.—Native of the Cape of Good Hope^a. Introduced here in 1786, by Mr. Francis Masson^b.

2. Corolla equal, greenish white on the outside, white within, rolled spirally during the night. Stigma simple, villose.—Native of the Cape^c.

3. Scape simple erect one-flowered or two-flowered. Leaves linear-lanceolate subfalcated striated smooth, shorter than the scape. Corolla blue, becoming spiral when it is past; the alternate segments narrower.—Native of the Cape^d.

4. This plant is only an inch or an inch and half high, covered with striated sheathing leaves. Peduncle very short one-flowered. Spathe two-valved membranaceous. Corolla white. Stigma trifid. This has been placed in the genus *Ixia* by Forster, *Galaxia* by Cavanilles, and *Tapeinia* by Jussieu; but Willdenow has made it a *Moræa* on account of the corolla being six-petalled. *Ixia* has a tube to the corolla, and *Galaxia* has cohering filaments.—Native of the Straits of Magellan^e. See *Galaxia*.

5. Culms naked long smooth and even. Leaves narrow-ensiform very long smooth and even, very finely striated. Spikes terminating, usually three, imbricate, with embracing bluntnish awnless glumes. Bracte ensiform behind the spikes, and not longer than them. Corolla yellow, with the outer petals red on the outside. Styles three.—Native of the Cape^f.

6. Corolla yellow. Stigmas three. This species is singular in being entirely leafless, and having the flowers lateral as in *Juncus*.—Native of the Cape^g.

7. The flowers with their spathes resemble those of *Dianthus*. Corolla yellow. Stigmas three.—Native of the Cape^h.

8. Leaves and stems filiform, the toughest and smoothest of all the species. Scape terminating in a two-leaved spathe, with a head of flowers fenced by smaller awl-shaped spathes. Corolla yellow. Stigmas threeⁱ.

Linneus formed the character of *Bobartia* from an imperfect specimen of this plant, as Schumacher has clearly shown^k.

It grows very abundantly on the hills near the Cape of Good Hope.

9. Scape striated, upright, smooth, a foot high and more. Leaf one (seldom two) at the root, linear, striated, shorter than the scape; branch-leaves similar. Flowers alternate on the flexuose rachis of the scape. Spathes oblong, acute, jagged. Segments of the corolla scarcely connate at the base, nearly equal, ovate, blunt with a point, concave, with a raised longitudinal line, spreading, yellow above, three alternate ones greenish underneath. Stigmas six or thereabouts, two always approximating, a little longer than the filaments.—Native of the Cape^l.

10. Scape jointed, panicled, upright, a foot high. Branches and branchlets filiform, upright, jointed. Leaf next the root linear, striated, upright, curved,

longer than the scape: branch-leaves similar. Flowers one, two, or three. Corolla blue, almost regular: segments ovate, blunt, spreading; three alternate a little shorter and narrower, with a yellow line below, green on the outside. Stigmas three, scarcely two-lipped, but bifid.—Native of the Cape^m.

11. Scape simple, striated, smooth, upright, two feet high. Root-leaves very many, distich, linear, striated, smooth, upright, shorter than the scape. Flowers lateral, alternate, spike-headed, very many. Heads on round peduncles. General spathes boat-shaped, acuminate, the length of the head: partial spathes ovate, entire, membranaceous at the edge. Corolla blue: segments ovate, blunt, concave, veined, from upright spreading, smooth, alternately somewhat narrower. Filaments very short, blue. Anthers oblong, blunt, bifid at the base, grooved on the outside, even within, inserted laterally, yellow, almost the length of the corolla. Germ smooth. Style the length of the stamens, shorter than the corolla, blue. Stigma simple, blunt, three-cornered. Capsule oblong, gradually attenuated below, smooth.

Native of the Capeⁿ. This has been already mentioned, but not described under *Gladiolus*.

12. Bulb ovate, covered with red membranaceous coats, yellow in the middle. Leaves radical, from two to three feet long, ensiform, broad, narrower and as it were petioled at the base, towards the root membranaceous and somewhat sheathing, purple, longitudinally six-nerved, folding over each other, very smooth. Scapes rather longer than the leaves, roundish or compressed a little, somewhat striated, smooth, nodding a little at top, terminated by a spathe-shaped lanceolate upright nerved leaflet, from the sheathing base of which issues a peduncle, two inches long, and bifid; each pedicel has a small leaflet under it. Flowers white, spathaceous, in a sort of head, rising gradually on very short pedicels. Spathe two-leaved, ancipital: leaflets ovate, acute, slightly striated, keeled, one of them bifid, smooth, inclosing from six to ten flowers separated by ovate acute membranaceous pale scales. Corolla six-petalled. Petals oblong, equal, from upright spreading, veined, white, flat with the base contiguous to the apex of the germ. Filaments shorter than the petals, about the apex of the germ, shortly connate. Anthers linear, bifid at bottom. Germ obovate, subtrigonal. Style awl-shaped, the length of the stamens. Stigma three-parted; the parts lanceolate, upright.

Native of the West Indies, as in the mountainous pastures of Jamaica on the west side; flowering the whole year, opening at four o'clock in the afternoon, one flower only coming out at a time^o.

13. Scape smooth, upright, simple, a foot high. Flowers terminating, one, two or three, peduncled, blue. Involucres two under the umbel, linear, striated; one shorter, acuminate, a little longer than the umbel; the other linear, reflex, the length of the scape.—Native of the Cape of Good Hope^p.

14. Scape simple, a span high. One leaf next the root linear, the length of the scape. Flowers terminating, peduncled, few, blue.—Native of the Cape^q.

15. *a*. Bulb with the scales connected at the sides, but distinct at the base: with ten compressed teeth, and as many alternately shorter. Culm branched; branches three or four. Glumes two-valved, two-flowered. Flowers white^r. Capsule inferior, ovate, half an inch long, rounded-three-cornered, three-grooved, with knobs where the seeds are, papery, white, three-celled, three-valved. Seeds fixed to the central margin of the partitions, in a double row, from eight to twelve in each cell, subglobular, acuminate towards the umbilicus, smooth, of a reddish rust colour^s.]

Bulb small, a little compressed on the sides, with a smooth dark-coloured skin. Leaves three or four, awl-shaped, pale green, from five to seven or eight inches in length, and about half an inch broad, terminating with three angles. Scapes about six inches

^a Linn. suppl.

^d Thunberg.

^e Ibid.

^b Hort. kew.

^c Willdenow.

^f Ibid.

^g Thunberg.

^h Linn. suppl.

ⁱ Linn. suppl.

^k Willdenow.

^m Thunberg.

ⁿ Ibid.

^o Ibid.

^p Willdenow.

^q Swartz

^r Gærtner.

^s Thunberg.

high, generally bending at the lower joint; with a small leaf at each joint, the base of which almost surrounds the scape. Flowers two terminating, encompassed by a withered spathe. Corolla orange; the parts pretty broad at top, connected at the base.

β. Bulb with scales connected at the base, bifid, depressed, but not compressed. Glume two-valved, two-flowered. Flowers two, seldom more than two on a scape¹.]

Roots fibrous, like those of the flag-leaved Iris, whence arise many small sword-shaped leaves, five or six inches long, and half an inch broad in the middle, diminishing towards both ends, of a deep green colour, lying over each other at the base. Scape about eight inches high, having one small leaf at each joint, and terminated by one flower, covered with a two-valved spathe. Corolla dirty white, each part having a blush of purple towards the upper part, and a pretty broad spot of yellow towards the claw. Stigma trifid.

Natives of the Cape of Good Hope. They flower in June, and the seeds ripen at the end of July. It was to these that Mr. Miller gave the name of *Moræa* from Robert More, Esq. who, as he says, was well skilled in botany and other parts of natural history. [He cultivated them in 1758².

16. Root fibrous. Scape a span or foot high, roundish or scarcely compressed, jointed, smooth, simple or little branched, upright, the length of the leaves. Leaves ensiform, narrowed at the inner base, nerved, smooth, acuminate, upright. Flowers from the uppermost axils of the leaves, sometimes three, but often only one. Spathe two-valved. Germ pedicelled, subtrigonal, striated. Corolla six-petalled; the three outer petals obovate, oblong, bearded, spreading, with a yellow spot in the middle: the three inner white without spots, spreading like the outer ones. Style short, thick. Stigmas petaloid, spreading, blue, bifid, as in Iris³. Capsule oblong, obsoletely three-cornered, coriaceous, black-brown, very finely striated. Seeds numerous, variously angular, depressed, with two flat sides, the others curved with the sides of the cells; they are thick, black-brown with confluent spots⁴.

Native of the Cape of Good Hope, according to Miller and the Kew catalogue; but of the Levant, according to Thunberg. Cultivated by Mr. Miller in 1758².

17. The style is inclined. The corolla being six-petalled, it is a species of *Moræa*; the *Ixias* having a tube⁵. This has already been sufficiently described under *Ixia chinensis*. Mr. Curtis thinks that it has scarcely any affinity with *Moræa*.

The corolla in this genus is said to be six-petalled in the generic description given above; it is however rather one-petalled and six-parted, as in Iris, at least in most of the species; but the connection at the base is so slight, that it is difficult to determine in some cases whether we should consider the corolla as one-petalled or six-petalled. It is the latter in species 4, 12, 16, 17: in the rest it is submonopetalous or subhexapetalous.

In the generic character it is said that there are three stigmas, or that the stigma is trifid. The number three is certainly predominant; but the stigma is simple in 2 and 11; many-parted in 1 and 15; sixfid in 9; in the rest bifid. Species 5 has three styles.

The corolla is black and white in 1: white in 2, 4, 12, 15, 16: blue in 3, 10, 11, 13, 14: and yellow in 5, 6, 7, 8, 9.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, offsets, or parting the roots; all which operations are best performed in August. Sow the seeds in small pots, plunged into a bed of old tanner's bark, under a common frame. The plants also require this sort of shelter in winter, being apt to draw up weak when placed in the dry stove. If they can enjoy the free air, even in winter,

when the weather is not cold, and are secured from frost and hard rain, they flower and ripen their seeds better than with more tender management. In summer they should be fully exposed to the open air till October, when they should be removed into shelter.

[*MORÆA*. See *Aristea*.

MORGANA. See *Zygophyllum*.]

MORINA. (So named by Tournefort, who discovered this plant in his travels in the Levant, in honour of Louis Morin, M. D. member of the academy of sciences at Paris, who first raised it from seed in his garden at the Abbey of St. Victor.)

Lin. gen. n. 41. Reich. n. 44. Schreb. n. 52. Tournef. t. 480. Juss. 194. Diotrothea. Vaill. mem. acad. par. 1722.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Aggregatae*. *Dipsacæ*, Juss.

GENERIC CHARACTER.

CAL. double. Perianth of the fruit inferior, one-leaved, cylindric, tubular, permanent: mouth toothed: toothlets two opposite, longer; all subulate, acute.

Perianth of the flower superior, one-leaved, tubular, bifid; segments emarginate, blunt, permanent, upright, the size of the outer.

COR. one-petalled, two-lipped. Tube very long, widening above, a little curved in, filiform at bottom. Border flat, blunt: upper lip semibifid, smaller; lower trifid: segments all blunt, uniform, the middle one more lengthened.

STAM. Filaments two, bristle-shaped, approximating to the style, parallel, shorter than the border. Anthers erect, cordate, distant.

PIST. Germ globular, under the receptacle of the flower. Style longer than the stamens, filiform. Stigma headed-peltate, bent in.

PER. none.

SEED single, roundish, crowned with the calyx of the flower.

ESSENTIAL CHARACTER.

Cal. of the fruit one-leaved, toothed—of the flower bifid. Cor. irregular. Seed one, under the calyx of the flower.

SPECIES.

1. *Morina perfica*.

Lin. spec. 39. syst. 72. Reich. 1. 73. Willd. 152. hort. cliff. 14.

M. orientalis. Mill. dict.—*carlinæ* folio. Tourn. cor. 48. it. 3. 132. ic.

DESCRIPTION, &c.

Root taper and thick, running deep into the ground, sending out several thick strong fibres as large as a finger. Stem near three feet high, smooth, purplish towards the bottom, but hairy and green at the top. At each joint three or four prickly leaves, like those of Carline Thistle, four or five inches long, an inch and half broad, of a lucid green on the upper side, but of a pale green and a little hairy underneath, armed on their edges with spines. Flowers axillary on each side, some white and others purplish red on the same plant. They appear in July, but do not produce seed in England. [Tournefort remarks, that they have the odour of the Honeysuckle.—Native of Persia near Isfahan.]

It was in the English gardens before the severe winter of 1740, which killed all the plants here, and in the Paris garden, so that the only plant remaining was in Mons. Duhamel's garden.

PROPAGATION AND CULTURE.

This plant is propagated by seed, which should be sown soon after it is ripe in the autumn, otherwise the plants will not come up the following summer; for I have several times observed, where the seeds have been sown in the spring, they have remained in the ground fourteen or fifteen months before the plants have appeared. These seeds should be sown in the places where the plants are to remain, because they send forth tap-roots, which run very deep into the ground; and when these are broken or injured in transplanting, the plants seldom thrive after. They may be sown in open beds or borders of fresh light earth, being careful to mark the places, that the ground may not be

¹ Willdenow. ² Hort. kew. ³ Linn. mant. & Thunb. diff. ⁴ Gartner. ⁵ Hort. kew. ⁶ Willdenow.

be disturbed; for it frequently happens, that the seeds do not come up the first year, when they are sown in autumn; but when they are sown in the spring, they never come up the same year. The ground where the seeds are sown must be kept clear from weeds, which is all that is necessary to be done, until the plants come up; where they are too close together, they should be thinned while young, so as to leave them near eighteen inches apart; after which time they will require no other culture but to keep them constantly clear from weeds; and in the spring, just before the plants put out new leaves, to dig the ground gently between them, and lay a little fresh earth over the surface of the bed to encourage them.

In autumn these plants decay to the ground, and send forth new leaves the following spring, but it will be three years from the time of the plants first coming up to their flowering, though after that time they will flower every season; and the roots will continue many years, provided they are not disturbed, or killed by very severe frost.

[**MORINDA.** (*Morus indica*. *Indian Mulberry*. So named by Vaillant, from the shape of its fruit, and its country.)

Lin. gen. n. 235. Reich. n. 252. Schreb. n. 317. Vaill. mem. acad. par. 1722. Juss. 209. Gært. t. 29. Rojoc. Plum. 26. Phillyreastrum. Vaill. mem. 1722.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Aggregatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. Receptacle common roundish, collecting sessile flowers into a globe.

Perianth five-toothed, scarcely observable, superior.

COR. one-petalled, funnel-form: tube cylindric: border five-cleft, acute, spreading very much: segments lanceolate, flat.

STAM. Filaments five, very short, inserted into the tube at top. Anthers linear, erect, almost the length of the tube.

PIST. Germ inferior. Style simple. Stigma bifid, thickish.

PER. Berry subovate, angular, compressed on all sides by the next, truncate, one-celled.

SEEDS two, convex on one side, flat on the other.

ESSENTIAL CHARACTER.

Flowers aggregate, one-petalled. Stigma bifid. Drupes aggregate.

SPECIES.

1. *Morinda umbellata*. *Narrow-leaved Morinda*.

Lin. spec. 250. Reich. 1. 485. fl. zeyl. n. 81. Gært. fruct. 1. 145. Lour. cochinch. 140.

Bancudus angustifolia. *Rumph. amb. 3. 157. t. 98. Burm. ind. 52.*

Erect, leaves lanceolate-ovate, peduncles clustered.

2. *Morinda citrifolia*. *Broad-leaved Morinda*.

Lin. spec. 250. Reich. 1. 485. fl. zeyl. n. 82. Gært. fruct. 1. 144. Lour. cochinch. 140.

Bancudus latifolia. *Rumph. amb. 2. 158. t. 99.*

Coda-pilava. *Rheed. mal. 1. 97. t. 52. Raii hist. 1442.*

Morinda malabarica, amplissimo citri folio. *Vaill. act. par. 1722.*

Arbor cornifera, Macandou javanensis. *Bont. jav. 97. Burm. ind. 52.*

Arboreous, with solitary peduncles.

3. *Morinda Royoc*. *Procumbent Morinda*.

Lin. spec. 250. syst. 217. Reich. 1. 486. hort. cliff. 73. Jacqu. hort. 1. t. 16. Swartz obs. 78. Brown. jam. 159. 1. Lour. cochinch. 140. Aubl. guian. 200.

M. americana humifusa laurifolia. *Vaill. act. par. 1722. p. 275.*

Royoc humifusum, fructu cupressino. *Plum. spec. 11. t. 26.*

Periclymenum americanum e cujus radice fit atramentum. *Pluk. phyt. t. 212. f. 4.*

Procumbent.

DESCRIPTIONS, &c.

1. This is a tree, with the leaves of *Cephalanthus*, opposite, petioled, quite entire. Umbel sessile, or several equal peduncles terminating blunt branches, on

each of which sit aggregate heads^b. Fruit subglobular, on a long peduncle, composed of berries, which are inversely pyramidal, four-cornered, fleshy, one-celled, having no partitions, or such very thin ones that they are obliterated when the fruit is ripe. Seeds four, bony, one-celled, arched on the back, flat on the sides, and towards the axis compressed into a wedge-form edge^c.

Native of the East Indies, Cochinchina, and the Society Isles. The root is used for dyeing yellow.

2. Shoots on the upper part quadrangular, grooved and knobbed. Leaves in pairs from the knots, on thick round petioles, large, rounded-oblong, more contracted towards the base, and ending in a point, of a soft thick texture, flat, dark green above, paler underneath: the midrib thick and whitish: the upper leaves gradually smaller, and on shorter petioles. Corolla four or five-cleft, the parts narrow-oblong, pointed, spreading, thick, white within, herbaceous on the outside. Stamens four, five or six, corresponding with the number of divisions in the corolla, short, yellowish^d. Berry to each flower, conglobated into an ovate-conoid fruit, tessellated with slightly depressed mamillæ, and fleshy, marked above with a round eye, somewhat convex, rhomb-wedge-form below, firmly united, four-celled. Seed in each cell one, obovate-oblong, slightly convex on one side, concave on the other, with a subglobular void protuberance on one side below the vertex of the seed. The seeds are fixed, without any receptacle to the base of the cells^e.

Native of the East Indies, and the Society and Friendly islands: where the yellow dye for their cloths is from the bark of the root.

3. Stem shrubby, a foot high, procumbent at bottom, branched. Branches simple. Leaves petioled, lanceolate, entire, smooth; branchlets from the axils of the leaves opposite. Flowers terminating, aggregate in a globular receptacle, white. Calyx tubular, thick, undivided. Tube of the corolla villose within, with a nectariferous base. Style bifid. Stigmas reflex. Berries aggregate, with two seeds to each^f.

The roots dye linen of a dark hue, and would probably be useful to the dyers^g.

Native of South America, and the islands in the West Indies; and also of Cochinchina, according to Loureiro.

MORINGA, MORINGHA, MORUNGU. See *Guilandina*.

MORIO. See *Orchis*.

MORISONA. See *Capparis* and *Morisonia*.

MORISONIA. (So named by Plumier in honour of Robert Morison, M. D. born at Aberdeen in Scotland in 1620, Professor of Botany to King Charles II. and in the University of Oxford, and first Prefect of the Botanic Garden there. Author of *Plantarum Historia Universalis Oxoniensis*, fol. 1672, 1680 and 1699, and other works. See Pulteney, 1. 298.)

Lin. gen. n. 642. Reich. n. 916. Schreb. n. 1148.

Plum. 23. Juss. 244. Jacqu. amer. 156. Gært. t. 78. Cavan. diff. 308.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Putamineae*. *Capparides*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, ventricose, bursting, bifid, spreading at the mouth, blunt, shrivelling.

COR. Petals four, blunt, somewhat oblong.

STAM. Filaments numerous, awl-shaped, shorter than the corolla, connate into a funnel at the base. Anthers oblong, erect.

PIST. Germ pedicelled, ovate. Style none. Stigma headed, plano-convex, umbilicate with a dot.

PER. Berry globular, with a hard smooth rind, one-celled, pedicelled.

SEEDS several, kidney-form, nestling.

OBS. Allied to *Capparis*, from which it differs only in its two-leaved calyx, and filaments united to the middle. Swartz unites them.

ESSENTIAL CHARACTER.

Cal. single, bifid. *Pet.* four. *Pist.* one. Berry with a hard rind, one-celled, many-seeded, pedicelled.

^b Linn. zeyl.

^c Gartner.

^d Gartner.

^e Swartz.

^f Hort. malab.

^g Browne.

1. *Morisonia americana*.

Lin. spec. 719. *syft.* 632. *Reich.* 3. 369. *Jacqu. amer.* 156. t. 97. *pic.* 96. t. 144. *Plum. gen.* 36. *ic.* 203. *Gärtn. fruct.* 1. 378.

Capparis Morisonia. *Swartz obs.* 272.

DESCRIPTION, &c.

This is an inelegant upright tree, seldom above fifteen feet in height. Leaves oblong, blunt or acuminate, quite entire, shining, coriaceous, alternate, few, at most a foot long, on a round petiole, thickened at the base and tip, an inch and half long. Short thick peduncles come out scatteringly both on the old and young branches, having commonly four or five flowers on each. These are of a dirty white, have some little smell, and are scarcely an inch in diameter. The segments of the calyx are seldom equal. The stamens are about twenty in number. Fruit brown, with rust-coloured dots: flesh or pulp whitish, not eatable^h. Gærtner describes it as a superior, spherical, one-celled berry, on a very long pedicel: rind coriaceous, hard, thick, shagreened with dots: flesh fungous, white. Peduncle twice as long as the berry, having callous dots scattered over it, and a swelling, striated joint at the base crowned with a row of very minute tubercles. Seeds numerous, largish, somewhat kidney-form, smooth, whitish or rufescent, immersed in all directions in the pulp.

Native of South America, and the islands of the West Indies; flowering there in July, and bearing fruit in November. In Martinico they call it *Bois Mabouia*, or *Devil's-wood*¹.

Linneus first placed this tree in the class Polyandria, but afterwards removed it into the class Monadelphia. Swartz is inclined to restore it to its former situation, and even to sink it in the genus *Capparis*.

MOROCARPUS. See *Blitum*.

MOROCCO, RED. See *Adonis*.

MORONOEBA. See *Symphonia*.

MORSUS DIABOLI. See *Scabiosa*.

—— GALLINÆ. See *Alfne* and *Lamium*.

—— RANÆ. See *Hydrocharis*.

MORUNGU. See *Guilandina*.]

MORUS. (Derivation uncertain. According to some, from *μωρος*, *stultus*, per antiphrasin; the Mulberry being reputed the wisest of trees, in not budding till cold weather is fully past; or from *mora*, from its slowness in coming out; or *Μορα*, from *αἰμορροα*, from *αἷμα* & *ρεω*, on account of the colour of the juice, flowing from the fruit like blood; or from *μωρος*, black. But the tree is called *μορεα*, and the fruit *μορον* in Greek, whence evidently the Latin *Morus*. In both languages, the fruit of the bramble, being of the same structure, had the same name.)

Lin. gen. n. 1055. *Reich. n.* 1150. *Schreb. n.* 1424. *Tournef. t.* 362. *Juss.* 402. *Gärtn. t.* 126.

Class. 21. 4. Monoecia Tetrandria.

Nat. order of *Scabridæ*. *Urticæ*, *Juss.*

GENERIC CHARACTER.

* Male Flowers in an Ament.

CAL. Perianth four-parted: leaflets ovate, concave.

COR. none.

STAM. Filaments four, awl-shaped, erect, longer than the calyx, one within each calycine leaf. Anthers simple.

* Female Flowers heaped either on the same, or a different individual from the males.

CAL. Perianth four-leaved: leaflets roundish, blunt, permanent, the two opposite outer ones incumbent.

COR. none.

PIST. Germ cordate. Styles two, awl-shaped, long, reflex, rugged. Stigmas simple.

PER. none. Calyx very large, fleshy, become succulent, like a berry.

SEED single, ovate, acute.

ESSENTIAL CHARACTER.

MALE. Cal. four-parted. Cor. none.

FEM. Cal. four-leaved. Cor. none. Styles two. Cal. becoming a berry. Seed one.

^h Jacquin.

¹ Idem.

1. *Morus alba*. *White Mulberry Tree*.

Lin. spec. 1398. *Reich.* 4. 134. *hort. cliff.* 441: *upf.* 283. *Gärtn. fruct.* 2. 199. *Hall. herb. n.* 1611. *Scop. carn. n.* 1176. *Villars dauph.* 3. 787. *Gmel. it.* 3. 374. *Du Roi herb.* 1. 473. *Dubam. arb.* 3. *Thunb. jap.* 71. *Lour. cochinch.* 555. *Burm. ind.* 198.

M. fructu albo. *Baub. pin.* 459.

M. alba. *Ger.* 1325. 2. *emac.* 1507. 2. *Park. parad.* 596. 2. *Baub. hist.* *Raii hist.* 1429.

M. candida. *Dod. pempt.* 810.

Leaves obliquely cordate even.

2. *Morus nigra*. *Common Mulberry Tree*.

Lin. spec. 1398. *Reich.* 4. 134. *hort. cliff.* 441: *upf.* 283. *mat. med.* 201. *Du Roi herb.* 1. 425. *Ludw. est. t.* 114. *Kniph. cent.* 3. n. 64. *Dubam. arb.* 1. 388. *fig.* *Hunt. Evel. silva.* 2. 39. *Thunb. jap.* 71. *Villars dauph.* 3. 788.

Morus. *Dod. pempt.* 810. *Ger.* 1325. 1. *emac.* 1507. 1.

M. fructu nigro. *Baub. pin.* 459. *Blackw. t.* 126.

M. nigra. *Baub. hist.* *Raii hist.* 1429. — *vulgaris.* *Park. parad.* 596. 1. t. 597. f. 3.

β. *M. laciniata.* *Mill. dict. n.* 2.

Leaves cordate rugged.

3. *Morus papyrifera*. *Paper Mulberry Tree*.

Lin. spec. 1399. *Reich.* 4. 134. *Du Roi herb.* 1. 433. *Thunb. jap.* 72. *Kämpf. amoen.* 2. 471. f. 472. & 5. 895. *hist. t.* 40. f. 1.

Leaves palmate, fruit hispid.

4. *Morus rubra*. *Red Mulberry Tree*.

Lin. spec. 1399. *Reich.* 4. 135. *Lour. cochinch.* 555. *Du Roi herb.* 1. 430. *Gron. virg.* 146. *Pluk. phyt. t.* 246. f. 4. *Dubam. arb.* 7.

M. virginiana. *Park. parad.* 596. n. 3. t. 597. f. 4. *Raii hist.* 1430.

Corylus maxima folio latissimo virginiana. *Raii hist.* 1799.

Leaves cordate villose underneath, aments cylindric.

5. *Morus indica*. *Indian Mulberry*.

Lin. spec. 1399. *Reich.* 4. 135. *fl. zeyl. n.* 337. *Thunb. jap.* 76. *Lour. cochinch.* 555. *Burm. ind.* 198. *Rumph. amb.* 7. 8. t. 5. *Rheed. mal.* 1. 87. t. 49.

M. tatarica. *Mill. dict. n.* 7.

Leaves ovate-oblong, equal on both sides, unequally serrate.

6. *Morus tatarica*. *Tartarian Mulberry Tree*.

Lin. spec. 1399. *syft.* 851. *Reich.* 4. 135. *Lepech. it.* 2. 269. *Pallas ross.* 1. 2. t. 52.

Leaves ovate-oblong, equal on both sides, equally serrate.

7. *Morus tinctoria*. *Dyer's Mulberry* or *Fustick-wood*.

Lin. spec. 1399. *syft.* 851. *Reich.* 4. 136. *Jacqu. amer.* 247. t. 180. *pic.* 121. t. 263. *Brown. jam.* 339. *Sloan. jam.* 2. 3. t. 158. f. 1. *Raii dendr.* 14. & 666. *Plum. ic.* 199. t. 204. *Marcgr. bras.* 119.

β. *M. Zanthoxylum.* *Mill. dict. n.* 8. *Pluk. phyt. t.* 239. f. 3.

Leaves oblong more produced on one side, spines axillary.

DESCRIPTIONS, &c.

1. [This is a middle-sized tree, with a whitish bark, of which a coarse sort of paper may be made, and spreading branches. Leaves broad-lanceolate, obliquely cordate, subserrate, undivided, or three-lobed, some cut, smooth, petioled, scattered. Berries lateral, juicy, insipid, pale, oblong^k.

Gærtner describes the fruit as a Capsule covered with the leaflets of the calyx conferruminated into a white turbinate berry, ovate-acuminate, membranaceous, full of soft pulp, one-celled, finally drying up into a thin pellicle drawn over the seed. Seed single, (one of the two being constantly abortive,) ovate, drawn to a point upwards, sublenticular, rufescent, fixed to the apex of the capsule by a filiform chord^l.

Native of China, CochinChina and Japan, and according to Gmelin of Persia. Cultivated by Gerarde, in 1596. It flowers in June^m.]

^k Loureiro.

^l Gærtner.

^m Hort. kew.

There are two or three varieties of this tree, which differ in the shape of their leaves, and in the size and colour of the fruit; but as it is of no other use but for the leaves, the strongest shooting and the largest leaved should be preferred. [Thunberg says it varies with entire leaves, with leaves simply lobed, and with the lobes cut or gashed.]

The white Mulberry is commonly cultivated for its leaves to feed silk-worms in France, Italy, &c. [In Spain, as Mr. Townsend informs us^a, they prefer the White Mulberry in Valencia, and the Black in Granada.] The Persians generally make use of the latter, and Mr. Miller was assured by a gentleman who had made trial of both sorts of leaves, that the worms fed with the Black Mulberry produced much the best silk; but that the leaves of the black should never be given to the worms after they have eaten for some time of the white, lest they should burst.

[Sir George Staunton says that the trees he observed in China did not appear to differ from the common Mulberry-trees of Europe; that some of them were said to bear white, and some red or black fruit, but that often they bore none; and that the tender leaves growing on young shoots of the black Mulberry are supposed to be the most succulent^c.

Mr. Evelyn remarks, that the leaves of the White Mulberry are far more tender than those of the Black, and sooner produced by at least a fortnight. Nor is this tree less beautiful to the eye than the fairest Elm, very proper for walks and avenues. The timber will last in water as well as the most solid Oak, and the bark makes good and tough bast-ropes^d.

The White Mulberry, and the Silkworm were unknown to Theophrastus and Pliny. About the year of Christ 551 two Persian monks, employed as missionaries in some of the Christian churches established in India, penetrated into the country of the Seres, or China. There they observed the labours of the Silkworm, and became acquainted with the art of working up its productions into a variety of elegant fabrics. They explained to the Greek Emperor at Constantinople these mysteries, hitherto unknown, or very imperfectly understood in Europe; and undertook to bring to the capital a sufficient number of these wonderful insects. This they accomplished by conveying the eggs of the silkworm in a hollow cane. They were hatched by the heat of a dunghill; they were fed by the leaves of a wild Mulberry-tree, and they multiplied and worked in the same manner as in those climates where they first became objects of human attention and care. Vast numbers of these insects were soon reared in different parts of Greece, particularly in the Peloponnesus. Sicily afterwards undertook to breed silkworms with equal success, and was imitated, from time to time, in several towns of Italy. In all these places extensive manufactures were established, with silk of domestic production.

From the reign of Justinian, it was mostly in Greece, and some of the adjacent islands, that silk-worms, which he first introduced into Europe, were reared.

Soon after the conquest of Constantinople by the Venetians in 1204, they attempted the establishment of the silk manufacture in their dominions; and in a short time the silk fabrics of Venice vied with those of Greece and Sicily.

About the beginning of the fourteenth century the Florentine manufactures of silk appear to have been very considerable^e.

It came much later into France; the manufacture of silk, though much encouraged by Henry IV. not having been fully established there, till under Louis XIV. by Colbert^f. In England, it is well known, that all the endeavours of James I. to raise Mulberry trees, and make silk utterly failed, and have never since been revived to any extent.

2. The difference which Linneus sets down between the Black Mulberry and the White is, that in the

former the leaves are subquinelobate, bluntish, and rugged, in the latter undivided and shining; the fructification of the former dioecous, of the latter monoecous. These distinctions however are not exact. The Black Mulberry is a larger stronger tree; and the fruit is dark blackish red and more acid.]

Mr. Miller's account is, that the Black Mulberry has generally male flowers or catkins on the same tree with the fruit, but it often happens that some of the trees which are raised from seeds have mostly male flowers and produce no fruit; and that he has observed some trees which produced only catkins for many years after they were planted, and afterwards have become fruitful. [This latter observation agrees with a general remark that I have made on monoecous trees, that whilst they are young they bear male flowers chiefly and very little fruit.] Mulberry trees of a certain age are not only more fruitful than young ones, but their fruit is much larger and better flavoured.

This tree grows naturally in Persia, whence it was first brought to the southern parts of Europe. It is now become common in every part of our continent, where the winters are not very severe. In the northern parts of Sweden it will not live in the open air; and in several parts of Germany it is planted against walls and treated in the same way as Peaches and other tender fruits are here.

It was cultivated here in 1596, by Gerarde.] In some of the old kitchen gardens near London there are trees of a very great age, which are very healthy and fruitful, and their fruit is larger and better flavoured than those of younger trees. [Bradley says, that most of these were planted in the time of King James I., when there was a project of setting up a silk manufacture in England.]

β. Mr. Miller sets down a variety of the Black Mulberry, with palmate or elegantly cut leaves and a smaller fruit, as a distinct species. He says, that it grows naturally in Sicily, whence he received a parcel of the seeds, and raised a good number of plants; that all these were totally different in their leaves from the common Mulberry, that the tree is of humbler growth, and the fruit small without any flavour.

3. This tree makes very strong vigorous shoots, but seems not to be of tall growth, for it sends out many lateral branches from the root upwards. The leaves are large, some of them entire, others deeply cut into three or five lobes, especially whilst the trees are young; they are dark green and rough to the touch on the upper surface, but pale green and somewhat hairy on the under side, falling off on the first approach of frost in autumn. The fruit is little larger than peas, surrounded with long purple hairs, when ripe changing to a black-purple colour, and full of sweet juice.

It is a native of Japan and the South Sea islands, according to Mr. Miller of China also and South Carolina, whence he received the seeds. The inhabitants of Japan make paper of the bark. They cultivate the trees for this purpose on the mountains much after the same manner as Osiers are cultivated with us, cutting down the young shoots in december, after the leaves are fallen.

[These being divided into rods of three feet in length, or shorter, are gathered into bundles to be boiled. If the shoots are dry, they must be softened in water twenty-four hours. The bundles are boiled very close together, and placed erect in a large copper properly closed: the boiling is continued till the separation of the bark displays the naked wood. Then the stalks are loosed out of the bundles, and allowed to cool; after which, by a longitudinal incision, the bark is stripped off, and dried, the wood being rejected. When this bark is to be purified, it is put three or four hours in water, when being sufficiently softened, the cuticle, which is of a dark colour, together with the greenish surface of the inner bark, is pared off. At the same time the stronger bark is separated from the more tender; the former making the whitest and best paper; the latter a dark weak and inferior kind. If any bark appears that is old, it is set aside for a thicker paper, of worse quality. Into this last class they

^a Travels, 3. 264. ^c Embassy, 2. 420. ^d Sylva, b. 2. ch. 1.
^e Robertson's India, p. 89. from Procopius—also p. 110. See
Gibbon's history, IV. 71. under Justinian.

^f Evelyn, b. 2. c. 1.

they throw the knotty parts of the bark, and those which have any fault or blemish.

The bark is now boiled in a lye that is clear and strained; care being taken to stir the substance as soon as it begins to boil, with a strong reed, and to pour in of the lye gradually as much as is necessary for stopping the evaporation, and restoring the liquor that is lost.

The boiling is to cease when the materials can be split, by a slight touch of the finger, into fibres and down.

Next it is to be washed, which is a thing of some moment; for if washed too short a time, the paper will be strong indeed, but too rough, and of an inferior quality: if too long, it will be whiter, but of a fat consistence, lax, and less fit for writing. Being sufficiently washed, the materials are put upon a thick, smooth, wooden table, and stoutly beat, by two or three men, with battons of hard wood, into a pulp; which being put in water, separates like grains of meal. Thus prepared, it is put into a narrow vat; an infusion of Rice, and a mucous water of the infusion of the root of Manihot being added to it. These three are to be stirred with a clean slender reed, till reduced into a homogenous liquor, of a due consistence. The prepared liquor is now put into a larger vat; from whence the sheets are poured out one by one, and placed in heaps upon a table covered with a double mat; a small thread of reed being placed between the sheets at the edge, and projecting a little, so that they may be taken up singly when wanted; the heaps are covered with a plank of wood the size of the paper, upon which stones are put, at first of a light weight, but afterwards heavier, that all the wet may be pressed out by degrees. The following day, the weights being removed, each sheet is taken up by itself, and the operation is finished.

The finest and whitest cloth, worn by the principal people at Otaheite and in the Sandwich islands is made of the bark of this tree: and this, when dyed red, takes a better colour. The Bread Fruit Tree makes a cloth inferior in whiteness and softness, worn chiefly by the inferior people. Cloth is also made of a tree resembling the wild Fig Tree of the West Indies. It is coarse and harsh, the colour of the darkest brown paper: but it is the most valuable because it resists water. This is perfumed and worn by the chiefs as a morning dress in Otaheite.

The juice of the Paper Mulberry is used in China as a glue in gilding either paper or leather, but not wood.

It was cultivated before 1759, by Hugh Duke of Northumberland, in whose gardens several of these trees were raised from seeds a few years past, and one of them was given to Mr. Miller.

4. The Virginian red or large-leaved Mulberry Tree with black shoots, [will grow to the height of thirty or forty feet, sending forth many large branches. The leaves are not only larger but rougher than those of the common Mulberry, though in other respects they somewhat resemble them. It produces plenty of catkins, in shape like those of the Birch, and it has a dark reddish fruit*.] Mr. Miller remarks, that a large tree of this species which had been many years in the Bishop of London's garden at Fulham, never produced any fruit, but had some years a great number of catkins, much like those of the Hazel-nut, which occasioned Mr. Ray to give it the name of *Corylus*: but it might be one of the male trees, which do not produce fruit, as sometimes happens in the common sort.

[According to Kalm, this tree is polygamous. The aments or catkins are the length of those of the common or white Birch. The young leaves are very tomentose underneath; they are also frequently palmate, but generally three-lobed and subvillose[†].

Loureiro describes it as a middle-sized tree, with a smooth ash-coloured bark, and long weak spreading branches. Leaves cordate, acute, ferrate, large, pale, villose underneath, soft, petioled, alternate. Berry

cylindric, an inch long, axillary, one or two together; peduncled, red, eatable.

Parkinson, so long ago as 1629, says that it grows quickly with us to a great tree, and that the fruit is longer and redder than the common sort; and of a very pleasant taste. Though it bears the severity of our climate very well, yet it is still a scarce tree among us.

Native of Virginia and Carolina. According to Loureiro, it is also found wild to the west of Cochin-China, and is cultivated by the Cochinchinese for feeding silkworms, but not so generally as the White Mulberry.]

5. This is a large tree, with a soft, thick, yellowish bark, and a milky juice like the Fig, which is astringent. The branches come out on every side. The leaves are on short foot-stalks, rough, dark green above, pale underneath, alternate. Flowers in round heads, at the foot-stalks of the leaves, on each side the branches, of an herbaceous white colour. Fruit roundish, first green, then white, and finally dark red. [It seems by Miller's description to be a monoecous tree. Linneus suspects it to be dioecous. Loureiro describes it as a shrub, six feet high, suberect and slender: the bark dusky and hempen; the branches few, long and weak. Leaves acute, commonly undivided, but some lobed, smooth, petioled, alternate. Berries roundish; dusky red, hispid, small, sweet, axillary, solitary.

Native of the East Indies, Japan, and Cochin-China, where it is cultivated on a very extensive scale, especially on the banks of rivers, to feed silkworms.]

Mr. Miller received the seeds from Bombay, which succeeded in the Chelsea garden before the year 1759.

[6. This is a shrub irregularly branched, with a trunk seldom so big as the human arm: bark whitish gray: wood very hard, yellow, somewhat veined: branches slender, wand-like, round, smooth: branchlets leafy, bearing fruit at the base. Leaves of middling width, on very long petioles, commonly oval, rounded at the tip, very seldom acute; generally unequal at the base, entire and subcordate, very smooth, equally and bluntly serrate, mostly entire; but sometimes deeply five-lobed, sinuate or three-lobed, or with only one sinus, but distinguishable from the common Mulberry by the smoothness of the leaves. Berries small, on long peduncles, red or pale when ripe, insipid: they are eaten fresh, in a conserve or dried; a wine and a spirit are made from them in Siberia and Russia, and the leaves are used for feeding silkworms[‡].

Linneus remarks, that it is very nearly allied to the preceding, but with longer peduncles and petioles, the serratures of the leaves more distinct, and the fruit of *Morus nigra*.

7. This is a tall branching tree with a fine head, the whole abounding in a slightly glutinous milk of a sulphureous colour. The timber is yellow and is used in dyeing. Spines awl-shaped, solitary, few; entire branches are frequently without any. Leaves acuminate, serrate, smooth on both sides, veined, distich, on short petioles, of various sizes. Aments solitary, pendulous, axillary between the petiole and the spine, two or three inches in length, cylindric and very close. Female flowers on a different tree, collected into a globe: their receptacles axillary, glaucous-green, solitary, with short petioles. Among the female flowers are some chaffy bodies, which perhaps were flowers suffocated by their neighbours and dried up. Fruit yellowish green, sweet, and eaten chiefly by birds[§].

Linneus remarks, after Jacquin and Loeffling, that this species is always dioecous; the leaves smooth, the style single, and the calyx not berried.

Browne says it is a fine timber wood, and a principal ingredient in most of our yellow dyes, for which it is chiefly imported into Europe, where it is well known under the name of Fustick-wood. The berries are sweet and wholesome, but not much eaten except by birds, who are the chief planters of it.

* Kämpfer.

† Cook's Voyage, 2. 210.

‡ Hort. kew.

§ Hunter's Evelyn.

¶ Linn.

• Pallas.

• Jacquin.

Native of Brazil, New Spain about Carthagena, Jamaica and other islands in the West Indies. Cultivated in 1739, by Mr. Miller^b.]

Mr. Miller makes two species of this—*Morus tinctoria* (n. 5.) the true Fustick-wood, which grows naturally in most of the islands in the West Indies, but in much greater plenty at Campeachy. It is one of the commodities exported from Jamaica, where it grows in greater plenty than in any other of the British islands.—*Morus Zanthoxylum* (n. 8.), inferior in size, the branches more slender, the leaves narrower, rounded at the base, serrate, and ending in acute points. At the foot-stalk of each leaf come out two sharp thorns, which in the older branches grow to the length of two inches. The fruit is smaller.

This also is a native of Jamaica, and of the Bahama islands. The wood of it is cut, and sold for the same use with the other, from which it has not been well distinguished by botanists, [who still regard them as the same, or at least not as specifically different.]

PROPAGATION AND CULTURE.

1. The White Mulberry may be propagated either from seeds or layers, as will be directed presently for the Black Mulberry, and is equally hardy: but the most expeditious method of raising this tree in quantity is from the seeds, which may be procured in plenty from the South of France or Italy. The best way to sow them in England is [to prepare a fine warm border of rich mellow earth, or if that is not easily to be had] to make a moderate hot-bed, arch it over with hoops, and cover it with mats. Sow the seeds towards the end of march in drills, covering them with light earth a quarter of an inch deep: in very dry weather water the bed gently and frequently, in the heat of the day shade it with mats, and cover it when the nights are cold. In five or six weeks the plants will come up, and being tender when they first appear, must be guarded against frosty mornings, which often happen in may. During summer keep them clean from weeds, [cover them from the extreme heat of the sun, and continue to water them in dry weather.] In autumn cover them again, when the first frosts come, and continue to protect them through the first winter. The following march transplant them into the nursery, there to remain two or three years, and then to be removed where they are to continue. [Or if not very strong, they had better remain in the seed-bed two years before they are planted out in the nursery, in rows at two feet and a half distance, and one foot and a half asunder in the rows, there to continue till they are sufficiently strong to be planted out finally^c.]

The trees which are designed to feed silk-worms, should never be suffered to grow tall, but rather kept in a sort of hedge: and instead of pulling off the leaves singly, they should be sheared off together with their young branches, which is much sooner done, and is not so injurious to the tree.

[It is surprising that this precept of Mr. Miller's has not been attended to, not only in England, but in many of the southern parts of Europe, where making silk is of some consequence, since the practice is followed in the East, and is in itself perfectly rational. Father Loureiro informs us, that in CochinChina they root up the plants every third year, and make fresh plantations of the cuttings, because the young shoots afford a more delicate food for the worms, and produce a finer silk. Sir George Staunton relates that in a part of China through which the Embassy passed, Mulberries were cultivated and reared with the greatest care; and planted in rows, ten or twelve feet asunder, in beds of a moist, but not inundated loamy earth, thrown about a foot high above the surface. The trees are frequently pruned or dwarfed, in order to make them produce a constant succession of young shoots, and tender leaves^d. Our planters recommend a dry soil for the Mulberry; but it appears from the

^b Hort. kew.

^c These additions are from Dr. Hunter's notes on Evelyn's Sylva.

^d Vol. 2. p. 420.

authors just quoted that in China and CochinChina, it is cultivated in a very moist one, by the sides of rivers, or where rice is grown in trenches between the rows of trees.

If the Paper Mulberry should be found too tender for our climate, might not this or our Common Mulberry, cultivated in this way, throw out shoots tender enough to be converted into Paper, by the process used in Japan for that purpose?

2. The Common or Black Mulberry has generally male flowers or catkins on the same tree with the fruit; but it often happens, that some of the trees which are raised from seeds, have generally male flowers, and produce no fruit; so that those who plant these trees for their fruit, should never make choice of such as have been propagated by seeds, unless they have seen them produce fruit in the nursery. It is also the surest way to mark such trees as are fruitful in the nursery, at the time when the fruit is upon them, because those trees which are propagated by layers, are sometimes of the male sort; for I have several times observed, that some of the large branches of these trees have produced only catkins, when the other parts of the trees have been very fruitful; so that unless care is taken in the choice of the branches for making the layers, there is the same hazard as in seedling trees: nor should the shoots which come out near the roots of old trees be ever laid down, for these rarely produce fruit until they have been planted many years, although the trees from which these were produced might be very fruitful. I have observed some trees which produced only catkins for many years after they were planted, and afterwards have become fruitful; the same I have observed in Walnut-trees, and my honoured friend the Chevalier Rathgeb, has informed me, that he has observed the same in the Lentisk and Turpentine-trees.

The old Mulberry-trees are not only more fruitful than the young, but their fruit are much larger and better flavoured; so that where there are any of these old trees, it is the best way to propagate from them, and to make choice of those branches which are most fruitful. The usual method of propagating these trees, is by laying down their branches, which will take root in one year, and are then separated from the old trees; but as the most fruitful branches are often so far from the ground as not to be layed, unless by raising boxes or baskets of earth upon supports for this purpose, the better way is to propagate them by cuttings, which, if rightly chosen and skilfully managed, will take root very well; and in this method there will be no difficulty in having them from trees at a distance, and from the most fruitful branches. These cuttings should be the shoots of the former year, with one joint of the two years wood to their bottom: the cuttings should not be shortened, but planted their full length, leaving two or three buds above ground. The best season for planting them is in march, after the danger of hard frost is over; they should be planted in light rich earth, pressing the ground pretty close about them; and if they are covered with glasses, it will forward their putting out roots: but where there is not such conveniency, the ground about them should be covered with moss, to prevent its drying; and where this is carefully done, the cuttings will require but little water, and will succeed much better than with having much wet. If the cuttings succeed well and make good shoots, they may be transplanted the following spring into a nursery, where they should be regularly trained to stems, by fixing down stakes by each, to which the principal shoots should be fastened; and most of the lateral branches should be closely pruned off, leaving only two or three of the weakest to detain the sap, for the augmentation of the stem; for when they are quite divested of their side shoots, the sap is mounted to the top, so that the heads of the trees grow too fast for the stems, and become too weighty for their support. In about four years growth in the nursery, they will be fit to transplant where they are to remain; for these trees are transplanted with greater safety while young, than when they are of a larger size.

If the cuttings are planted in a bed fully exposed to the sun, it will be proper to arch the bed over with hoops, that they may be shaded with mats in the heat of the day during the spring, till they have put out roots; after which, the more they are exposed to the sun, the better they will succeed, provided the ground is covered with moss or mulch to prevent its drying, for the sun will harden the shoots, and thereby they will be in less danger of suffering by the early frosts in autumn; for when these are in a shady situation, they are apt to grow vigorously in summer, so will be replete with moisture, and the early frosts in october frequently kill their tops; and if the following winter proves severe, they are often killed to their roots, and sometimes are entirely destroyed. I have two or three times made trial of planting the cuttings of Mulberries on a hot-bed, and have found them succeed extremely well. This I was led to by observing some sticks of Mulberry-trees which were cut for forks, and thrust into the hot-bed, to fasten down the vines of Cucumbers, which, although they had been cut from the tree a considerable time, yet many of them put out roots, and shot out branches; cuttings therefore planted on a moderate hot-bed will take root much sooner than in the common ground.

This tree delights in rich light earth, and where there is a depth of soil, as in most of the old kitchen gardens about London; in some of which are trees of a very great age, which are healthy and fruitful, and their fruit is larger and better flavoured than those of younger trees. In a very stiff soil, or on shallow ground whether of clay, chalk or gravel, the trunk and branches are commonly covered with moss, and the little fruit produced is small, ill-tasted, and ripens late.

If this tree be planted in a situation where it is defended from the strong south and north-west winds, it will preserve the fruit from being blown off; but this shelter, whether it be trees or buildings, should be at such a distance as not to keep off the sun; for where the fruit has not the benefit of his rays to dissipate the morning dews early, it will turn mouldy and rot upon the trees. There is never any occasion for pruning these trees, more than to cut off any of the branches which may go across others, so as to rub and wound their bark, by their motion occasioned by the wind; for their shoots should never be shortened, because the fruit is produced on the young wood.

[For propagating the Mulberry by layers, a number of trees must be planted for stools two yards asunder. A few stools will soon produce many layers, for they throw out plenty of young branches, when the head is taken off. When the stools have shot forth young wood fit for laying, in the beginning of winter let the earth be excavated round each stool, and let the preceding summer shoots be slit at a joint and laid therein, fixing them down with a peg, filling the interstices with fine mould, levelling the ground, and cutting the young twigs to one eye above the surface. In the autumn following the layers will all probably have taken good root, and have made a considerable shoot in the stem, so that they will be ready for the nursery ground, in which they are to be managed in the same way as the seedlings. The second year after, the stools will have a fresh crop of young wood for laying.

Cuttings may be planted not only in march, but also in october. These should be strong shoots of the last year's wood, and if a tree does not make such shoots, it must be headed the year before for this purpose. The shoots should be a foot and half long, and must be planted a foot deep, in a shady well-sheltered place, and in a moist soil, well worked and fine.

These trees may likewise be increased by cuttings planted at the end of june, or the beginning of july, in pots plunged up to their rims in the stove, where if water and shade be constantly afforded them, they will strike roots and become good plants.

* Marshall on Planting, vol. 2. edit. 2.

If an old Mulberry-tree becomes a bad bearer, or casts the fruit before it is ripe; cut a trench, two feet deep, round the tree, and about four feet from the trunk; fill it with fresh mould, enriched with cow-dung; and as the large roots may be raised without inconvenience, let the compost be put under them, so as to make the bed, over which the tree stands, as rich as possible. At the same time, let the old wood be cut from the head of the tree, that the young wood may have space to grow in. These operations being judiciously conducted, you will, in a few years, have an old tree converted into a young one. Observe also, that if you expect plenty of fruit, the ground must not be cropped near the tree, for the feeding fibres of the roots will be cut off by the spade, when the fruit requires the greatest nourishment.

The Mulberry is remarkable for putting out its leaves late; so that when they appear, the gardener may take it for granted that all danger from frost is over. This is a remark of Pliny's. *Cum germinare videris Morum, injuriam postea frigoris timere nolito.*

On the 22d of may, 1798, when I am writing this article, the season being early and uncommonly genial, the Hawthorn having blossomed on the first of the month, the leaves of the common Mulberry are now expanding with great caution, a few only at the extremities of the branches being almost as big as a shilling. Some of the Ash-trees are nearly in the same state; which I mention because it is said that Ash leaves are used in China as a succedaneum for those of the Mulberry in feeding silkworms.]

3. Paper Mulberry may be propagated by seeds, or by laying down the branches, or by cuttings, in the manner directed for the common sort. In Japan it is cultivated for making paper of the bark much after the same manner as Osiers are cultivated here, cutting down the young shoots at the end of the year, when the leaves are off.

4. This tree has not been propagated yet in this country, for though it has been budded and grafted upon the White and Black Mulberry, it has not succeeded. Being tall, it cannot well be laid down, which is the most likely method to propagate it. This is very hardy, and will endure the cold of our climate in the open air very well.

5. This is too tender to live out of the Bark-stove, where it must be treated as other tender plants, giving it but little water in winter. With this management it will retain its leaves all the year.

6. Culture and management the same as the first and second sorts.

7. This must be preserved in the Bark-stove. The seeds come up freely in a hot bed: when the plants are fit to remove, plant each in a separate small pot filled with fresh light earth, and plunged into a hot-bed of tanner's-bark, shading them from the sun till they have taken new root; and then treating them as other plants from hot countries. They retain their leaves great part of the year in the stove.

[MORUS NORVEGICA. See *Rubus Chamæmorus*.

MOSCHARIA: See *Teucrium Iva*.

MOSCHATEL, MOSCHATELLA,] MOSCHATELLINA. See *Adoxa*.

[MOSCHEUTOS. See *Hibiscus*.]

MOSS. See *Muscus*.

MOTHERWORT. See *Leonurus*.

MOTH MULLEIN. See *Verbascum*.

[MOTTA-PULLU. See *Scirpus*.]

MOULD, or vegetable earth, the goodness of which may be known by the sight, smell, and touch.

First, by the sight: those Moulds that are of a bright chestnut, or hazelly colour, are counted the best; of this colour are the best loams, and also the best natural earth, and this will be better yet, if it cuts like butter, and does not stick obstinately, but is short, tolerably light, breaking into small clods, is sweet, will be tempered without crusting or chapping, in dry weather, or turning to mortar in wet.

The next to that, the dark gray and russet Moulds

* Hunter on Evelyn.

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are accounted the best, the light and dark Ash-colour are reckoned the worst, such as are usually found on common, or heathy ground; the clear tawny is by no means to be approved, but that of a yellowish red colour is accounted the worst of all: this is commonly found in wild and waste parts of the country, and for the most part produces nothing but Furz and Fern, according as their bottoms are more or less of a light and sandy, or of a spewy gravel, or clayey nature.

Secondly, by the smell: all lands that are good and wholesome, will, after rain, or breaking up by the spade, emit a good smell.

Thirdly, by the touch: by this means we may discover whether it consists of substances entirely arenaceous, or clammy; or, as it is expressed by Mr. Evelyn, whether it be tender, fatty, detersive, or slippery, or more harsh, gritty, porous, or friable.

That being always the best that is between the two extremes, and does not contain the two different qualities of soft and hard mixed, of moist and dry, of churlish and mild, that is neither too unctuous or too lean, but such as will dissolve, of a just consistence, between sand and clay, and such as will not stick to the spade or fingers upon every flash of rain.

A loam, or brick Mould, is not to be disapproved, as requiring little help or improvement but the spade, and is esteemed both by the gardener and florist.

[MOUL-ELAVOU. See *Bombax*.

MOUNTAIN ASH. See *Sorbus*.

————— EBONY. See *Baobab*.

MOURERA. See *Lacis*.

MOURICOU. See *Erythrina*.

MOURIRI. See *Petaloma*.

MOUSE-EAR. See *Hieracium* and *Myosotis*.

————— Chickweed. See *Cerastium*.

MOUSE-TAIL. See *Myosurus*.

MOUTABEA. See *Cryptostomum*.

MOXA. See *Artemisia*.

MUCEDO and MUCILAGO. See *Mucor*.

MUCOR. *Lin. gen. Schreb. n. 1685. Micheli, 95.*

Mucilago. Mich. 96. Lycocala. Mich. 95.

Class. 24. 6. Cryptogamia Fungi.

GENERIC CHARACTER.

Seeds naked, or in transparent capsules or vesicles at the end of the stem.

These plants form the last genus of the lowest order of Vegetation. They chiefly appear in form of mouldiness on putrid or putrefying substances, as rotten wood, fruits, dung, corrupted food, old cheese, decayed leaves, and other funguses, in caverns and arched cellars. Seventeen British species are enumerated in the third edition of Withering's Arrangement.

MUDWORT. See *Limosella*.

MUEL SCHAVI. See *Cacalia*.

MUGWORT. See *Artemisia*.

MUHLENBERGIA.

Lin. gen. Schreb. n. 103.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. *Glume* one-valved, very small, emarginate, lateral.

COR. Two-valved: *valves* equal: *outer* lanceolate, long, acute, awned, embracing the inner one, hairy at the base: *inner* a little shorter, narrower, linear, mucronate.

Nectary two-leaved: *leaflets* ovate, obliquely truncate, gibbous, small.

STAM. *Filaments* three, capillary, shorter than the corolla. *Anthems* linear.

PIST. *Germ* ovate. *Styles* two, capillary. *Stigmas* feathered.

PER. none. Corolla incloses the seed.

SEED one, oblong, acuminate.

ESSENTIAL CHARACTER.

Cal. one-valved, minute, lateral. *Cor.* two-valved.

SPECIES.

1. *Muhlenbergia diffusa*.

Lin. spec. ed. Willd. 320.

DESCRIPTION, &c.

Culm branched diffused procumbent. Leaves linear-lanceolate somewhat rugged nerved, three of the nerves thicker on the back of the leaf so that it seems

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to be three-nerved. Ligule short. Panicle slender at the ends of the branches, which are alternate and pressed close. It is a perennial Grass; native of North America^a.

MUIVA. See *Melastoma*.

MU-KELENGU. See *Dioscorea*.]

MULBERRY TREE. See *Morus*.

————— BLITE. See *Blitum*.

MULE'S TONGUE. See *Asplenium*.

MULLEIN. See *Verbascum*.

[MULLERA. (So named by the younger Linneus, in memory of Otto Frederick Muller, author of *Flora Fridrichsdalina*, continuator of *Flora Danica*, which was begun by Oeder, and author of many papers in the *Danish Acts*, &c.)

Lin. suppl. 53. Gen. Schreb. n. 1192. Juss. 352.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ. Leguminosæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, bell-shaped, compressed, truncated and flattish at the base, four-toothed: the upper tooth obliterated, very seldom cloven: the lateral ones more remote, acute, the lowest more produced, and more awl-shaped.

COR. papilionaceous. *Banner* reflex, cordate, ovate, quite entire, obtuse, flat; claw flattish, scarcely longer than the calyx, remote from the wings and keel. *Wings* oblong, converging, gibbous at the base, clawed. *Keel* shorter than the wings, composed of two distinct, converging, clawed petals, forming an oblong, compressed, straight sheath.

STAM. *Filaments* ten, united into a compressed sheath, broader at the base. *Anthems* ovate.

PIST. *Germ* linear, compressed. *Style* short. *Stigma* acute.

PER. *Fruit* necklace-form, composed of three, four or five concatenated, solid, one-celled, one-valved, one-seeded globules, the lowest of which are larger.

SEEDS solitary, compressed, kidney-form, smooth.

ESSENTIAL CHARACTER.

Pericarp elongated, fleshy, necklace-form, with one-seeded globules.

SPECIES.

1. *Mullera moniliformis*.

Lin. syst. 667. suppl. 329. Mer. surin. t. 35.

DESCRIPTION, &c.

This is a tree with ferruginous, somewhat warted branches. Leaves alternate, pinnate, having two pairs of leaflets with an odd one at the end. Leaflets equal, opposite, petioled, ovate-oblong, like those of Privet, quite entire, acute, smooth above, silky underneath, flat, veined: petioles elongated, round, with a thickened joint at the base where they are inserted. Stipules none. Racemes axillary and terminating, simple, the length of the petioles. Bractes none. Flowers scattered, nodding, the size of Laburnum flowers. The petals fall off, whilst the calyx remains, and the germ swells: this however does not become a fruit, but it is lengthened out, and from it, as from a receptacle, come out several globules, flattened a little and in a chain, no vestige of which is in the flower. At first they are the size of a Lentil seed, and when perfect they are as big as a large Plum: they are exactly spherical, very smooth, and separated from the receptacle by a petiole: from the top of each globule issues a short petiole uniting it to the next, and so on: no future is apparent in the globules, nor are they cloven as in the proper legume; but they are composed of a thick hard substance, in the middle of which is a cavity, as in oblong Plums, filled with one kidney-form seed, the size of a large Kidney Bean, with the hilum or umbilical scar at the angle, as in legumes.

This plant has a near affinity to Sophora, but it differs from it in having the stamens properly diadelphous, and the fruit not leguminous, or opening longitudinally by two valves.

Native of Surinam^a.

^a Willdenow.

^a Linn. suppl.

MUNCHHAUSIA. (So named from Baron Gerlach Adolphus de Munchhausen.)

Lin. gen. Reich. n. 976. Schreb. n. 1220. Juss. 331.

Class. 18. 4. Polyadelphia Polyandria.

Nat. order of Calycanthemæ. Salicariæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, half-six-cleft, turbinate, torulose, permanent; with blunt segments.

COR. Petals six, obovate, spreading, clawed, inserted into the calyx.

STAM. Filaments twenty-four or thirty, capillary, shorter than the petals, collected into six bodies. Anthers kidney-form.

PIST. Germ superior, ovate. Style filiform, declining, of a middling length. Stigma blunt.

PER. Capsule ovate, acuminate, six-celled.

SEEDS very many.

Obs. It is allied to Lagerstroemia,

ESSENTIAL CHARACTER.

Cal. six-cleft, torulose. Pet. clawed. Stam. in six bodies, four or five in each. Pist. superior, with a filiform curved style.

SPECIES.

1. Munchhausia speciosa.

Lin. syst. 697. Reich. 3. 586. mant. 243. Murr. prodr. præf. cum ic. Munch. hausv. 5. 357. t. 356.

DESCRIPTION, &c.

This is a small tree, with alternate, patulous, round, smooth branches. Leaves alternate, ovate or ovate-oblong, acuminate, quite entire, smooth, paler underneath; on very short petioles. Stipules none. Racemes terminating, somewhat branched, erect, a foot long, strict, round, smooth. Flowers alternate, on very short peduncles, extremely handsome. Calyxes subtomentose, with six channelled swellings. Petals four times as large as the calyx. Stamens half the length of the petals. Style at first equal to the stamens, but afterwards longer¹.

Native of Java and China. Cultivated in the Upsal garden in 1748; and flowered there the year following².—See Lagerstroemia.

MUNDA-VALLI. See Ipomoea.

MUNDUBI. See Arachis.

MUNDUBIGUACU. See Jatropha.

MUNGOS. See Ophiorrhiza.]

MUNTINGIA. (So named by Plumier, from Abraham Munting, Professor of Botany at Groeningen.)

Lin. gen. n. 651. Reich. n. 707. Schreb. n. 884.

Plum. 6. Jacqu. amer. 166. Gært. t. 59.

Juss. 291.

Class. 13. 1. Polyandria Monogynia.

Nat. order of Columniferae. Tiliaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, concave at the base: segments lanceolate, acuminate, large: deciduous.

COR. Petals five, roundish, spreading, inserted into the calyx.

STAM. Filaments very many, capillary, very short. Anthers roundish.

PIST. Germ globular, clothed with villose hairs. Style none. Stigma headed, pentagonal, rayed, permanent:—pyramidal, five-grooved, sessile. G.

PER. Berry globular, umbilicate with the stigma, five-celled.

SEEDS numerous, roundish, very small, nestling.

Obs. The number of cells in the berry is frequently more than five. G.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. five-petalled. Berry five-celled (many-celled. G.) Seeds many, nestling.

SPECIES.

1. Muntingia Calabura. Villose Muntingia.

Lin. spec. 728. syst. 490. Reich. 2. 576. hort. cliff.

203. Swartz obs. 211. Gært. fruct. 1. 285.

Jacqu. amer. 166. t. 107. pict. 81. t. 158.

Brown. jam. 245. Plum. gen. 41. ic. 205. Sloan.

jam. 2. 80. t. 194. f. 1. Raii dendr. 32. (Loti

arboris folio, &c.)

Calabura alba. Pluk. mant. t. 152. f. 4.

¹ Murr. prodr. præf. a Linn.

² Murr. prodr. præf.

DESCRIPTION, &c.

[This shrub or small tree rises from a fathom to ten or twelve feet, or according to Sloane thirty feet in height, sending out many irregular, spreading, long, round, hairy branches, covered with a smooth dark purple bark, with distich slender branchlets or twigs set alternately. Leaves alternate, flat, spreading horizontally, oblique, ovate lanceolate, acuminate, unequally serrate, nerved, green and hirsute above, hoary-tomentose and viscid underneath, three, four or five inches long and three quarters of an inch broad at the base; the upper ones more oblique, or stretching much farther back on one side of the petiole than they do on the other. Petioles short, round, hirsute. Stipules solitary, the length of the petioles, filiform, hirsute in front at the base of the leaves. The hairs of the leaves are glandular. Peduncles two to four, between the petioles, and not axillary, clustered, longer than the petiole, shorter than the leaf, one-flowered, round, villose-viscid. Jacquin remarks, that they successively turn the flower when it is about to expand to the face of the leaf, which before was reflexed to the back of it. Flowers without scent but handsome, an inch in diameter, resembling those of the Bramble, according to Sloane. The calyx is ash-coloured, and the petals are white. The former is five or six-parted; the parts the same length with the petals, hirsute, and viscid: the latter five or six in number with a very short claw, and plaited. Filaments twenty-five to thirty, shorter than the germ. Anthers twin. Germ smooth. Stigma five or six-cornered, five or six-rayed¹. Berry spherical, crowned with the sessile stigma, which has from four to six grooves, succulent, many-celled: partitions membranaceous, very thin, subdivided towards the periphery, when the cells are unequal and irregular. Seeds very smooth and shining, whitish or pale straw-colour, nestling in the pulp without any receptacle². According to Jacquin, the berry is rose-coloured with a tinge of yellow, and when cut transversely seems to be one-celled, but if the pulp and seeds be gently pressed out in water, it appears very clearly to be five-celled. Sloane says, the fruit is as big as a Cherry, and Miller] that it is as large as that of the Cockspur Hawthorn; of a dark purple colour, when ripe.

Native of Jamaica, on the calcareous subalpine hills, flowering in the spring³: and of St. Domingo, in the wet parts of woods, flowering in august and september⁴.

This is not the Mullam Toddali of Rheede, hort. malab. as Linneus thought it was, for that is of a different genus, and has nothing in common with Muntingia Calabura, but a slight agreement in the leaves⁵.]

The seeds of this plant were sent by Mr. Robert Millar from Jamaica, which succeeded in some of the English gardens.

PROPAGATION AND CULTURE.

This plant is propagated by seeds, which should be sown in pots filled with light rich earth, and plunged into a moderate hot-bed of tanner's bark, and in warm weather the glasses should be raised to admit fresh air. These seeds will often remain in the ground a whole year before the plants will appear; in which case the pots must be kept constantly clear from weeds, and should remain in the hot-bed till after michaelmas, when they may be removed into the stove, and plunged into the bark-bed, between other pots of tall plants, where they may remain during the winter season. These pots should be now and then watered, when the earth appears dry, and in the beginning of march the pots should be removed out of the stove, and placed in a fresh bark-bed under frames, which will bring up the plants soon after.

When the plants are come up about two inches high, they should be carefully taken out of the pots, and each planted into a separate small pot filled with light rich earth, and then plunged into the hot-bed again, observing to shade them from the sun until they have taken new root, after which time they should

¹ Swartz, Jacquin.

² Gartner.

³ Swartz.

⁴ Jacquin.

⁵ Gartner.

be duly watered, and in warm weather they must have a large share of fresh air. In this hot-bed the plants may remain until autumn, when the nights begin to be cold; at which time they should be removed into the stove, and plunged into the bark-bed. During the winter season these plants must be kept warm, especially while they are young, and frequently refreshed with water; but it must not be given to them in large quantities lest it rot the tender fibres of their roots. It will be proper to continue these plants in the stove all the year, but in warm weather they should have a large share of fresh air; but as the plants grow in strength, they will be more hardy, and may be exposed in summer for two or three months, and in winter will live in a dry stove, if kept in a moderate degree of heat.

[MURCIA. See *Myrtus*.

MUREX. See *Pedaliium*.

MURIGUTI. See *Hedyotis*.

MURRAYA. (So named by Koenig, in honour of Jo. Andr. Murray, knight of the order of Wasa, professor of Medicine and Botany at Gottingen, &c. editor of Linneus's *Systema Vegetabilium*, &c.)

Lin. gen. Reich. n. 570. Schreb. n. 717. Murr.

comm. 9. 186. t. 1. Gært. t. 93. Juss. 261.

Marfana. Sonnerat ind. 2. t. 139.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Aurantia*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, five-parted, very small; segments linear, erect, roundish, remote, permanent.

COR. five-petalled, bell-shaped: petals lanceolate, spreading at the top.

Nectary bell-shaped, short, encircling the germ.

STAM. Filaments ten, awl-shaped, the length of the flower. Anthers somewhat oblong.

PIST. Germ roundish, superior. Style filiform, subangular, longer than the stamens. Stigma flattish, warted, angular.

PER. Berry somewhat pulpy, one-celled.

SEED one, large, obovate, acute, grooved on one side.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. bell-shaped, with a nectary encircling the germ. Berry one-seeded.

SPECIES.

1. *Muraya exotica*. Ash-leaved *Muraya*.

Lin. syst. 398. mant. 563. Reich. 2. 268. Gært. fruct. 2. 76.

Camunium japonicum. Rumph. amb. 5. 29. t. 18. f. 2.

Marfana *buxifolia*. Sonner. ind. 2. 245. t. 139.

Chalcas japonensis. Lour. cochinch. 271.

DESCRIPTION, &c.

This is a tree of the smallest size, with a whitish bark, and the appearance of *Schinus*. Leaves alternate, petioled, somewhat rigid, unequally pinnate. Leaflets seven, petioled, alternate, obovate, smooth, bluntish. It was thought to be a very different plant from *Chalcas paniculata*, but it proves to be the same species. Loureiro however has two. Berry juiceless, superior, globular, terminated by a short point, obscurely shagreened by raised dots or miliary tubercles, leathery, thin, one-celled. Seed almost the size of the berry, subglobular, covered all over with very short soft fibres, pressed close to it, whitish or pale straw-colour, fixed to the bottom of the berry, and cohering to it all round by its cuticle.

Native of the East Indies. Introduced in 1771, by Benjamin Torin, Esq. It flowers in august and september.

MURUCUA. See *Passiflora*.

MUSA. (So named by Plumier, in memory of Antonius Musa, the freedman of Augustus.)

Lin. gen. n. 1141. Reich. n. 1248. Schreb. n. 1563.

Mus. cliff. 2. Plum. 34. Garc. phil. trans. 1730.

n. 415. t. 2. Trew commerc. 1741. t. 5. Ebret.

t. 18—23. Breyn. act. nat. cur. 8. app. 180.

Gært. t. 11. Juss. 61.

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Scitamineæ*. Musæ, Juss.

^a Linn. mant.

^b Gartner.

^c Hort. kew.

GENERIC CHARACTER.

* *Hermaphrodite* flowers more, towards the base of the simple Spadix, separate in alternate spathes.

CAL. Spathe partial ovate-oblong, plano-concave, large, many-flowered.

COR. unequal, ringent: the petal constituting the upper lip, but the nectary the under lip. Petal erect, ligulate, truncate, five-toothed, converging in front at the base.

Nectary one-leafed, cordate, boat-shaped, compressed, acuminate, spreading outwards, shorter than the petal, inserted within the sinus of the petal.

STAM. Filaments six, awl-shaped, five of which within the petal are erect, the sixth within the nectary is reclining. Anthers linear, from the middle to the top fastened to the filament; but most frequently there is only one anther on the sixth filament, and very small ones or none on the rest.

PIST. Germ very large, obtusely three-sided, very long, inferior. Style cylindric, erect, the length of the petal. Stigma headed, roundish, obscurely six-cleft.

PER. Berry fleshy, covered with an husk, obscurely three-sided or six-sided, gibbous on one side, one-celled, hollow in the middle.

SEEDS very many, nestling, subglobular, wrinkled-tubercled, excavated at the base. G. or only rudiments.

* Males on the same Spadix, above the Hermaphrodite flowers, separated by Spathes.

CAL. COR. and NECT. as in the Hermaphrodites.

STAM. Filaments as in the Hermaphrodites, equal, erect. Anthers as in the Hermaphrodites, on the filament placed within the nectary, most frequently very small or none.

PIST. Germ as in the Hermaphrodites, but less. Style and Stigma as in them, but less and more obscure.

PER. is abortive.

SEEDS

OBS. The flowers, often monstrous, vary much in the number of parts of the corolla, stamens and anthers both perfect and imperfect; they do not always therefore agree exactly with Linneus's description. Scopoli observed five stamens only. Berry of *M. Troglodytarum* three-celled.

ESSENTIAL CHARACTER.

Cal. Spathe partial many-flowered. Cor. two-petalled; one petal erect five-toothed, the other nectariferous concave shorter. Stam. six. Style one. All the flowers hermaphrodites.

Male Herm. above; five filaments perfect. Germ inferior, abortive.

Fem. Herm. one filament only perfect. Berry oblong, three-sided, inferior, many-seeded.

SPECIES.

1. *Musa paradisiaca*. Plantain Tree.

Lin. spec. 1477. syst. 902. Reich. 4. 295. hort. cliff. 467. upf. 301. fl. zeyl. n. 368. Burm. ind. 217. Thunb. jap. 130. Forst. prodr. n. 382. escul. 28. Brown. jam. 363. 1. Hasselqu. it. 491. 259. Gron. orient. 324. Gært. fruct. 1. 29. 7.

M. clifortiana. Lin. mus. 1. t. 1. Trew Ebret. t. 18, 19, 20.

Musa. Clus. exot. 229. Sterb. citr. t. 4. Rumph. amb. 5. 125. t. 60. Garcin philos. trans. 1730. n. 415. t. 2.

M. arbor. Baub. hist. Park. theat. 1495. f. 1496. Raii hist. 1374.

M. Serapionis. Ger. 1332. emac. 1515.

Ficus indica fructu racemoso folio oblongo. Baub. pin. 508.

Palma humilis longis latisque foliis. Baub. pin. 107.

Bata. Rheed. mal. 1. 17. t. 12, 13, 14.

Spadix nodding, male flowers permanent.

2. *Musa sapientum*. Banana Tree.

Lin. spec. 1477. syst. 902. Reich. 4. 295. Gært. fruct. 1. 29. 8. Swartz obs. 382. Brown. jam. 363. 2. Sloan. jam. 2. 147. Trew Ebret. 4. t. 21, 22, 23.

Musæ affinis altera. Baub. pin. 508.

Arbor foliis amplissimis fructu cucumeris forma. Baub. pin. 508.

Banana.

Banana. *Marcgr. Raii hist.* 1375.

Spadix nodding, male flowers deciduous.

[3. Musa *Troglodytarum.*

Lin. spec. 1478. *fist.* 902. *Reich.* 4. 296. *Gartn. fruct.* 1. 29.

M. *Uranoscopos* *Rumph. amb.* 5. 137. t. 61. *Lour. cochinch.* 645.

Spadix erect, spathes deciduous.

DESCRIPTIONS, &c.

Root a perennial roundish solid watery bulb, dusky on the outside, white within; with a few thick fibres. Stem biennial, sometimes longer lived, from five to twenty feet in height, upright, very straight, quite simple, thick, round, smooth, fungous, watery, lamellated: the lamellas convoluted, each ending in long channelled embracing petioles, imbricate at the base. Leaves oblong, blunt, quite entire, from three to ten feet in length, and less than two feet in width, having many transverse streaks or grooves, smooth, bright green, readily divisible at the grooves. Flowers terminating, whitish, in one very large raceme or bunch, most commonly reflex, thick, round, compound: racemelets alternate, sessile, with the flowers extended in breadth in a double row. General calyx none: partial of each racemelet a spathe, which is subacute, concave, grooved, purplish, opening successively, deciduous. Proper perianth none. Petals two: outer erect, blunt, five-toothed and reflex at the end; inner boat-shaped, quite entire, shorter, reflex at the base. In the fertile flower five filaments, which are awl-shaped, shorter than the erect petal, sitting on the receptacle: of these one or two, sometimes all, are antheriferous: anthers linear, lateral. Germ oblong, inferior, bluntly three-cornered. Style linear, thick, longer than the stamens. Stigma headed, grooved at the top. Berry oblong, somewhat angular, fleshy, sweet, eatable, three-celled; containing many roundish black nestling seeds. The barren flower has also five filaments, of which frequently all, often some only, sometimes none are antheriferous; the corolla is like that of the fertile flower: style, stigma, and germ small and abortive. The fertile flowers always occupy the lower, and the barren ones the upper part of the raceme: both are always deciduous, as are also the spathes, except the uppermost and outmost, which rot within the spathes^a.

They are natives of hot climates only, and are generally cultivated within the tropics. They do not however seem to have been indigenous of America.]

1. This plant rises with a soft herbaceous stalk fifteen or twenty feet high, and upward; the lower part of the stalk is often as large as a man's thigh, diminishing gradually to the top, where the leaves come out on every side, which are often more than six feet long, and near two feet broad, with a strong fleshy midrib, and a great number of transverse veins running from the midrib to the borders. The leaves are thin and tender, so that where they are exposed to the open air, they are generally torn by the wind; for as they are large, the wind has great power over them: these leaves come out from the side of the principal stalk, inclosing it with their base; they are rolled up at their first appearance, but when they are advanced above the stalk, they expand quite flat, and turn backward; as these leaves come up rolled in the manner before mentioned, their advance upward is so quick, that their growth may be almost discerned by the naked eye; and if a line is drawn across, level with the top of the leaf, in an hour's time the leaf will be near an inch above it. When the plant is grown to its full height, the spike of flowers will appear from the centre of the leaves, which is often near four feet in length, and nods on one side. The flowers come out in bunches, those on the lower part of the spike being the largest; the others diminish in their size upward; each of these bunches is covered with a spatha or sheath, of a fine purple colour within, which drops off when the flowers open. The upper part of the spike is made up of male or barren flowers, which are not succeeded by fruit. The fruit is eight or nine inches

long, and above an inch diameter, a little incurved, and has three angles; it is at first green, but, when ripe, of a pale yellow colour. The skin is tough, and within is a soft pulp of a luscious sweet flavour. The spikes of fruit are often so large as to weigh upwards of forty pounds.

[Native of the East Indies, and other parts of the Asiatic continent, probably also of Africa. Cultivated generally between the tropics.] Said to be transported to the West Indies from the Canary islands, to which it is believed that it was carried originally from Guinea. [It seems to have migrated with mankind from Asia into the numerous islands of the southern Pacific Ocean, where it is universal in all the islands that are inhabited, and has degenerated into numerous varieties. It was not known in America before the arrival of the Spaniards^b.

It was cultivated here in 1690, in the royal garden at Hampton-court, and commonly flowers with us from october to december^c. Johnson the editor of Gerarde's herball, says that april 10, 1633, his much honoured friend Dr. Argent, then president of the College of Physicians in London, gave him a plant of the Musa, which he received from the Bermudas. The fruit on it was unripe, but he hung up the stalk with the fruit thereon in his shop, where it became ripe about the beginning of may, and lasted until june; the pulp was very soft and tender, and it did eat somewhat like a Musk Melon. Gerarde and other old authors name it *Adam's Apple-tree*, from a notion that it was the forbidden fruit of Eden; whilst others supposed this fruit to have been the Grapes brought out of the promised land to Moses.

Dampier thus speaks of it.—The Plantain is the king of all fruit, not excepting the Coco itself. The tree is three feet, or three feet and a half round, and ten or twelve high. It is not raised from seed, but from the roots of other old trees. If these young suckers are taken out of the ground, and planted in another place, it will be fifteen months before they bear, but if let stand in their own native soil they will bear in twelve months. As soon as the fruit is ripe the tree decays, and many young ones grow up to supply its place. The fruit of it is so excellent, that the Spaniards give it the preference to all others, as most conducing to life. It grows in a cod six or seven inches long, and as big as a man's arm; the rind is soft, and yellow when ripe. It resembles in shape a hog's pudding. The inclosed fruit is no harder than butter is in winter, and much of the colour. It is of a delicate taste, and melts in one's mouth like marmalade. It is all pure pulp, without any seed, kernel or stone. The fruit is so much esteemed by all Europeans that settle in America, that when they make a new plantation, they commonly begin with a good Plantain-walk; enlarging it as their family increases. Some or other of the trees are bearing most part of the year; and this is many times the whole food on which a family subsists. They thrive only in rich flat ground; poor sandy soil will not bear them. When this fruit is used only for bread, it is roasted or boiled when it is just full grown, but not yet ripe, or turned yellow. The Indians and Negroes eat them in a variety of ways, both raw and dressed, fresh and preserved: they also make a fermented liquor with them, which they drink always new. The ordinary people of Mindanao wear no other cloth, but what is made from the fibres of the trunk.

There is another sort in Mindanao, shorter and less than the other. These are full of black seeds mixt quite through the fruit. They are binding, and much eaten by those that have fluxes.

In the West Indies the fruit is generally used when full grown, but before it ripens: it is commonly peeled and roasted, and is thus distributed among the negroes, by whom it is mostly used; though many of the whites prefer it to any of the bread kind, especially whilst young and tender. The negroes generally boil it with other messes, as salt-fish, beef, pork, pickle or crabs, and find it a hearty wholesome food. As the fruit

^a Loureiro.

^b Forster escul.

^c Hort. kew.

ripens, it becomes soft and sweetish, and is then generally made into tarts, or sliced and fried with butter. The juice of the tree is a very rough astringent. The leaves are generally used to dress blisters; and when dried are made into mats, or employed to stuff mattresses^d.

The Spaniards dry and preserve the fruit as a sweet-meat. The ripe fruit and maize together are the best food for hogs put up to fat, and give them a most exquisite flavour and firmness. On thrusting a knife into the body of the plant, the astringent limpid water that issues out is given with great success to persons subject to a spitting of blood, and in fluxes^e.]

The fruit of some out of the many varieties is eaten in the islands of the South Seas raw, of others roasted or baked, according to their different qualities. The trees which bear the former are the chief ornaments of the gardens in Otaheite; the latter are in the mountainous tracts of the islands, that are covered with woods. This fruit is easy of digestion, very wholesome and agreeable to seamen after a long voyage: to many however its clammy sweetness is unpleasant; and it is reputed to disagree with weak stomachs, to bring on a constipation and flatulency in the bowels. Rumphius is of opinion, that whether crude or mature, this fruit, running readily into putrescence, increases the malignity of the humours in the epidemic dysentery^f.]

2. The Banana or Bonana tree, as it is sometimes written, differs from the preceding in having its stalks marked with dark purple stripes and spots. The fruit is shorter and rounder, with a softer pulp of a more luscious taste. [Dampier says the Banana is less luscious than the Plantain, yet of a more delicate taste. According to Long, it has a softer, mellow taste, and is more proper for fritters than the Plantain. A very excellent drink is made from the juice of the ripe fruit fermented, most resembling the best Southam cyder. A marmalade is likewise made of it, esteemed an excellent pectoral, cooling and refreshing.

The Banana fruit ripe, has been noted for its efficacy in correcting those sharp humours, which generate, or accompany the fluxes, to which Europeans are often subject on their first coming into the West Indies. The roasted fruit would be an useful sea store, would keep a long time, packed in dry leaves, and stowed in tight casks; and would require only a fresh roasting or heating, when wanted for use.—It was cultivated in 1731, by Mr. Miller.

These two fruits are among the greatest blessings bestowed by Providence upon the inhabitants of hot climates. Three dozen Plantains are sufficient to serve one man for a week instead of bread, and will support him much better^g.

Though the Plantain and Banana are generally considered as different, yet Loureiro, Forster and Gärtner cannot find any certain specific distinction, and agree that Linneus's is insufficient. Gärtner unites them under the character of a one-celled berried fruit, which separates them from *Musa Troglodytarum*, that having a three-celled berried fruit.

There are many varieties of Plantain and Banana, as might be expected in plants so extensively cultivated. Rumphius has set down sixteen, which he observed in the Molucca islands. Forster has enumerated these: and Loureiro has four species with several varieties, besides *Musa Troglodytarum*.

3. Stem four feet high, an inch in thickness. Leaves linear, three feet long, and five inches wide. Spathes linear, alternate, scarlet, many. Berry scarlet, ovate, compressed, two inches long, not eatable^h. Gärtner describes it as columnar, drawn to a point at both ends, curved, hexangular, leathery-fleshy, very smooth, yellowish-green, three-celled: partitions membranaceous, thickish, meeting and connected near the axis. Seeds numerous, in a double row in each cell, fixed to the axis of the fruit, variously angular, jointed into one another as it were like the stones of a pavement, without any pulp between them, acuminate towards the umbilicus, very smooth, ferruginous or blackish.

^a Browne.

^e Long, jam. 782.

^f Forster.

^g Long, jam. 783.

^h Loureiro.

Thunberg says that they are almost as large as Linseed or the seed of Flax. Gärtner asserts, that this is a genuine species of *Heliconia*.
Native of the Molucca islands.]

PROPAGATION AND CULTURE.

In Europe there are some of these plants preserved in the gardens of curious persons, who have hot-houses capacious enough for their reception, in many of which they have ripened their fruit very well; but as they grow very tall and their leaves are large, they require more room in the stove than most people care to allow them: they are propagated by suckers, which come from the roots of those plants which have fruited; and many times the younger plants, when they are stunted in growth, will put out suckers; these should be carefully taken off, preserving some fibres to their roots, and planted in pots filled with light rich earth, and plunged into the tan-bed in the stove: these may be taken off any time in summer, and it is best to take them off when young, because if their roots are grown large, they do not put out new fibres so soon, and when the thick part of the root is cut in taking off, the plants often rot.

During the summer season these plants must be plentifully watered, for the surface of their leaves being large, there is a great consumption of moisture, by perspiration in hot weather, but in the winter they must be watered more sparingly; though at that season they must be often refreshed, but it must not be given them in such quantities.

The pots in which these plants are placed, should be large in proportion to the size of the plants, for their roots generally extend pretty far, and the earth should be rich and light. The degree of heat with which these plants thrive best, is much the same with the Anana, or Pine Apple, in which I have had many of these plants produce their fruit in perfection, and they were near twenty feet high.

The most sure method to have these plants fruit in England is, after they have grown for some time in pots, so as to have made good roots, to shake them out of the pots with the ball of earth to their roots, and plant them into the tan-bed in the stove, observing to lay a little old tan near their roots for their fibres to strike into, and in a few months the roots of these plants will extend themselves many feet each way in the bark; and these plants will thrive a great deal faster than those which are confined in pots or tubs. When the bark-bed wants to be renewed with fresh tan, there should be great care taken of the roots of these plants, not to cut or break them, as also to leave a large quantity of the old tan about them, because if the new tan is laid too near them, it will scorch their roots, and injure them: these plants must be plentifully supplied with water, otherwise they will not thrive; in winter they should be watered twice a week, giving at least two quarts to each plant, but in summer they must be watered every other day, and double the quantity given to them each time. If the plants push out their flower-stems in the spring, there will be hopes of their perfecting their fruit; but when they come out late in the year, the plants will sometimes decay before the fruit is ripe. The stoves in which these plants are placed should be at least twenty feet in height, otherwise there will not be room for their leaves to expand; for when the plants are in vigour, the leaves are often eight feet in length, and two feet broad: so that if the stems grow to be fourteen feet to the division of the leaves, and the house is not twenty feet high, the leaves will be cramped, which will retard the growth of the plants; besides, when the leaves are bent against the glass, there will be danger of their breaking them, when they are growing vigorously; for I have had in one night the stems of such bent leaves force through the glass, and by the next morning advanced two or three inches above the glass.

I have seen some bunches of fruit of the first sort, which were upwards of forty pounds weight, and perfectly ripe in England; but this is not so good a fruit, as to tempt any person to be at the expense of raising them in England. The second sort is preferred to the first,

first, for the flavour of its fruit, in all those hot countries where these plants abound: the bunches of these are not near so large as those of the first sort, nor are the single fruit near so long; these change to a deeper yellow colour as they ripen, but their taste is somewhat like that of mealy Figs. Some persons who have resided in the West-Indies, having eaten some of these fruit which were produced in England, thought them little inferior to those which grew in America; and I imagine, that the inhabitants of those countries would not esteem these fruits so much, had they variety of other sorts; but, for want of better, they eat many kinds of fruit, which would not be valued in Europe, could they be obtained in perfection.

[The Plantain Tree is cultivated with great care in all our sugar-colonies. It thrives best in a cool, rich, moist soil, and is commonly planted in regular walks or fields: it is propagated by the shoots, and planted at convenient distances; but as the root throws up a number of young shoots every year, the spaces between the first plants are left pretty considerable. When the fruit is ripe, the stem decays gradually, and the root begins to throw up young shoots. The stem is then usually cut down near the root, to give a stronger and quicker growth to the new plants¹.

In the South Sea islands, they put some wood ashes and burnt plants with a little shell lime into the hole, when they plant the Musa, by which they so accelerate the growth, as to have fruit in six and even four months; whereas in the common course it is eighteen months before fruit is expected².

MUSA BIHAI. See *Heliconia*.

MUSCARI. See *Hyacinthus*.

MUSCIPULA. See *Dionæa* and *Silene*.

MUSCO-FUNGUS. See *Lichen* and *Tremella*.

MUSCOIDES. See *Mnium* and *Jungermannia*.]

MUSCUS, Moss. *Musci*, Mosses.

Formerly supposed to be only excrescencies produced from the earth, trees, &c. but now known to be plants no less perfect than those of greater magnitude. [They are ranged by Linneus in the second Order of his twenty fourth Class, entitled *Cryptogamia Musci*: but so much having been done to his hands on the subject of this Order by Dillenius, he did little more than arrange the species, and give them specific characters.

Linneus has three divisions of the Mosses.—1. Without any Calyptræ or Veil: containing the following genera—*Lycopodium*, *Porella*, *Sphagnum*. 2. Calyptræd, dichinous, or having the males and females separate—*Splachnum*, *Polytrichum*, *Mnium*. 3. Calyptræd, monoclinoous, or having the males and females on the same plant—*Phascum*, *Bryum*, *Hypnum*, *Fontinalis*, *Buxbaumia*.

Since the time of Dillenius and Linneus, great light has been thrown upon this obscure order by Jacquin, Hoffman, Wiegell, Batsch, Pollich, Weis, Ehrhart, Schmidel, Schreber, Dickson, Withering, Stackhouse, &c. but especially by Hedwig, who first communicated the result of his observations to the Academy of Sciences at Petersburg in the year 1783.

According to this last author, Mosses are vegetables, in which the female parts of fructification are furnished with a veil-like petal, bearing a style. He divides them into two Orders:

1. Capsule entire, lidded, and opening transversely: *Frondeosi*.
2. Capsule with four valves, opening lengthways: *Hepatici*.

The latter are not ranged with the *Musci*, but with the *Algæ* by Linneus.

These definitions of Hedwig exclude the *Lycopodium* from the Mosses.

General Character of *Musci* or Mosses.

* Male Flowers.

CAL. common, of many leaves: leaflets in structure resembling those of the plant, but generally broader, sometimes coloured, open and expanding like the rays of a star, or the petals of a full-blown rose, or else closing and approaching like a bud.—A few have no appearance of a calyx.

¹ Browne.

² Forster.

COR. none.

STAM. numerous, within the common calyx, mostly separated by succulent threads or chaff-like substances: sometimes uniting so as to form a little knob, or placed in the axils of the upper branches. *Filament* short, filiform. *Anthers* sometimes cordate or ovate, but mostly cylindrical, one-celled, opening at the top and discharging granulated pollen:

* Female Flowers, on the same or a different plant, sometimes intermixed with the males.

CAL. *Perichæti* many leaved; leaflets various, generally inclosing several pistils intermixed with succulent threads.

COR. Veil cylindrical or conical, investing the germ and fixed to its top, united at the base to the sheath of the peduncle, but not elsewhere attached.

PIST. Germ cylindrical or conical. Style slender, standing on the veil. Stigma truncate.

PER. Capsule on a peduncle sheathed at the base, when unripe crowned by the veil which separates at its base, adhering to the point of the capsule; but falling off when that becomes ripe. The capsule then opens horizontally, the lid separating.

Lid with or without a ring, single? or double; outer cartilaginous, sometimes swollen, or else contracted at the base, forming a kind of excrescence called *Apophysis*.

Mouth of the capsule either naked, or closed with an outer fringe.

Outer fringe with from four to thirty-two teeth, which are upright or reflected, straight or twisted, triangular, spear-shaped or bristle-shaped, sharp or blunt.

Inner fringe finer, either closely adhering to the outer, or joined to it by threads from its inner side, or loose and unconnected, or fixed to the pedicle on its little bulb. Mouth naked, or covered with a membrane or network of the inner fringe, or variously jagged, or closed by distinct and regular teeth. Column extending from the base to the point of the capsule, filiform, straight, passing through the lid into the style, and often giving the lid a pointed appearance.

SEEDS numerous, minute, spherical, smooth or rough.

HABIT. Stems leafy. Leaves membranaceous, reticulated, after being dried reviving when soaked in water.

Observations.

If *Bryum pomiforme*, *subulatum* of Haller, *trichodes*, and a few others be excepted, Mosses bear the stamens and pistils in separate flowers, either on the same, or on distinct plants.

The time of flowering generally coincides with that of the fruit attaining maturity, as happens in other evergreen perennials. Thus in *Polytrichum urnigerum*; *Mnium fontanum*, *hornum*, *punctatum*, *undulatum*; *Bryum trichodes*, *caespitium*, &c. the veils fall off early in the spring, and the seed is scattered abroad; whilst at the same time the less obvious unimpregnated germs, and the male or stameniferous flowers are performing their respective functions. This circumstance caused these ripe capsules to be mistaken for anthers, and the seeds for pollen.

Both male and female flowers are furnished with an involucre, which gives the outward figure to the flower, and is called the *Perichæti*. It varies more, and is more to be attended to in the male than in the female flowers. The radiated disks of the *Polytrichums* and *Mniums* are very remarkable, and the scales composing them differ in many respects from the other leaves. The heads which put forth at the extremities of the *Bryums* have been hitherto unnoticed, though they contain the parts of fructification, and are composed of leaflets or scales different both in shape and size from the stem-leaves. Thus in *Bryum rurale* they are not terminated by hairs, and are shorter than the stem-leaves. In *Bryum pellucens*, *scoparium*, *beteromallum*, *aciculare*, &c. they are broader than the other leaves, and more hollow at the base. Where the disk-like substances form a kind of bud, as in almost all the *Hypnums*, *Bryum extinctorium*, *subulatum*, *pulvinatum*, *hypnoideum*, &c. they are much smaller than the leaves; they are also concave, ovate or spoon-shaped,

shaped, and destitute of the hairs which are on the real leaves. These therefore are truly the calyx, and as they include the florets with stamens only, they may be called the Perichætiums of the male florets.

On those Mosses which bear female flowers or capsules, the leaves adjoining to the peduncle are much more beautiful than those on the stems: but sometimes the inner leaves become gradually smaller, and those nearest to the flowers so very minute, that without a microscope it is not possible to dissect them away so as to expose the flower. These therefore are to be considered as the involucre of the female flowers, surrounding and embracing the germ.

Male or stameniferous flowers.

The *Antbers* are almost universally cylindrical, either straight or crooked; but in *Sphagnum palustre* and *Mnium androgynum*, they are ovate and more or less tapering to a point. Their colour is a very dilute green, almost white. When viewed under the highest magnifiers, and strongly illuminated by reflected light, they are found to contain a granulated substance; but their tops are very pellucid, and this pellucid part expands into a rising vesicle at the time the pollen is about to be discharged. The top then opens and the pollen is ejected, the space from which it issues becoming more transparent. This pollen, when evacuated, seems to explode in the drop of water, in which these observations are to be made.

Besides the anthers, included within the same involucre are some very delicate succulent bodies, of various shapes.

In *Polytrichum* and *Mnium* some of the barren florets are like disks, others like roses; and some like stars, when in a fully expanded state. In the stellated *Polytrichums* the scales are placed in concentric circles. In *Mnium hornum*, *palustre*, *fontanum*, &c. they are more like a rose or a disk. After the pollen is dispersed, these roses or stars become more expanded; but previous thereto they are generally so open as to admit a view of the parts they contain. In some Mosses the flowers terminate the branches, as in *Mnium pyriforme* and *purpureum*; *Bryum pellucidum*, *aciculare*, *scoparium*, *heteromallum*, *viridulum*, *simplex*, &c. in such, though a little open, they are not enough so to allow a sight of the anthers, until the flowering be past. Some florets are like buds, and sit in the bosom of the leaves; others in the imbricated thickened termination of the branches, as in *Sphagnum*.

Female flowers.

These are furnished with a germ, style and stigma; but being accompanied by other substances much resembling them, they are difficult to be distinguished until the germ begins to swell, in consequence of its impregnation.

The pistils, after impregnation, daily growing larger, and rising upwards, show the calyptra or veil, which may be considered as a kind of petal, and is perforated at the top by the style. This style is sometimes permanent, falling off only with the veil itself; but where it is not so, the remains of it are always to be found.

It is evident, from what has been said, that what Linneus called the anthers, are really the seed vessels: but by sowing the seeds which they contain, a crop of young plants has been repeatedly procured, in all respects similar to their parents¹.

Mr. John Lindsay, surgeon in Jamaica, sowed the fine dust from the fructification of *Lycopodium cernuum* and *Bryum caespitium* repeatedly, and in a proper situation found them to grow very readily. He also raised plants from the fine elastic filaments and small globules, commonly considered as the male parts, of *Marchantia polymorpha*. This however is not now considered as a Moss properly so called, but one of the *Hepaticæ*. Joseph Fox also raised plants of *Lycopodium Selago* from seed. It is singular that Mr. Miller should positively assert in the year 1768, that Mosses cannot be propagated from seed by any art; and that a journeyman weaver of Norwich should accomplish it in the year 1779^m.

¹ Withering ed. 3. 1. 356.

^m Smith in Linn. trans. 2. 314.

The Capsules of Mosses are always supported upon a peduncle, though sometimes it is very short, and excepting only in *Sphagnum palustre*, it is sheathed and conical at its base. The capsules vary in shape, size and consistence. In some species there is an elastic ring between the capsule and the veil, which when the seed is ripe, throws off the veil with more or less force. The veil being thrown off certain fringe-like processes or projections appear, varying greatly in size, shape, structure, number and disposition: they surround the opening of the capsule in a single or double, rarely in a triple series. These substances constitute the *Peristoma*. The use of this Peristoma or Fringe seems to be, to defend the seeds in wet weather. In dry weather it expands and leaves the mouth of the capsule open, but upon the least moisture, even that of the breath, it closes again.

The Seeds of Mosses are spherical, generally smooth, sometimes dotted, as in *Bryum extinctorium*; sometimes prickly, as in *Bryum pyriforme* and *heteromallum*. They are brown, yellowish or greenishⁿ.

Some of the above observations being made with very high magnifiers are to be received with some degree of caution.

Uses.

Mosses thrive best in barren places. Most of them love cold and moisture. Trifling and insignificant as they are generally supposed to be, their uses are by no means inconsiderable. They protect the more tender plants when they first begin to expand in the spring, as the experience of the gardener can testify, which teaches him to cover with moss the soil and pots which contain his tenderest plants; for it equally defends the roots against the scorching sun beams and the severity of the frost. In the spring particularly the roots of young trees and shrubs are liable to be thrown out of the ground, especially in light spongy soils: but if they are covered with moss, this accident never can happen. They who raise trees from seed, will find an interest in attending to this remark.

Mosses retain moisture a long time without being disposed to putrefy. The angler takes advantage of this circumstance to preserve his worms, and the gardener to keep moist the roots of such plants as are to be transported to any considerable distance.

It is a vulgar error to suppose that Mosses impoverish land. It is true they grow upon poor land which can support nothing else; but their roots penetrate very little, in general hardly a quarter of an inch into the earth. Take away the moss, and instead of more grass there will be less; but if the land be drained and manured, the grass will increase, and the moss will disappear.

Sphagnum palustre, *Mnium triquetrum*, *Bryum paludosum* and *æstivum*, *Hypnum aduncum*, *scorpioides*, *riparium* and *cuspidatum* grow upon the sides and shallower parts of pools and marshes: in process of time, occupying the space heretofore filled with water, they are in their half-decayed state, dug up and used as fuel, under the name of Peat. These marshes, drained partly by human industry, and partly by the long continued operations of vegetables, are at length converted into fertile meadows. Very few Mosses are eaten by cattle. A few Moths feed upon some of them. Their medicinal virtues are but little known, and less attended to. It is probable, on account of their astringent properties, that some of them might be worth trying as a substitute for oak bark in tanning leather^o.]

Mosses are frequently very injurious to trees, particularly Fruit trees, which grow upon cold barren soils, or where they are so close planted as to exclude the free access of air. The only remedy in such a case is to cut down part of the trees, and to plough up the ground between those left remaining: and in the spring of the year, in moist weather, to scrape off the moss, with an iron instrument made a little hollow, the better to surround the branches; and to carry it off the place: by cleansing the trees thus two or three times,

ⁿ Withering, 1. 361. and Hedwig.

^o Withering, 1. 362.

together with carefully stirring the ground, the moss may be entirely destroyed: but if part of the trees be not cut down, and the ground well stirred, rubbing off the moss will signify little; for the cause not being removed, the effect will not cease, but the moss will in a short time be as troublesome as ever.

[Linneus's genera have been split into several others by Hedwig and the other reformers. Hypnum and Bryum were indeed so unwieldy that it was very desirable they should be divided. The genera of Mosses as they stand in Schreber are *Phascum*, *Sphagnum*, *Gymnostomum*, *Tetraphis*, *Ostoblepharis*, *Splachnum*, *Grimmia*, *Eucalypta*, *Dicranum*, *Trichostomum*, *Didymodon*, *Tortula*, *Weissia*, *Pebelia*, *Funaria*, *Bryum*, *Timmia*, *Meesia*, *Bartramia*, *Fontinalis*, *Hypnum*, *Leskia*, *Neckera*, *Buxbaumia*, *Polytrichum*. See their characters under these respective genera.

Other Mosses were placed by Linneus in his Order of *Algæ*; they are now separated from that, and form a distinct Order, under the name of *Hepaticæ*.

In these, the Female fructifications are inclosed in a veil, which splits open at the top, and discharges the capsule. The Capsule opens lengthwise, and is filled with numerous Seeds, fixed to an elastic cord, formed of one or two spiral threads.

Some plants are referred to this subdivision on account of their agreement in general habit, though the female fructification has no veil, but is placed upon, or immersed in the substance of the leaf.

The leaves are mostly lobed, exhibiting a net-work of vesicles, and though dried, reviving again when moistened with water.

Hedwig observes that all the female florets have a double calyx, or a calyx and corolla. In shape and structure he says they greatly resemble the proper mosses, but that he never found the succulent threads: the pistil-like substances are however found, accompanying both the germ and ripened capsule; but not in all the species.

The Capsule, like those of the true Mosses, is inclosed in a veil, to which the style adheres; but this veil is not, as in them, loosened at its attachment and raised along with the growing capsule; it tears open in two, three or four places, and has therefore been sometimes considered as a petal.

All these Mosses agree in ripening their fruit, which is raised upon an elongated peduncle, and opens by four valves, filled with the seeds, attached to elastic cords. These seeds have proved upon trial to reproduce their respective plants^p.

The genera comprehended under this subdivision of the Mosses are, *Marchantia*, *Jungermannia*, *Targionia*, *Anthoceros*, *Blasia*, *Riccia* and *Sphaerocarpus*.

MUSHROOM. See *Agaricus*.

To what was set down under the article *Agaricus* respecting the culture of the Mushroom, it may be useful to add the following practice from Justice's British Gardener's Director.

Make the beds at the end of august, in order to furnish the table with Mushrooms all the winter, except in case of extreme and intense frosts.

Make the beds in the following manner: Dig a trench three feet wide, one foot deep, and what length you please (from ten to fifteen feet is sufficient for a moderate family). If your soil be wetish, let the bed be quite above ground. Take horse dung (three or four good cart-loads for twenty feet), lay it in a heap to ferment for ten or twelve days, or lay it abroad till little heat remains in it; for great heat destroys the spawn of Mushrooms. The dung should be warm and moist, not dry and such as has already been exhausted by fermentation. So soon as you perceive the heat to be gone off, fill the trench with the dung, near one foot above the surface of the adjacent ground; above that, lay ten inches of fresh, light, rich earth; and observe to cover the sides of the dung-bed with the same earth, and as much of the earth gathered from the fields with the Mushroom spawn upon the sides, as can be; and then take some of the spawn, and plant the small knobs of it six inches asunder, half an inch

deep into the earth: then take another layer of dung, lay it ten inches thick, and above that, another layer of the rich light earth, and the field earth on the sides eight inches thick; observing as you lay the stratum of earth and dung, to draw in the sides narrower, so as to make the bed ascend gradually in form of a ridge, and still drawing it narrower, till you arrive at the top, and in such a manner, as the knobs of spawn may not be buried deeper than half an inch, planting the knobs all the way up; by which means you may have four layers of dung, and as many of earth.

When your bed is thus made and planted, lay good wheat-straw, or loose litter half a foot or more thick; and, as the cold increases, cover to twelve inches in thickness.

After ten days take off the litter with your hands, to see if the Mushrooms begin to appear: if they come black or brown and long-shanked, cut them over, and riddle on a little of the fine earth upon them; and when they appear again, they will come up white, round and fit for use: this is called purging of them, their first bad appearance being owing to too much heat in the dung.

It will be necessary to look them over every day in september, which is the chief season of their growth. If allowed to grow large, they will soon become too big for use, rot, breed worms, and infect all the young spawn near them. To prevent this, gather them once every day; in doing which, pull them gently out, so as not to leave their stems behind, which would canker and breed worms, and rot the spawn. If any of this should come up with the Mushrooms, take it off gently, and plant it in again without bruising it, and it will soon root. Make another bed in the same manner at the end of september, and no later.

Some make the Mushroom-beds entirely of dung, without stratum of earth, only covering the sides of the dung with earth, three or four inches thick. When this method is followed, always put good dry litter or straw four inches thick between the earth laid on the sides of the beds and the dung, which prevents the earth from caking or cracking into rents, which it is apt to do, from the heat of the dung: and on the top of the straw, which immediately covers the Mushroom-bed, put some warm litter from the stable, or from a dung-heap, in the cold season; and this will much promote the growth of the Mushrooms. If the frost should continue, and the warm litter cool, add some fresh warm litter upon the straw-covering.

Such beds, if duly attended to, will last several months, and produce great crops; and as the Mushrooms for use grow, so will the spawn, which ought to be laid up in a dry warm place until the season for using it. The spawn will keep four months; so that if you give up the Mushroom beds in may, the spawn will keep until september following, among their own earth, and even until october or november in a warm and dry place: august however and september are the months for making mushroom-beds.

In very severe frosts or great rains, observe to increase the straw-coverings, and in great storms sometimes lay boards above the straw, so as to rest gently against the sides of the beds, but not to rest so much on the Mushrooms as to bruise them.

By continuing the forcing of Mushrooms, they may be continued good until the months of april or may. If when Mushrooms are set down in august, september or october, or even later, they do not produce immediately, they should not be destroyed, but let them remain all winter covered with straw, and in march probably, but most certainly in april, may and june, a most plentiful crop of Mushrooms may be expected.

Another method of raising Mushrooms is this—About the end of february lay old rotten dung in a trench nine inches deep, and six feet in breadth, fill it up and tread it well down, and above the dung put some earth, taken in october preceding from a pasture where Mushrooms grow in plenty: cover the dung with it five inches thick, tread it as hard as you can, and make the bed level: keep it clear from weeds, and in may the Mushrooms will begin to appear: if they come up black, take some turf of the Mushroom pasture,

^p Withering, i. 363.

pasture, half an inch thick only, and tread it down on the bed; this will purge them, and make them come up of a good colour. Such a bed will continue good for two years.

MUSK and MUSK CRANESBILL. See *Erodium*.

MUSK and MUSK OCHRA. See *Hibiscus*.

MUSSÆNDA. (*The vernacular name of Ceylon.*)

Lin. gen. n. 241. Reich. n. 257. Schreb. n. 326.

Gærtn. t. 28. Juss. 200.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ. Rubiaceæ; Juss.*

GENERIC CHARACTER.

CAL. *Perianth* superior, five-parted, unequal: *leaflets* linear-acuminate, permanent.

COR. one-petalled, funnel-form: *tube* long, filiform, *hirsute*: *border* five-cleft, equal; *segments* ovate.

STAM. *Filaments* five, the length of the corolla, growing to the tube on the inside. *Anthers* linear-bristle-shaped, long, within the tube.

PIST. *Germ* inferior, ovate. *Style* filiform. *Stigmas* two, simple, thickish.

PER. *Berry* oblong, crowned.

SEEDS numerous, in four parcels.

ESSENTIAL CHARACTER.

Cor. funnel-form. *Stigmas* two, thickish. *Berry* oblong, inferior. *Seeds* disposed in four rows.

SPECIES.

1. *Mussænda frondosa*.

Lin. syst. 218. Reich. 1. 489. mant. 338. fl. zeyl.

n. 84. Gærtn. fruct. 1. 140. Lour. cochinch. 151.

Vahl symb. 3. 37. Herm. zeyl. 36. Burm. zeyl. 165. t. 76.

Folium principissæ. Rumph. amb. 4. 111. t. 51.

Belilla. Rheed. mal. 2. 27. t. 18. Raii hist. 1493.—

& Mussænda indica. dendr. 126.

Panicle with coloured leaves.

2. *Mussænda glabra*.

Vahl symb. 3. 38.

Branches and leaves of the branches and panicle very smooth.

3. *Mussænda chinensis*.

Lour. cochinch. 152.

Leaves in bundles, flowers solitary.

DESCRIPTIONS, &c.

1. This is a large woody climbing shrub, without tendrils or thorns, having many long scattered branches. Leaves ovate-lanceolate, quite entire, wrinkled, hairy, subsessile, opposite. Flowers gold-coloured, in large, spreading, terminating cymes, with large, ovate, nerved, very white, petioled bractes. Calyx tubular; segments awl-shaped, hairy, erect. Border of the corolla short; segments acute, tailed. Anthers erect. Style equal to the corolla. Stigmas lanceolate, erect. Berry ovate-oblong two-celled. Seeds roundish^a. According to Gærtner, the Berry is inferior, ovate-globular or sub-turbinate, with a prominent whitish ring from the remains of the calyx, and within that, marked at the top with five minute tubercles, and on each side with an obscure longitudinal groove, smooth, black, two-celled: skin thin, becoming leathery when ripe: pulp watery, finally vanishing. Receptacle an ovate fungous lamina bent like an ox-yoke, and by means of another transverse lamina fixed on both sides to the middle of the partition, both together forming the Burgundian cross, as Rumphius calls it, in the middle of the fruit. Seeds very numerous, small, subovate, compressed like a lens, shagreened, pale.

Linneus remarks, that the panicle is dichotomous. One bracte of each pedicel grows into a white elliptic nerved leaf, longer than the panicle.

He gives *Belilla* of Rheede, and *Folium principissæ* of Rumphius as synonyms to his *Mussænda frondosa*. The first of these has oblong berries and black seeds: the second has almost cylindrical berries, excavated on the outside. Gærtner can scarce believe them all three to be one and the same species. He is certain however that his plant is the genuine *Mussænda* of the Ceylonese and of Hermann. Vahl suspects that Fo-

^a Loureiro.

lium principissæ of Rumphius rather is the same with his *Mussænda glabra*. Loureiro remarks, that the figures and descriptions of Burmann and Rumphius agree in many things, but not in all, with his plant, and that they do not entirely agree with each other, but that the differences are rather those of varieties than species. In the Cochinchinese plant he did not observe any finell, but great beauty in the singular whiteness of the bractes mixed with the golden flowers; and it is remarkable that these bractes do not adhere to the peduncles, but to the fruit.

Native of the East Indies and Cochinchina, Otaheite and Namoka islands in the South Seas.

2. Branches round, purplish dotted with white, smooth. Leaves petioled, opposite, three inches long, attenuated, ovate, quite entire, smooth on both sides except on the rib underneath, obliquely and alternately nerved, obscurely veined. Stipules obliterated. Panicle terminating. Partial peduncles three or four times dichotomous, opposite, with a pedicelled flower at each of the divisions. Bractes under the ramifications, trifid as in *M. frondosa*, deciduous, but five times smaller; segments lanceolate, smooth. Bractes under the last pedicels lanceolate, quite entire, sometimes cut with a toothlet at top, scarcely villose. Flowers pedicelled; pedicels angular, the length of the germ. Segments of the calyx lanceolate, slightly hairy with minute hairs. Tube of the corolla pubescent, an inch long, thicker in the middle: segments of the border lanceolate, in the dry specimen orange above. Fruit smooth, obovate, umbilicate, obscurely marked with five lines. Leaves of the panicle three times as large and firmer than in *M. frondosa*, ovate, obtuse, marked with four larger nerves, vanishing towards the tip, smooth on both sides, yellowish underneath in the dry specimen, greenish above, decurrent a little at the base. It appears to be quite different from the preceding, in having the leaves smooth on both sides, and not as in that hoary underneath, with the bractes and calycine segments smaller; in the size, consistence and colour of the leaf of the panicle, and in its orange-coloured flowers.

The leaves of the panicle in *M. frondosa* are more tender, acuminate, acute not blunt, the segments of the calyx are longer, and the fruit villose, not smooth as in *M. glabra*, which is a native of the East Indies as well as the other^b.

3. This is a small tree, with diffused unarmed branches. Leaves lanceolate, quite entire, smooth, heaped. Flower terminating, with a berried, five-parted calyx, having lanceolate segments. Berry ovate, crowned, pale, four-celled; containing many, almost kidney-form, bony seeds.—Native of China, near Canton^c.

MUSSÆNDA FORMOSA & SPINOSA. See *Gardenia*.

MUSTARD. See *Sinapis*.

——, Hedge. See *Erysimum* and *Sisymbrium*.

——, Mithridate. See *Thlaspi*.

——, Tower. See *Turritis*.

——, Treacle. See *Thlaspi*.

MUTELLINA. See *Phellandrium*.

MUTISIA. (*So named in memory of Joseph Celestine Mutis, an American Botanist, who designed a History of American Plants, especially of Palms, and communicated many new plants to the younger Linneus and others.*)

Lin. suppl. 57. Gen. Schreb. n. 1293. Juss. 178.

Class. 19. 2. Syngenesia Pólygamia Superflua.

Nat. order of *Discoideæ. Corymbiferae, Juss.*

GENERIC CHARACTER.

CAL. *Common* oblong, cylindric, imbricate: *scales* lanceolate; the *inner* ones longer.

COR. *Compound* radiate: *Corollets* of the disk three times more than of the ray, hermaphrodite: of the ray eight, female.

Proper of the Hermaphrodites tubular, trifid: the outer-segment lanceolate, the inner segments linear.

Female oval-oblong, entire, with a linear claw.

^b Vahl.

^c Loureiro.

STAM. in the Hermaphrodites, *Filaments* five, linear. *Anther* cylindric, longer than the floret, with decurrent bristles at the base.

In the *Females* none; but only the rudiments of two filaments.

PIST. *Germ* short. *Style* filiform. *Stigma* in the Hermaphrodites simple: in the *Females* two, bristle-shaped.

PER. none.

SEEDS somewhat oblong. *Down* feathered.

REC. naked.

ESSENTIAL CHARACTER.

Cal. cylindric, imbricate. *Corollets* of the ray oval-oblong; of the disk trifold. *Down* feathered. *Recept.* naked.

SPECIES.

1. Mutisia Clematis.

Linn. suppl. 373. *syft.* 769. *Gærtn. fruct.* 2. 454.

DESCRIPTION, &c.

This is a climbing plant, like *Clematis*, when young tomentose all over. Stem shrubby, striated, long, branched, twining. Leaves alternate, remote, pinnate; with the rachis ending in a tendril. Leaflets oblong-ovate, subsessile, alternate or opposite, seven, by age becoming smooth above, but very tomentose underneath. Stipules in pairs, ovate, many times smaller than the leaflets. Peduncles axillary, solitary, one-flowered, tomentose; with one or two small awl-shaped bractes. Flowers the size and form of a large Pink. Calyx tomentose. Corolla purple, the length of the ray of the calyx itself. It was found in New Granada by Mutis^d.

Jussieu remarks, that it has the calyx of *Scorzonera*; and, independent of the flower, the habit of *Vicia*. Joseph de Jussieu had given it the Peruvian name *Guariruma*; and it is allied on one side to *Chuquiraga*, and on the other to *Barnadesia*^e.

MYAGROIDES. See *Draba*.

MYAGRO SIMILIS. See *Erysimum* and *Myagrum*.]

MYAGRUM, (of *Pliny*, *Μυαγρος* of *Dioscorides*: from *μυα*, a fly, and *ωπρεω*, to catch.)

Lin. gen. n. 796. *Reich.* n. 860. *Schreb.* n. 1069.

Gærtn. t. 141. *Tournef. t.* 99. *Juss.* 241.

Class. 15. 1. *Tetradynamia* *Siliculosa*.

Nat. order of *Siliquosæ*, or *Cruciformes*. *Cruciferae*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* four-leaved: leaflets ovate-oblong, concave, gaping, coloured, deciduous.

COR. four-petalled, cruciform. *Petals* flat, roundish, blunt, with narrow claws.

STAM. *Filaments* six, the length of the calyx; of which four opposite are a little longer. *Antthers* simple.

PIST. *Germ* ovate. *Style* filiform, the length of the calyx. *Stigma* blunt.

PER. *Silicle* obcordate, compressed a little, entire, rigid, terminated at top by the rigid conic style, two-valved: some of the cells often empty.

SEEDS roundish.

Obs. *Myagrum* of *Tournefort* has a one-celled pericarp, two of the cells being empty at top, and only one at the base with a seed in it.

Alyssum Sp. of *Tourn.* has a two-celled pericarp, and few seeds.

ESSENTIAL CHARACTER.

Silicle terminated by a conical style, with a cell commonly one-seeded.

SPECIES.

1. Myagrum perenne. Perennial Gold of Pleasure.

Lin. spec. 893. *syft.* 583. *Reich.* 3. 207. *hort. upf.* 182. *Hall. helv.* n. 525. *Scop. carn.* n. 795.

Jacqu. austr. 5. t. 414. *Ger. prov.* 342. *hort. cliff.* 340. *Gort. gelr.* 404. (*Crambe*).

M. biarticulatum. *Crantz. fasc.* 1. ed. 2. p. 6.

Rapistrum perenne. *Allion. pedem.* 2. 941.

R. diffusum. *Crantz. crucif.* 105. n. 1.

R. monospermum. *Baub. pin.* 95. *prodr.* 37. *Mapp. alsat.* t. 266. *Raii hist.* 840.

Silicles two-jointed one-seeded, leaves outwardly sinuate toothletted.

^d *Linn. suppl.*

^e *Gen.* 178.

[2. Myagrum orientale. Oriental Gold of Pleasure.

Lin. spec. 893. *syft.* 583. *Reich.* 3. 207. *hort. upf.* 182.

Rapistrum orientale, folio raphani, capsulis rugosis. *Boerb. lugdb.* 2. p. 2.

Silicles grooved even, leaves oblong tooth-sinuate.]

3. Myagrum rugosum. Wrinkled Gold of Pleasure.

Lin. spec. 893. *Reich.* 3. 207. *hort. upf.* 183.

Rapistrum rugosum. *Allion. pedem.* n. 940. t. 78.

Silicles grooved hairy wrinkled, leaves oblong blunt toothed.

[4. Myagrum hispanicum. Spanish Gold of Pleasure.

Lin. spec. 893. *Reich.* 3. 207.

Sinapi hispan. minus, raphani folio. *Tournef. inst.* 227?

Silicles even somewhat swelling, leaves lyrate.

5. Myagrum austriacum. Austrian Gold of Pleasure.

Lin. syft. 584. *Jacqu. austr.* 2. t. 111.

Silicles roundish smooth, leaves oblong embracing, root creeping.]

6. Myagrum perfoliatum. Perfoliate Gold of Pleasure.

Lin. spec. 893. *syft.* 584. *Reich.* 3. 208. *hort. upf.* 182. *cliff.* 328. *Gærtn. fruct.* 2. 288. *Hall. helv.*

n. 524. *Villars dauph.* 3. 277. *Kniph. cent.* 10. n. 64.

M. monospermum latifolium. *Baub. pin.* 109. *prodr.*

52. t. 51. *Mor. hist.* 2. 267. f. 3. t. 21. f. penult.

M. hortense monospermum. *Best. cyst. æst.* 10. t. 8. f. 1.

M. monospermum. *Baub. hist.* *Raii hist.* 839.

Silicles obcordate subsessile, leaves embracing.

7. Myagrum fativum. Cultivated Gold of Pleasure.

Lin. spec. 894. *Reich.* 3. 208. *hort. cliff.* 328.

fl. suec. n. 564. *Hudf. angl.* 277. *Lightf. scot.*

336. *Neck. gallob.* 273. *Pollich pal.* n. 602.

Krock. files. n. 1008. *Villars dauph.* 3. 278. *Fl.*

dan. t. 1038. *Kniph. cent.* 11. n. 38. *Cavan.*

hisp. 47. n. 72. t. 66.

M. sylvestre. *Baub. pin.* 109. *Dill. giff.* 134. *Mor.*

hist. f. 3. t. 21. f. 2.—f. *Pseudo-myagrum.* *Park.*

theat. 868. 2.

M. Ger. 213. 2. *emac.* 273. 3. *Raii hist.* 820. *syn.*

302. *Petro. brit.* t. 48. f. 11.

Alyssum fativum. *Scop. carn.* n. 794. *Hall. helv.*

n. 489.—*segetum*, fol. auriculatis acutis. *Tourn. inst.*

217.

Camelina fativa. *Crantz. austr.* 18.

C. f. Myagrion. *Dod. pempt.* 532. *Lob. obs.* 111. 3.

ic. 1. 224. 2.

Moenchia fativa. *Wither. arr. ed.* 3. 562.

β. M. fativum. *Baub. pin.* 109. *Mor. f.* 3. t. 21.

f. 1. *Pollich pal.* β.

Camelina f. Myagrion. *Dod. pempt.* 532.

γ. M. foetidum. *Baub. pin.* 109. *Lind. alsat.* 49.

t. 1. *Raii hist.* 820. 3.

Alyssum. 489. *γ.* *Hall. helv.* *Pollich.* *γ.*

Silicles obovate peduncled many-seeded.

[8. Myagrum paniculatum. Panicked Gold of Pleasure.

Lin. spec. 894. *syft.* 584. *Reich.* 3. 209. *hort. cliff.*

328. *fl. suec.* n. 565. *Pollich pal.* n. 603. *Scop.*

carn. n. 798. *Fl. dan.* t. 204. *Gmel. fib.* 3. 249.

Hall. helv. n. 522. (*Rapistrum*). *Krock. files.*

n. 1010. *Villars dauph.* 3. 278.

Nasturtium paniculatum. *Crantz. austr.* 15.

Crambe paniculata. *Allion. pedem.* n. 935.

M. monospermum hirsutum, filiquis rotundis. *Loef. pruss.* 174. t. 56.

Myagro similis filiqua rotunda. *Baub. pin.* 109.

prodr. t. 52. *Mor. hist.* f. 3. t. 21. f. ult.

M. affinis capitulis rotundis. *Baub. hist.* *Raii hist.* 839.

Silicles lens-shaped orbiculate dotted-wrinkled.

9. Myagrum saxatile. Rock Gold of Pleasure.

Lin. spec. 894. *syft.* 584. *Reich.* 3. 209. *Jacqu.*

vind. 257. *austr.* t. 128. *Krock. files.* n. 1011.

Villars dauph. 3. 278.

Alyssum alpinum. *Scop. carn.* n. 793. *Hall. helv.* n.

490. *Segu. veron.* 1. 378.

Nasturtium saxatile. *Crantz. austr.* 14. t. 1. f. 2.

Thlaspi petræum myagroides. *Pona bald.* 336. t. 338.

T. 3 saxatile. *Cam. epit.* 338.

T. saxatile rotundifolium. *Baub. pin.* 106. *prodr.* 48.

T. alpinum minus, capitulo rotundo. *Baub. pin.* 107.

prodr. 48. n. 6. *Raii exter.* 297.

T. alterum

T. alterum majus. Baub. pin. 106. n. 6.—capitulis rotundis. prodr. t. 49.

Silicles lens-shaped obovate smooth, leaves petioled oblong serrate rugged, stem panicled.

10. *Myagrum ægyptium.* Egyptian Gold of Pleasure.

Lin. spec. 894. *fl.* 584. *Reich.* 3. 210.

Silicles angular, leaves three-parted.

DESCRIPTIONS, &c.

Under this genus are assembled by Linneus—

1. *Myagrum* T. with a turbinate compressed three-celled silicle, not opening, the two upper cells empty, the lower one-seeded. 2. *Camelina* Dod. with a pear-shaped, two-celled, two-valved, many-seeded silicle. *Moenchia* With. *Alyssoides* T. and *Vesicaria* T. now added to *Alyssum*, are perhaps congeners with this. 3. *Rapistrum* T. with a silicle either oblong and two-jointed, or spherical acuminate two-celled, one joint or cell empty: the other one-seeded scarcely opening. Lamarck adds to these *Anastatica syriaca*, and most of the species of *Bunias*, with a spherical or four-cornered fruit, and some *Sisymbrium*s with a short pod (*Radicula* of Haller) two-celled and many-seeded. He refers *Myagrum saxatile* to *Cochlearia*, on account of its ovate, two-celled, many-seeded fruit. In such a confusion of species it is scarcely possible to define the genus, and it might perhaps be better to divide them, and restore some of the old genera^a. These reformations may be made without end in orders so natural as this, wherein all the species may be considered as forming one great genus, in which the subordinate divisions are generally arbitrary.]

1. Mr. Miller, though he gives this plant Linneus's epithet of *perenne*, describes it as an annual plant; the lower leaves large jagged and hairy; the stalks branching out from the bottom; the leaves about four inches long, and two broad, hairy and unequally jagged; the stalks terminated by very long loose spikes of yellow flowers, succeeded by short pods with two joints, each including one roundish seed.

[Linneus remarks, that the lower joint of the silicle is strict and abortive; the upper globular, striated, one-seeded.

Scopoli describes the stem as grooved, branched, firm and somewhat villose; the leaves pinnatifid, the pinnae toothed here and there, the terminating one very large and roundish; the upper leaves lanceolate, toothed: the flowers in long spikes; petals yellow, twice as long as the calyx: the fruiting-peduncles more remote, pressed close to the stem: the first joint of the silicle more slender and less villose; the upper one ovate, and striated longitudinally: there is an evident partition, but it is loose at the sides, or at least does not cohere every where with the inner surface of the valves.

M. perenne of Miller, Scopoli, Gerard, &c. is probably different from that of Linneus. Miller says it is annual, and Gerard that it is biennial. Villars mentions a perennial sort which he has seen cultivated, with an enormous root, of a lower stature, and a smaller smooth fruit.

Native of Germany. Cultivated in 1739 by Mr. Miller^b, if this be his plant.

2. This is an annual plant. The silicles have two joints, with three ridges, and a style the length of the silicle. Native of the Levant^c.]

3. This also is an annual plant, the lower leaves of which are five or six inches long; they are hairy and succulent, their base is eared, and they end in acute points. The stalks are a foot and half high, brittle and hairy, branching out toward the top, and terminated by short loose spikes of small pale flowers; which are succeeded by small rough roundish capsules, compressed at the top.

[Villars describes his *Myagrum rugosum*, which he makes synonymous with *M. perenne* of Scopoli and Miller, thus: Stem a foot high, a little villose, very much branched at the base. Leaves a little rough, sinuated, lyrate, or deeply cut like those of *Sinapis arvensis*: the upper ones are narrower and almost entire. Calyx green, shorter by half than the petals;

which are pale yellow, wide, rather large: there are two green pointed glands between the two longer stamens and the calyx. Silicle short, seeming to be two-celled, but the lower part is smaller, square, one-celled, often barren: the upper part is channelled and villose, terminated by the style, which is longer than the silicle. Seeds a little lengthened out. It is biennial. Native of the South of Europe.

Allione makes his *Rapistrum rugosum* synonymous with *Myagrum rugosum* of Linneus and Villars, and describes it thus. Stems round green hispid, from half a yard to three quarters of a yard in height, branching from the very bottom, the branches subdivided, each horizontal or reclining, flowering to a great length. Root-leaves on a semicylindric petiole, pinnatifid, pinnae triangular, gradually larger, the extreme one largest, the first and second pinnae scarcely toothed; they are rough with stiffish hairs, succulent and of an acid flavour. Leaves on the stem only one at the base of each branch; the lower ones have one or two pairs of pinnae, the next one only, the rest are almost entire and linear. Flowers in very long racemes. Calyx spreading, of a very pale yellowish green colour, the leaflets concave and linear. Petals ovate, entire or slightly emarginate, sulphur-coloured. Stamens a little higher than the stigma. Filaments tinged with purple. Anthers grooved, linear. Germ a little hirsute. Style longer than the calyx. Stigma headed, bifid. Silicle ovate, not opening, hirsute, with wrinkled interrupted ribs on it, one-celled. Seed one ovate a little compressed shining; and sometimes there is another little joint.

4. Stem rugged with scattered reflex hairs. Racemes rod-like, long. Leaves lyrate, toothed, petioled, oblong. Silicles cylindric, even, not grooved, wrinkled or striated, consisting of an oblong, pedicelled, cylindric, barren body, upon which an ovate silicle is placed with a narrower neck; the lower joint is two-celled and empty, the upper has one seed in it. Corolla yellow. It is a biennial plant, native of Spain^d.

5. The whole plant is smooth: the stems subangular; herbaceous, erect, branchy, leafy, and about a foot or a cubit high. Leaves oblong, obtuse or a little acute, the radical ones attenuated at the base and notched: those on the stem sessile, embracing the stem with their produced bases, and of a sagittate form, with serrated edges. Flowers yellow, on corymbose terminal racemes stretching gradually to two or three inches. Germ globose and smooth. Style thick and short, ending in a headed obtuse stigma. Silicle globose, small, crowned by the obtuse style, obscurely foot-stalked, smooth, equal, two-celled, with about five subovate seeds on each side, fixed to the dissepiment. This species grows in clayey ground, and flowers in June. Native of Austria^e.]

6. This has a smooth branching stalk upwards of two feet high. The lower leaves are five or six inches long, smooth, succulent, and a little indented; the upper leaves almost embrace the stalks with their base. The flowers are produced in long loose spikes, are yellow and sessile.

[Villars describes the plant as about a foot in height, with straight stems and very spreading branches; the leaves smooth, with a tinge of ash-colour on them; the lower ones sinuated or waved, the upper ones entire. The whole plant is smooth. The flowers small. The silicle obcordate, three-celled; the two upper cells, which are lateral, are empty, and the lower one, which answers to the axis, is filled with a single seed.]

Mr. Miller says, the pod is heart-shaped and compressed, divided by a longitudinal partition into two cells, each containing one roundish seed. [The accurate Gærtner describes it as spongy-suberous, oblong, terminated by the subulate style; the upper part twinglobular, two-celled, barren; the lower cylindric or obconic, one-celled, fertile; both parts are valveless and never open. Seed ovate-oblong, with a streak along the middle on each side, rust-coloured, fastened by a short umbilical chord descending from the top of

^a Jussieu.

^b Hort. kew.

^c Linn.

^d Linn.

^e Jacquin.

the lower cell.—It differs from *Crambe* in having flat cotyledons or seed-lobes, not concave-conduplicate, as in that genus.

It is an annual plant, native of the South of France and Switzerland. Mr. Miller adds Italy.—Cultivated in 1658, in the botanic garden at Oxford. It flowers in June and July^f.]

7. This is an annual plant, with an upright stalk about a foot and half high, sending out two or four side branches towards the top, which grow erect; they are smooth and have a fungous pith: the lower leaves are from three to four inches long, of a pale or yellowish green, and eared at the base; those upon the stalks diminish in size all the way up, are entire and almost embrace the stalk with their base. The flowers grow in loose spikes at the end of the branches, standing upon footstalks an inch long. Petals small, yellowish. Silicles oval, bordered, crowned with the style, two-celled; the cells filled with red seeds.

[Lower part of the stem round, upper somewhat angular, slightly hairy. Leaves cloathing the whole stem, alternate, lanceolate, arrow-shaped at the base, half-embracing, slightly toothed, hairy. Flowers yellow. Silicles on long fruitstalks, terminated by a long style: the partition extends beyond, and forms a strong ridge round the silicle^g.—Linneus remarks, that the capsule or silicle bellies out on each side, but is usually, in the wild plant, marked with a cavity pressed inwards, which cavity disappears in the cultivated plant^h.

Villars observes, that the stem has only one or two branches, and is sometimes quite simple. Pollich, that the flowers are almost three lines in diameter; the petals blunt but quite entire, pale yellow, with claws two lines and a half long; two glands or nectaries at the shorter filaments; germ smooth, style yellowish green, stigma yellowish: silicle wider at top, terminated by the style of the same length with itself, and having five, six or seven seeds in each cell.

According to Cavanilles, the whole plant is very villose; the leaves very soft; the root-leaves oblong, blunt, subspatulate; the stem-leaves sessile, alternate, half-embracing, having blunt ears; the upper ones very sharp and much ciliated. Flowers in terminating racemes; each flower on a smooth peduncle, three times as long as the fruit.

It is cultivated in Germany for the sake of the expressed oil of the seeds, which is there used for medicinal, culinary and oeconomic purposes. The seeds are a favourite food with geese; horses, kine, sheep and goats eat itⁱ.

Native of Germany and the southern countries of Europe, in corn fields, and especially flax, with the seed of which it has been introduced into the more northern parts, as Sweden, Denmark and Britain. With us it has been found near Bridport and Lyme in Dorsetshire; Heydon in Norfolk.] Mr. Miller found it growing in the corn in Easthamsted Park, the seat of William Trumbull, Esq.

Following Tournefort, he makes two species of this, under the names of *M. fativum* (n. 1.) and *Alyssum* (n. 2.). The latter, he says, differs from the former in having a taller stalk; the leaves are much longer, narrower, and regularly indented on their edges, ending in obtuse points. The flowers are larger, but of the same form and colour. The capsules are much larger, and shaped like a heart.

[3. Has the leaves smooth and more green.

γ. Is a remarkable variety, every where smooth; the lower leaves are lacinated and pinnatifid; the rest are toothletted. The smell is not very fetid. Silicle many-seeded^k.

8. Root small, annual, fusiform, white within and without, four inches long. Stem erect, two feet high and more, somewhat angular and rugged, having one or two alternate branches at the upper part; both terminated by a loose longish raceme, with the flowers on round peduncles, three or four lines in length. Leaves alternate, sagittate or rather eared, embracing,

hirsute on both sides, the lower four inches long, and an inch wide. Corolla small, yellow; petals wider at top and blunt, a little more than a line in length. Silicle very small, orbicular, rugged, obscurely wrinkled, crowned with the style, containing one seed^l.

Native of Europe. Introduced in 1787, by Mr. Zier. It flowers in July and August^m.

9. Root perennial, long, brown. Root-leaves many, spread out in a ring, oblanceolate, (orbiculate, or oblong) gradually attenuated into the petiole, blunt, unequally obscurely and thinly toothed, thickish, slightly rough, less than an inch in length, deep green. Stem slender, smooth, half a foot or a span in height, upright, round, hard, simple, having a few scattered sub-linear leaves on it, broadish at the tip; and terminated by a corymbed many-flowered raceme, either simple, or compounded of a few axillary filiform racemes. Calyx yellowish white. Petals white, spreading very much, twice as long as the calyx, roundish. Style short. Silicles almost globularⁿ. The stamens are differently described: according to Jacquin, the longer filaments are contiguous and forked at top, the inner division being truncated, the outer arched outwards; the shorter stamens have a gland on each side. In Krock's specimen the filaments were simple. Villars remarks, that the lateral filaments are elbowed outwards, and as it were broken at a right angle, without being forked.

There seem to be several varieties of this species. Linneus mentions three plants which were sent him, one by Allione, and two by Seguiet, on which he does not positively determine whether they are distinct species, or only varieties of this.

The first from Allione has the root-leaves spatulate, rugged, bluntish, quite entire; the stem-leaves tongue-shaped and smoothish; the stem simple.

The second from Seguiet has the root-leaves as in the first, and the stem-leaves tongue-shaped, but sagittate at the base; the stem has a few racemes.

The third, also from Seguiet, has the root-leaves lanceolate, somewhat toothed, rugged; the stem-leaves lanceolate, somewhat toothed, subpetioled; the stem with a few racemes.

Villars mentions two varieties; one drawn by Plumier at the Grande Chartreuse; *Alyssum alpinum* of Scopoli, n. 793. with the lower leaves roundish and hirsute; they are more numerous, and it has several on the stems: another, with the root-leaves sessile, lanceolate, toothed, thick, gray from the quantity of simple hairs that cover it, and having some resemblance to *Draba alpina* of Linneus.

Native of the mountains of France, Italy, Austria and Switzerland. Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in June and July^o.

10. Stem divaricated, with rod-like racemes. Leaves petioled, three-parted or five-parted, toothed. Capsules or silicles have two four-cornered joints. Flowers yellow. Style very short. It has the appearance of *Bunias Cakile*.—Found in Egypt by Hasselquist^p.]

PROPAGATION AND CULTURE.

If the seeds of these plants are permitted to scatter in the autumn, the plants will rise without any care, and only require to be thinned and kept clean. These autumnal plants will always ripen their seeds, whereas those which are sown in the spring sometimes fail.

[MYAGRUM. See *Anastatica*, *Crambe*, *Erysimum*, *Saponaria*.

MYGINDA. (So named by Jacquin, in honour of the most noble Francis a Mygind, Aulic Counsellor, well skilled in Botany, and protector of the Botanic Garden at Vienna.)

Lin. gen. n. 178. Reich. n. 190. Schreb. n. 238.

Jacqu. amer. 24. Juss. 378.

Class. 4. 3. Tetrandria Tetragynia.

Nat. order of *Rhamni*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-parted, very small, permanent.

COR. Petals four, roundish, flat, spreading very much.

^f Hort. kew.

^g Woodw. M.S.

^h Fl. suec.

ⁱ Linn. suec. and With.

^k Pollich.

^l Krock and Pollich.

^m Hort. kew.

ⁿ Jacquin.

^o Hort. kew.

^p Linn.

M Y G

STAM. *Filaments* four, awl-shaped, erect, shorter than the corolla. *Antbers* roundish.
 PIST. *Germ* roundish. *Styles* four, erect, short. *Stigmas* acute.
 PER. *Drupe* globular.
 SEED. *Nut* ovate, acute.

OBS. *Style undivided* in *M. Rhacoma*: none in *M. latifolia*.

ESSENTIAL CHARACTER.

Cal. four-parted. Pet. four. Drupe globular.

SPECIES.

1. *Myginda uragoga*.
Lin. spec. 1661. *syft.* 170. *Reich.* 1. 361. *Jacqu.* amer. 24. t. 16. *piet.* 18. t. 22. *Swartz prodr.* 39.
Leaves subcordate acuminate subserrate pubescent.
2. *Myginda Rhacoma*.
Swartz prodr. 39. *descr.* 340.
Rhacoma Crossopetalum. *Lin. spec.* 169. *syft.* 157.
Reich. 1. 326. *amoen.* 5. 393. *Swartz obs.* 48.
Crossopetalum. *Brown. jam.* 145. t. 17. f. 1.
Leaves lanceolate-ovate obtuse crenate, flowers monogynous, style four-cleft.
3. *Myginda latifolia*.
Swartz prodr. 39. *descr.* 342. *Vahl symb.* 2. 32.
Leaves elliptic crenulate subcoriaceous, stigmas two to four sessile.

DESCRIPTIONS, &c.

1. This is an upright shrub, divided into few branches, on sandy shores three feet high, in woods eight feet. Root thick, knobbed, irregular; the bark brown without, orange within; the wood solid, whitish, very bitter. Leaves ovate or lanceolate, acute, very finely ferrate, on very short red petioles, opposite but sometimes alternate. Peduncles filiform, axillary, opposite, bifid; each division trifid and three-flowered; the middle flower opening long before the side ones. Flowers small, of a dark shining red. Fruit red, soft, the size of peas. The Spaniards call it *Yerva de maravedi*.

At Carthage they use a decoction or infusion of the root as a powerful diuretic: the leaves have the same quality in a much smaller degree. It is abundant about Carthage in New Spain, and in the island of St. Martin, in places not far from the sea.

2. This is an upright branching shrub, from two to three feet in height, with an ash-coloured bark. Branches subdivided, even, strict. Leaves small, half an inch in length, opposite, stiffish, scarcely nerved, smooth, somewhat shining, on very short petioles. Flowers in small racemes, very minute, red. Racemelets or peduncles two or three-flowered, axillary, shorter than the leaves. Calyx four-cleft, very shortly tubular, coloured red at bottom. Corolla deeply four-parted subrotate, whitish red; segments ovate, minute, fringed at the edge. Filaments from the base of the corolla between the segments of it, bent in above the tube. Anthers simple, very minute. Germ ovate. Style awl-shaped, the length of the tube of the corolla. Stigma four-cleft. Drupe roundish, the size of a small red currant, scarlet, shining; containing a spherical one-seeded nut.

Native of Jamaica, on the western sandy coasts; flowering in summer. In habit it resembles the preceding, but has smaller, ovate leaves, and an undivided style.

3. This is a branching shrub, three or four feet in height. Branches scattered, four-cornered, smooth. Leaves opposite, oblong, blunt, remotely notched, veined, very smooth, rigid, on short petioles. Peduncles shorter than the leaves, axillary, few-flowered: pedicels one-flowered. Flowers very small, whitish. Corolla with a very short tube: border spreading, four-parted; parts oblong, blunt, flat, reflex, entire. Filaments in the divisions of the corolla, the length of the border. Anthers roundish. Germ globular. Style none. Stigmas sessile, globular. Drupe globular; containing an oblong, bony, wrinkled nut.

The branches are round at bottom and ash-coloured; the younger ones green, opposite, four-cornered. Leaves sessile, opposite and alternate, an inch long,

1 Jacquin.

2 Swartz.

M Y O

often roundish, with simple veins, smooth on both sides. Peduncles solitary, filiform, trifid: pedicels somewhat branched. Fruit obovate, smooth, nearly the size of Pepper, hanging down.

Native of the West Indies.

MYOPORUM. (*Μυοπὸρος*, *Pori obstructi, obstructed pores.* The plant appearing as if scattered over with points or pores filled up with a pellucid substance.)

Soland. Forst. prodr. 44. *Lin. gen. Schreb. n.* 1053.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personata*.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-parted: segments ovate, acute, erect, permanent.

COR. one-petalled, bell-shaped: border spreading, almost equal, five-parted.

STAM. *Filaments* four, two shorter. *Antbers*

PIST. *Germ* oblong, compressed. *Style*

PER. *Berry* one-celled.

SEEDS one or two, two-celled.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. bell-shaped, with a spreading almost equal five-parted border. Berry one or two-seeded. Seeds two-celled.

SPECIES.

1. *Myoporum laetum*.
Forst. prodr. n. 238.
Leaves oblong, subserrate at the tip, even, smooth, shining, corollas hirsute.
2. *Myoporum pubescens*.
Forst. prodr. n. 239.
Leaves oblong-elliptic serrate pubescent.
3. *Myoporum crassifolium*.
Forst. prodr. n. 240.
Leaves oblong subserrate fleshy.
4. *Myoporum tenuifolium*.
Forst. prodr. n. 241.
Leaves lanceolate acuminate quite entire, corollas smooth and even.

These plants are natives of the islands of the South Sea. The first and second of New Zealand; the third of Botany island; and the fourth of New Caledonia.]

MYOSOTIS, (of *Pliny*, *Μυος ὠτίον* of *Dioscorides*. *Mouſe-Ear*.)

Lin. gen. n. 180. *Reich. n.* 192. *Schreb. n.* 240.

Gartn. t. 68. *Dill. gen.* 3. *Juss.* 131.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*. *Borraginea*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* half-five-cleft, oblong, erect, acute, permanent.

COR. one-petalled, salver-shaped: tube cylindric, short: border half-five-cleft, flat; segments emarginate, blunt: opening closed with five convex, prominent, converging scalelets.

STAM. *Filaments* five in the neck of the tube, very short. *Antbers* very small, covered.

PIST. *Germ*s four. *Style* filiform, the length of the tube of the corolla. *Stigma* blunt.

PER. none. *Calyx* larger, erect, cherishing the seeds in its bosom.

SEEDS four, ovate, acuminate, smooth.

OBS. *Some species have seeds with even surfaces, others with hooked prickles.*

ESSENTIAL CHARACTER.

Cor. salver-shaped, five-cleft, emarginate: the opening closed with arches.

SPECIES.

- [1. *Myosotis scorpioides*. *Mouſe ear Scorpion-grass*.
Lin. spec. 188. *syft.* 184. *Reich.* 1. 383. *vir. cliff.* 149. *fl. suec. n.* 157. *Hudf. angl.* 78. *Curt. lond.* 3. 13. 165. *Lightf. scot.* 132. *Fl. dan.* t. 583. *Pollich pal. n.* 181. *Neck. gallob.* 97. *Scop. carn. n.* 185. *Leers herb. n.* 138. *Gmel. fib.* 4. 73. *Krock. flesf. n.* 269. *Villars dauph.* 2. 458. *Kniph. cent.* 11. n. 80.
α. M. foliis hirsutis. *Lin. hort. cliff.* 45. *Hall. belv. n.* 590. (*Scorpiurus*).

• Vahl.

M. arvensis.

- M. arvensis. *Lin. spec.* 188. *Reich.* 1. 383. *Huds. angl.* 78. *Wither. arr. ed.* 3. 225. *Krock. files.* 276. *Allion. pedem.* n. 190.
- M. scorpioides. *Relb. cant.* n. 145.—hirsuta.. *Ger. emac.* 337. 4. *Park. theat.* 691. 7. *Raii syn.* 229. *hist.* 504.
- M. hirsuta arvensis major. *Dill. giff.* 53. *Lin. lapp.* 74.
- Echium scorpioides arvense. *Baub. pin.* 254.
- Auricula muris cærulea. *Tabern.* 197.
- Scorpioides folisequum flore minore. *Baub. hist.* 3. 589. 2.
- Sc. tertium. *Dod. pempt.* 72.
- Scorpiurus annuus arvensis hirsutus cæruleus. *Mor. hist. f.* 11. *t.* 31. *f.* 1.
2. M. scorp. latifolia hirsuta. *Merr. pin. Raii syn.* 229. *t.* 9. *f.* 2.
3. M. scorp. hirta minor. *Merr. pin. Raii syn.* 229. M. scorp. minor, flosculis luteis. *Park. theat.* 692. Scorpiurus arv. hirs. flosc. minoribus luteolis. *Mor. hist.* 451. 2.
- Echium scorpioides minus flosculis luteis. *Baub. pin.* 254. *Raii hist.* 504.
- Hairy Mouse-ear Scorpion-grass.
- β. M. foliis glabris. *Lin. hort. cliff.* 46. *Kniph. cent.* 11. n. 81. *Knorr. del. hort.* 1. *t.* H. 1.
- M. palustris. *Lin. spec.* 188. *Reich.* 1. 383. *Huds. angl.* 78. *Wither. arr. ed.* 3. 225. *Relb. cant.* n. 146. *Krock. files.* 276. *Allion. pedem.* n. 188.
- M. perennis. *Moench. bass.* n. 154.
- M. glabra pratensis. *Dill. giff.* 67. *Linn. lapp.* n. 75.
- M. scorpioides palustris. *Ger. emac.* 337. 3. *Raii hist.* 504. *syn.* 229.
- M. scorpioides repens. *Park. theat.* 691. 8.
- Echium scorpioides palustre. *Baub. pin.* 254.
- Scorpioides folisequum aliud flore majore cæruleo & albo. *Baub. hist.* 3. 589.
- Scorpiurus radice longa fibrosa perenni. *Hall. helv.* n. 591.
- S. palustris perennis viridioribus foliis. *Mor. hist. f.* 11. *t.* 31. *f.* 4.
- Marsh Mouse-ear Scorpion-grass.
- Seeds smooth and even, tips of the leaves callous.
2. Myosotis fruticosa. Shrubby Scorpion-grass. *Lin. syst.* 184. *Reich.* 1. 383. *mant.* 201.
- Seeds smooth and even, stem shrubby smooth and even.]
3. Myosotis virginiana. Virginian Scorpion-grass. *Lin. spec.* 189. *syst.* 185. *Reich.* 1. 384. *Gron. virg.* 19.
- Cynoglossum virg. floribus & seminibus minoribus. *Mor. hist.* 3. 449. *f.* 11. *t.* 30. *f.* 9.
- Seeds with hooked prickles, leaves ovate-oblong, branches divaricating.
4. Myosotis Lappula. Prickly-seeded Scorpion-grass. *Lin. spec.* 189. *syst.* 185. *Reich.* 1. 384. *fl. suec.* n. 158. *Gærtn. fruct.* 1. 328. *Pellich pal.* n. 182. *Gmel. it.* 1. 117. *Moench. bass.* n. 155. *Fl. dan.* t. 692. *Ger. prov.* 298. 3. *Villars dauph.* 2. 460. *Krock. files.* n. 270. *Kniph. cent.* 11. n. 79. *Allion. pedem.* n. 191.
- Lithospermum seminibus echinatis. *Lin. hort. cliff.* 46.
- Cynoglossum Lappula. *Scop. carn.* n. 192. *Hall. helv.* n. 589. *Guett. stamp.* 1. 92.
- C. minus. *Baub. pin.* 257. *Baub. hist.* 3. 600. *Raii hist.* 491.—flore cæruleo. *Park. theat.* 514. 10.
- Cynoglossa minor montana ferotina altera. *Col. ecphr.* 179. *t.* 180.
- Buglossum angustifolium semine echinato. *Tournef. inst.* 134. *Garid.* 68.
- Seeds with hooked prickles, leaves lanceolate hairy.
- [5. Myosotis spinocarpos. Thorny-seeded Scorpion-grass. *Vahl symb.* 2. 32.
- Anchusa spinocarpos. *Forst. descr.* 41.
- Seeds muricate-spiny, racemes leafy with the flowers remote; leaves linear hairy.]
6. Myosotis apula. Small Scorpion-grass. *Lin. spec.* 189. *syst.* 185. *Reich.* 1. 384. *Allion. pedem.* n. 192. *Thunb. jap.* 81. *Pluk. phyt. t.* 16. *f.* 5. *Sauv. monsp.* 62. (Lithospermum).
- Anchusa lutea. *Cavan. hisp.* 50. n. 75. *t.* 69. *f.* 1.
- A. lutea minima. *Lob. ic.* 312.

- Buglossum luteum annuum minimum. *Tournef. inst.* 134. *Quer. hisp.* 3. 313.
- Echium luteum minimum. *Baub. pin.* 254. *Raii hist.* 500.
- Echioides lutea minima. *Park. theat.* 414. 8.—apula campestris. *Col. ecphr.* 1. 184. *t.* 185.
- Seeds naked, leaves hispid, racemes leafy.
- [7. Myosotis spatulata. Spatula-leaved Scorpion-grass. *Forst. prodr.* n. 62.
- Seeds smooth and even, leaves spatulate hispid, peduncles axillary solitary one flowered.

DESCRIPTIONS, &c.

1. Hairy Mouse-ear Scorpion-grass has an annual fibrous root. Stems several, procumbent ascending or erect, according to circumstances, a long span or a foot in height, or even somewhat more in moist situations or strong land, angular, villose, branching towards the top for flowering: branches axillary, alternate. Leaves alternate, quite entire, bent back a little at the edge, having no apparent veins, but a very strong rib along the back, which makes a shallow channel along the upper surface, of a light green colour, villose on both sides and along the edge, and somewhat rugged: the lower leaves are elliptic or oblong, blunt, running down into the petiole, three inches long, and sometimes more, measured from the stem; the middle and upper ones are lanceolate, sharpish, sessile or half embracing, from an inch and half to two inches in length; both are half an inch or five lines in width. Flowers in racemes, whilst young bending in at the top, whence the names of *Scorpioides*, *Scorpiurus* and *Scorpion-grass*, from the similitude to a Scorpion's tail; as the flowering advances, lengthening out very considerably and divaricating; they are alternate, in a double row, and all grow one way, each on its proper pedicel. Calyx villose, deeply five-cleft, closing at top as the seeds ripen. Corolla red before it opens, but when open of a fine blue, with a yellow eye, not more than a tenth or a twelfth of an inch in diameter.

The above description was made on the 2d of June, 1798, from plants growing wild in a garden, in hedges, and by a brook.

This plant varies much according to the soil and situation in which it grows. On barren pastures, heaths and walls, the plant and flowers are both much smaller. I have seen it scarcely more than an inch in height, bearing one minute flower only.

Merret mentions two varieties: one with wider leaves, very hairy, and larger flowers, appearing earlier than the common sort; this grows in woods only, and owes its superior size probably to its damp shaded situation. It was observed by Mr. James Sherard on the west of Charlton-wood, and between Redgwell and Batham-end (or Bathon-inn) in Essex by Mr. Dale, and is figured in Dillenius's edition of Ray's synopsis: the other small, rough-haired, with yellow flowers, appearing in April, and occurring in very dry sandy pastures; in such a soil the blue border of the corolla is very small, and sometimes is scarcely expanded, so that it appears to be wholly yellow.

β. Haller, who separates the *palustris* from the preceding, says that the root is larger, long, black and perennial, the stem higher, the leaves larger, the flower much larger and of a paler colour. He makes Merret's first variety to be a variety of this: and this is what Curtis seems to have figured for the *palustris*, for the plant in his figure is very hairy, which the true *palustris* is not. According to him, the root runs out to a great length through the water, and sends down fibres from the joints. Stalk creeping at bottom, afterwards upright, from one to two feet high, round, solid, branched, smooth, but often hairy. Leaves alternate, lanceolate, sessile, slightly decurrent, smooth or hirsute, the edge often rolled back. Racemes long, dichotomous, divaricating, the tops rolled in. Flowers peduncled and growing all one way: peduncles alternate, upright. They are much larger than those of the other, are remarkable for their beauty and delicacy, somewhat resemble blue enamel, and are a very pretty ornament for the edges of ponds.

Leers

Leers thus distinguishes them: *arvensis* has a fibrous, annual root; stem branched; leaves hirsute; calyx deeply five-cleft, closing as the seed ripens: sheep do not eat the plant: *palustris* has a creeping perennial root; stem somewhat branched; leaves smooth; calyx a little open even when the seed is ripe: it is noxious and even deadly to sheep.—This notion of *Myosotis palustris* being deadly to sheep is derived from Linnæus, and I very much suspect that it is erroneous, it has this bad character in common with many other aquatic plants (*Drosera*, *Pinguicula*, *Hydrocotyle*, &c), which I believe sheep never eat.

Withering says that *M. arvensis* is a smaller plant than *M. palustris*, and the blossoms much smaller; the latter observation is generally just, but the rough Scorpion-grass is frequently as large a plant as the smooth, when it grows in moist shady places.

It appears to me that *M. arvensis* is villose or very hairy with smaller flowers in all soils and situations: *M. palustris* is smooth with larger, paler flowers, most exquisitely elegant. It seems to flower later; for whilst I am writing this article at the beginning of June, *M. arvensis* is in full flower, and some of it even going off, and I cannot find a single specimen of *M. palustris* in flower, to compare with it.

I first discovered *M. palustris* in flower on the 11th of June. The root is truly repent. The whole plant is of a much paler green. The stem is somewhat hairy, but scarce visibly so except towards the top. The leaves are all lanceolate, none of them so broad at the base as in the *arvensis*, and I cannot discover any hairs on them. The corolla is four times as large as the largest of *arvensis*, being more than three eighths of an inch in diameter, of an elegant pale blue like smalt, with a large deep yellow eye.

Allione and Villars have another variety, which they have adopted as a species from Haller, and he from Scheuchzer and Seguer, and have named *M. nana*. It is a very low plant, not even three inches in height, with a very thick tuft of leaves. Leaves roundish, like those of *Thymus Serpyllum*, subhirsute. Spike small, few-flowered, seldom many more than three; but a single flower occupies the whole, being large and of a very bright blue colour. Calyx bearded with a long silky pile^a.

It forms solid tufts on the highest precipices. Leaves small, blunt, lanuginous. Stems sometimes only a line, and never more than two inches in height. It is perennial and common on the Alps^b. Villars insists that this is a distinct species; but situation changes this plant so much, that I suspect it to be no more than a variety.

2. Stem a foot high, woody, perennial, even. Branches many, flowering at the top. Leaves alternate, linear, almost even, with a few hairs pressed close. Spikes terminating, with the flowers pointing one way, not peduncled. Flowers and fruits minute. Native of the Cape of Good Hope^c.

3. This is an annual plant. Leaves large. Seeds naked on the inside, angular, erect, fixed at the base as in the following species. Fruit nodding.—Native of Virginia^d. Cultivated by Mr. Miller in 1768.

4. This also is annual. Stem from nine or ten inches to eighteen inches in height, erect, round, somewhat rugged. Branches alternate. Leaves sessile, somewhat rugged, very narrow, quite entire, bluntish. Flowers very small, not from the axils, but on the side opposite to the leaf, at the branches, on short peduncles. Corolla bright blue. Calyx open when the seed is ripe^e. Seeds small, coriaceous, ovate-acuminate, shagreened all over with bony pointed dots, on one side convex and muricated at the sides with a double row of hooked prickles, angular on the other^f.

Gærtner calls these fruits nuts, the seed being covered with a shell. With respect to this genus he remarks, that it is too artificial, and differs not, in any essential point, from *Cynoglossum*. This remark, might with equal justice be made on many other genera in classes

strictly natural. Villars also observes, that this little plant has all the port or air of a *Cynoglossum*.

Native of many parts of Europe: Sweden, Denmark, Germany, France, Switzerland, Italy.—It was cultivated in 1683, by Mr. James Sutherland, and flowers from April to August^g.

5. Stems woody at the base, diffused, dichotomously branched at top, closely hairy, ash-coloured, as is the whole plant. Leaves sessile, bluntish, spreading a little at the end. Peduncles on the branchlets, axillary, solitary, remote, short: two leaflets under each calyx. Flowers small, white. Fruit pyramidal, muricated all over, spiny-angular at the base with larger tubercles. Seeds or nuts shining, compressed at the sides, acuminate, keeled; keel toothed^h.

6. Root reddish, annual. Stems simple or branched, a span high. Leaves ovate, soft, ciliate, villose, sessile, the lower ones embracing. Flowers in terminating racemes, recurved at the end. Calyx whitish with pubescence, swelling at the base, deeply five-parted; segments converging, acute. Corolla deep sulphur-coloured, funnel-form: tube longer than the calyx, prismatic at the base: border spreading very much, five-parted; segments orbiculate, quite entire; scalelets roundish. Seeds ovateⁱ.

On account of the situation of the stamens, and the integrity of the petals, Cavanilles removes this species into the genus *Anchusa*, where Lobel had placed it before. He suggests also that *Myosotis* and *Anchusa* might very well constitute one genus. To this suggestion may be applied the remark made above, under the fourth species.

Native of the South of Europe: France, Spain, Italy: also of Japan, where it flowers in April: about Madrid it flowers in March: with us in June and July. Cultivated by Mr. Miller in 1768^k.]

7. Native of New Zealand^l.

PROPAGATION AND CULTURE.

Sow the seeds in autumn, upon an open bed or border of light earth. In the spring thin the plants where they are too close, and keep them clean. Or if the seeds be permitted to scatter, the plants will rise without farther trouble.

[*Myosotis*. See *Cerastium* and *Stellaria*.]

MYOSOTIS. (*Μῡος ὤψα*, Mouse-tail.)

[*Lin. gen. n.* 394. *Reich. n.* 426. *Schreb. n.* 538.

Gärtn. t. 74. *Juss.* 233. *Myosuros Dill. gen.* 4.

Class. 5. 7. Pentandria Polygynia.

Nat. order of Multifloræ. Ranunculaceæ Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets half-lanceolate, obtuse, reflex, annexed above the base, coloured, deciduous.

COR. Petals five, shorter than the calyx, very minute, tubular at the base, opening obliquely inwards: (with a nectariferous pore at the claws. G)

STAM. Filaments five or more (five to twelve. G.), the length of the calyx. Anthers oblong, erect.

PIST. Germs numerous, placed on the receptacle in a conic-oblong form. Styles none. Stigmas simple.

PER. none. Receptacle very long, style-shaped, covered with the seeds disposed imbricately.

SEEDS very numerous, oblong, acuminate.

Obs. The number of stamens varies much. It bears a near affinity to *Ranunculus*. What are called petals here, in Syst. veg. are said to be awl-shaped petal-like nectaries. The ridge on the seed seems to be the style adhering longitudinally to the germ.

ESSENTIAL CHARACTER.

Cal. five-leaved, growing together at the base. *Pet.* five, (or *Nect.* five, awl-shaped, resembling petals, and) having a melliferous pore at the claw. *Seeds* numerous (five to twelve.)

SPECIES.

1. *Myosurus minimus.* Mouse-tail.

Lin. spec. 407. *syst.* 308. *Reich. l.* 778. *hort. cliff.*

117. *fl. suec. n.* 276. *Gärtn. fruct.* 1. 354.

Hudf. angl. 136. *Witber. arr. ed.* 3. 326. *Mill.*

^a Hort. kew.

^b Vahl.

^c Cavanilles.

^d Hort. kew.

^e Forster.

^a Haller.

^b Villars.

^c Linn. mant.

^d Linn. spec.

^e Pollich.

^f Gærtner.

illustr. ic. Lightf. scot. 176. *Curt. lond.* 4. 26. 251. *Engl. bot.* 435. *Relb. cant. n.* 257. *Sibth. oxon. n.* 326. *Hall. belv. n.* 1159. *Pollich pal. n.* 324. *Gmel. it.* 2. 198. t. 31. *Moench. bass. n.* 269. *Fl. dan. t.* 406. *Kniph. cent.* 5. n. 58. *Krock. filef. n.* 496. *Villars dauph.* 2. 553.

Myosurus. Baub. hist. 3. 512. *Raii hist.* 1332. *syn.* 251. *Pet. brit. t.* 39 f. 7.

Cauda murina. Dod. pempt. 112. 1. *Lob. obs.* 242. 1. *ic.* 40.

Cauda muris. Ger. 345. 4. *emac.* 426. 4.

Holosteo affinis Cauda muris. Baub. pin. 190.

Holosteuum Loniceri (2. 18. 1.) *Cauda muris vocatum.*

Park. theat. 500.

DESCRIPTION, &c.]

This plant is very near a-kin to *Ranunculus*, in which genus it was ranged by Tournefort. The flowers are extremely small, and are succeeded by long slender spikes of seeds, resembling the tail of a mouse, whence it had the name.

[Root annual. Leaves all radical, about twenty in a plant of a middling size, upright, of unequal lengths, linear, broadest at top, flattened, faintly channelled on each side, smooth, somewhat fleshy, blunt, of a yellowish green colour, and reddish at the base: sometimes hairy, according to Hudson. Scapes or flowering stems four, five or more, each supporting one flower, upright, from two to four inches in height, longer than the leaves, round, smooth, a little thicker at the top. Calycine leaflets concave, herbaceous, with the claws lengthened out behind, pressed to the flowering stem, and tapering to a point. Petals of a yellowish colour^m. Stamens varying in number from four or five to ten, twelve and even twenty, according to different authors.—Seeds compressed wedge-shaped; the outer side ferruginous, linear-lanceolate, with a ridge along the middle; the other sides half-ovate, flat, blackish, converging into a very acute angleⁿ.

Mr. Curtis remarks, that the structure of the whole fructification, in this delicate little annual plant, is singular, and deserving the attention of the young botanist, who should be careful to distinguish the corolla from the stamens.

It grows wild in most parts of Europe, Linneus says on dry open hills; with us I have commonly found it by the sides of corn fields, especially where water has stagnated in winter, and this year (1798) coming up as a weed in a garden. Dr. Withering assigns it to corn fields, meadows and pastures in a gravelly soil.] Mr. Miller says it grows wild upon moist ground. It has occurred to me generally among clay. In English Botany it is said to be a native of gravelly corn-fields. That elegant and interesting work, describes the pistil to be conical, longer than the stamens, composed of a conical receptacle, covered with a great number (even two or three hundred) of ovate striated germs, each furnished with its own minute sessile stigma.

This plant affords a rare instance of a very great disproportion of males to females in the same flower, and yet the latter are generally all prolific. The seeds are justly described by Linneus as naked, for the part which Jussieu (and Gærtner) call a capsule is nothing more than a thickened inseparable coat, as in *Ranunculus*, to which *Myosurus* has a great affinity in its nectariferous pore.

A plant which I have before me, and which grew in a garden on a good soil, has above fifty scapes of very different lengths, some above seven inches and others about three inches long: the leaves three inches and a half in length; I do not perceive any trace of hairiness on them. It flowers in april and may, and is not disposed yet to shed its seeds on the seventh of june.]

MYRICA, (of Pliny, ΜΥΡΙΧ of Theophrastus and Dioscorides. Derivation merely conjectural, ἀπο τοῦ μυρεσθαι, either because it grows near streams, or because it is fabled that the daughter of Cinyras was changed into this plant: this verb signifying both fluo and lugeo. It

^m Curtis.

ⁿ Gærtner.

was put as a wreath round the heads of criminals, and the wood was accounted unfortunate.)

Lin. gen. n. 1107. *Reich. n.* 1213. *Schreb. n.* 1510. *Gærtn. t.* 39. *Juss.* 409. *Gale Tournef. mem. par.* 1706. t. 3. *Dill. gen.* 10. *Nageia Gærtn. t.* 39.

Class. 22. 4. Dioecia Tetrandria.

Nat. order of Amentaceæ, Lin. Juss. &c.

GENERIC CHARACTER.

* Male.

CAL. Ament ovate-oblong, imbricate on all sides, loose, composed of one-flowered, crescent-shaped, bluntly acuminate, concave scales. *Perianth proper* none.

COR. none.

STAM. Filaments four (seldom six) filiform, short, erect. *Anthers* large, twin, with bifid lobes.

* Female.

CAL. as in the male.

COR. none.

PIST. Germ subovate. *Styles* two filiform, longer than the calyx. *Stigmas* simple.

PER. Berry one-celled.

SEED single.

OBS. There is a great affinity between this genus and *Pistacia*. *M. Gale* has four stamens, and a dry berry, or leathery crust, compressed at top and three-lobed. *M. cerifera* has usually six stamens, and a succulent globular berry.—*Calyx* three or four-leaved: stamens four or six: style one bifid: fruit a drupe, Gærtner.

ESSENTIAL CHARACTER.

Ament with a crescent-shaped scale. *Cor.* none.

FEM. Styles two. Berry one-seeded.

SPECIES.

1. *Myrica Gale.* Sweet Gale, Sweet Willow, or Candleberry Myrtle.

Lin. spec. 1453. *synt.* 884. *Reich.* 4. 243. *mat. med.* 211. *fl. lapp. n.* 373. *succ. n.* 907. *hort. cliff.* 455. *Huds. angl.* 432. *Wither. arr. ed.* 3. 208. *Lightf. scot.* 613. *Relb. cant. n.* 724. *Gort. ingr.* 159. *Fl. dan. t.* 327. *Kniph. cent.* 9. n. 70, 71.

Gale frutex odoratus. Baub. hist. 1. 225. *Raii syn.* 443. *Dill. app.* 154.

Rhus myrtifolia belgica. Baub. pin. 414. *Raii hist.* 1707.

R. sylvestris, f. Myrtus brabantica vel anglica. Park. theat. 1451. 5.

Myrtus brabantica, f. Elæagnus Cordi. Ger. 1228. *emac.* 1414.

Elæagnus Cordi. Lob. ic. 2. 110. 2. *adv.* 417. *obs.* 547. 2.

Chamæleagnus. Dod. pempt. 780. 2.

Thee europæum aut nostras. Sim. Paul. monogr.

Leaves lanceolate subserrate, stem suffruticose.

2. *Myrica cerifera.* American Candleberry Myrtle.

Lin. spec. 1453. *Reich.* 4. 244. *hort. cliff.* 455. *ups.* 295. *Gærtn. fruct.* 1. 190. *Swartz obs.* 374. *Gron. virg.* 120. 153. *Kalm. it.* 2. 312. *engl. ed.* 1. 192.

α. *M. cerifera angustifolia. Ait. hort. kew.* 3. 396.

Common or narrow-leaved American Candleberry Myrtle.

Myrtus brabanticae similis carolinensis baccata, fructu racemoso sessili monopyreno. Catesb. car. 1. t. 69. *Pluk. phyt. t.* 48. f. 9.

β. *M. cerifera latifolia. Ait. hort. kew.* 3. 396.

Broad-leaved American Candleberry Myrtle.

M. carolinensis. Mill. dict. n. 3.

Myrt. brab. sim. carol. humilior, foliis latoribus & magis serratis. Catesb. car. 1. t. 13.

Leaves lanceolate subserrate, stem arborecent.

[3. *Myrica Faya.* Azorian Candleberry Myrtle.

Ait. hort. kew. 3. 397.

Leaves elliptic-lanceolate subserrate, male aments compound, drupe with a four-celled nucleus.

4. *Myrica æthiopica.* African Candleberry Myrtle.

Lin. syst. 884. *Reich.* 4. 244. *want.* 298. *Thunb. prod. cap.* 32.

M. conifera. Burm. prodr. 27.

Myrt. brabanticae accedens africana, baccis carens, conifera. Pluk. phyt. t. 48. f. 8.

- Arbor conifera odorata, foliis salicis rigidis leviter serratis. Raii hist. 1800.*
Leaves lanceolate or elliptic toothed, the lowest entire.
5. *Myrica montana. Mountain Candleberry Myrtle.*
Vahl symb. 2. 99.
Buxus dioica. Forsk. descr. 159.
Leaves lanceolate serrate not dotted underneath, aments globular.
6. *Myrica nagi. Japanese Candleberry Myrtle.*
Lin. syst. 884. Thunb. jap. 76.
Nageia japonica. Gært. fruct. 1. 191.
Nagi. Kämpf. amoen. 773. t. 874.
Leaves lanceolate entire veinless.]
7. *Myrica quercifolia. Oak-leaved Candleberry Myrtle.*
Lin. spec. 1453. Reich. 4. 244. hort. cliff. 456.
Burm. ind. t. 98. f. 1. Thunb. prodr. cap. 32.
Laurus africana minor folio quercus. Comm. hort. 2. 161. t. 81. Raii dendr. 85. 7.
 α. *M. quercifolia. Mill. dict. n. 5.*
Smooth oak-leaved Candleberry Myrtle.
 β. *M. hirsuta. Mill. dict. n. 6.*
Hairy oak-leaved Candleberry Myrtle.
Leaves oblong oppositely sinuate.
8. *Myrica cordifolia. Heart-leaved Candleberry Myrtle.*
Lin. spec. 1454. Reich. 4. 245. hort. cliff. 456.
Thunb. prodr. cap. 32. Pluk. phyt. t. 319. f. 7.
Alaternoides ilicis folio crasso hirsuto. Walth. hort. 3. t. 3.
 β. *M. fol. subcordatis integris sessilibus. Burm. afr. 263. t. 98. f. 3.*
Leaves cordate serrate sessile.
9. *Myrica trifoliata. Three-leaved Candleberry Myrtle.*
Lin. spec. 1453. Reich. 4. 245. amoen. 6. afr. 98.
Leaves ternate toothed.]

DESCRIPTIONS, &c.

1. This rises with many shrubby stalks from two to near four feet high, dividing into several slender branches, [and covered with a dusky or rust-coloured bark, sprinkled with white dots. The buds are composed of nine leafy shining scales, the first nearly opposite, very short, rectangularly pointed, the rest ovate, blunt.] Leaves alternate, stiff, an inch and half long, and half an inch broad in the middle, light or yellowish green, smooth, a little serrate towards their points, and emitting a fragrant odour when bruised: [this is occasioned by the resinous points with which they are sprinkled: they are convoluted and petioled. The flowers appear before the leaves; and the flower-buds are above the leaf-buds, at the ends of the branches, whence as soon as the fructification is completed the end of the branch dies, the leaf-buds which are on the sides shoot out, and the stems become compound. The aments or catkins are of a short ovate figure, of a yellowish brown colour, and frequently sprinkled with shining resinous golden particles. The fruit is a coriaceous berry. The male and female aments are sometimes on distinct plants, and sometimes on the same individual^a. Dr. Withering affirms that he has found a few female florets upon the male catkins. Mr. John Templeton, of Orange Grove, near Belfast, informs me that the monoecous plants may be distinguished by the form of the leaves being exactly lanceolate, the broadest part lying in the middle; whereas in the dioecous plants the broadest part is near the apex, and the leaves in general are much smaller.

The leaves have a bitter taste, and an agreeable odour, like those of Myrtle. Their essential oil rises in distillation. The northern nations formerly used this plant instead of Hops; and it is still in use for that purpose in some of the western isles and a few places of the highlands of Scotland. Unless it be boiled a long time, it is reported to occasion head-ache. The catkins or cones boiled in water throw up a scum resembling bees-wax, which gathered in sufficient quantity would make candles. From the next species Myrtle candles are prepared in America. It is used to tan calf-skins. Gathered in the autumn it dyes wool yellow, and is used for that purpose both in Sweden and Wales. The Swedes sometimes use a strong

^a Linn. lap. & succ. Lightf. Stokes in Wither.

decoction of it to kill bugs and lice, and to cure the itch. The Welsh lay branches of it upon and under their beds to keep off fleas and moths, and give it as a vermifuge in powder and infusion, applying it also externally to the abdomen. In most of the Hebrides, as well as in the Highlands of Scotland, an infusion of the leaves is frequently given to children to destroy worms. In Isla and Jura the inhabitants garnish their dishes with it, and lay it between their linen and other garments, to give them a fine scent, and to drive away moths. When it grows within reach of a port, the sailors make besoms of it for sweeping their ships. In the isle of Ely they make faggots with it to heat their ovens.

Linneus was induced to suspect, from the smell of this shrub, that Camphor might possibly be prepared from it. Horses and goats eat it; sheep and cows refuse it^b.

Native of the northern parts of Europe, and of North America, in bogs: flowering with us in May. Not unfrequent in many parts of England, Wales, Scotland and Ireland,] particularly in the northern and western counties, also in Windsor-park and near Tunbridge-wells; [in the fens of the isle of Ely; about Wareham in Dorsetshire, between Shap and Anna Well in Westmorland. Gerard says, it grows by Colbrooke, and in sundry other places. Darlington-moor, in Norfolk. Frequent in the Highlands of Scotland.

In England it has the names of Sweet Gale, Goule, Gaule, Sweet Willow, Wild Myrtle and Dutch Myrtle. The Scotch call it Gaul; and the Irish Moss-Gaul. Our Gaul is from the German and Dutch *Gagel*. In those languages, as well as in the Danish and Swedish, it is also called *Pors* or *Post*. In French it is, *le Gale odorant*, *le Piment royal*, *Myrthe bâtard* or *du Brabant*, *Piment des marais*.

So little was the Tea shrub known formerly, that Simon Paulli asserted it to be the same with our Sweet Gale.

2. American Candleberry Myrtle is a shrub, or a tree acquiring a height of thirty feet: the bark is warted; the branches unequal and straight. Leaves evergreen, somewhat clustered, blunt at the end, membranaceous-rigid, wrinkled, smooth, covered underneath with very minute, shining, orange-coloured, glandular pores. Flowers in aments, on different individuals. Swartz had not an opportunity of observing the male aments. Miller says they are about an inch long, and stand erect. [The female aments are sessile, axillary, linear, shorter than the leaves. Scales very minute, and between each of them an oblong minute germ, longer than the scales; two filiform styles, the length of the germ; and reflex stigmas. Berry minute, roundish, yellow^c. Gærtner, finding the ripe fruit to be farinaceous, as Miller and Kalm had described it, calls it a Drupe; which is juiceless, superior, small, ovate-globular, defended at the base by the four calycine leaflets, acuminate above, covered all over with a white farinaceous substance mixed with many hard dusky granules, making the whole of the rind in the ripe fruit: shell ovate-acuminate, bony, thickish, one-celled, valveless. Seed filling the cavity of the shell, pale yellow with dusky veins, and a white scar at the base^d.

Willich remarks, that he finds sometimes four, and sometimes six stamens^e.]

Mr. Miller makes two species of this. The Common sort, according to him, rises with many strong shrubby stalks eight or ten feet high, sending out many branches. Leaves stiff, near three inches long, and one inch broad in the middle, smooth, entire, of a yellowish lucid green on their upper side, but paler on their under, alternate, subsessile, having a grateful odour, when bruised. Male and female flowers on different plants. Male catkins about an inch long, erect. The female flowers come out on the side of the branches in longish bunches; and are succeeded by small roundish berries, covered with a sort of meal.

^b Withering, Lightf. Linneus. ^c Swartz. ^d Gærtner. ^e Obs. 6.

The Broad-leaved American Candleberry Myrtle; *Myrica carolinensis* as he names it, does not rise so high as the former, the branches are not so strong, and they have a grayish bark. The leaves are shorter, broader, and ferrate. In other respects it is like the preceding, and the berries are collected for the same purpose.

[They are natives of North America: and of Jamaica, in the highest mountains. The common sort was cultivated in 1699, by the Dutchess of Beaufort. They flower in may and june^f.

Candles are made from the berries in North America, whence it is called there the *Tallow shrub* or *Candleberry tree*; some also name it the *Bayberry-bush*. It grows abundantly on a wet soil, and seems to thrive particularly well in the neighbourhood of the sea, nor does it seem ever to be found high up in the country. The berries intended for making candles are gathered late in autumn, and are thrown in a pot of boiling water; their fat melts out, floats at the top of the water, and may be skimmed off. The fat when congealed looks like tallow or wax, but has a dirty green colour: it is therefore melted again and refined, by which means it acquires a fine and pretty transparent green colour. It is dearer than common tallow, but cheaper than wax. They usually mix some tallow with it. Candles of this kind do not easily bend or melt in summer, as common candles do; they burn better and slower, nor do they cause any smoke, but rather yield an agreeable smell, when they are extinguished. At present not many candles of this kind are used, the animal tallow is readily come at, it being very troublesome to gather the berries. They are chiefly used by poor people, who live near where the bushes grow, and have not cattle enough to supply them. A soap is made from the fat, which has an agreeable scent, and is excellent for shaving: and it is used by surgeons for plasters. In Carolina they likewise make sealing-wax from these berries. The root is accounted a specific in the tooth-ache^g.

3. Native of Madeira and the Azores, where it was found by Mr. Francis Masson. Introduced in 1777. It flowers in june and july^h.

4. This is an obscure shrub, approaching to *M. Gale* and *cerifera*. Leaves alternate, petioled, coriaceous, naked, having three or four teeth on each side. Spikes axillary, erect, shorter by half than the leaf.—Native of the Cape of Good Hopeⁱ.

5. This is a shrub, with round, smooth branches. Leaves subpetioled, an inch long, narrow-lanceolate, attenuated to both ends, smooth, having five or six minute sharp approximating serratures towards the tip. Flowers glomerate in a sessile head, axillary, small, smooth. Calyx four-leaved: leaflets minute, lanceolate. Filaments scarcely any. Anthers four, longer than the calyx. Berry the size of a pepper-corn. It has the habit and fruit of *Myrica*, but differs from it in having a four-leaved calyx, in the same manner as the next species, which Gærtner has distinguished under the name of *Nageia*^k.

6. Stem shrubby, smooth, upright. Branches decussated, round, knobbed, spreading very much, leafy. Leaves elliptic, sessile, bluntish, oblique, smooth and even, opposite, spreading, leathery, a finger's length. Berry globular, smooth, the size of a Cherry^l.

Calyx two-leaved or four-leaved. Fruit a superior, spherical, berried drupe, dark-purple with a bloom or meal on it, when ripe: rind fleshy, succulent, moderately thick: shell spherical, with an acuminate point at top, bony, thin, brittle, one-celled, valveless. Seed of the same shape with the cavity, rufescent, fixed by the top^m.—Native of Japan.]

7. Stalks slender, shrubby, about four feet high, dividing into smaller branches. Leaves about an inch and half long, and almost an inch broad, some of them having two, others three deep opposite indentures on their sides, they sit close to the branches, and end in obtuse indented points: between the leaves come out some oval catkins, which drop off. This species retains its leaves all the year.

[Mr. Miller had not an opportunity of observing the female flowers or the fruit. Mr. Ray mentions that the fruit is dry when ripe, and contains only a single seed.

Mr. Miller makes two species of this—*M. quercifolia* and *hirsuta*.] The first having smooth shining stalks and leaves; both of which are hairy in the second, and the leaves of a darker green. He received them from Holland as different species, but he suspected them to be what they certainly are, mere varieties.

Native of the Cape of Good Hope. [Cultivated in 1752 by Mr. Miller. It flowers in june and julyⁿ.]

8. This has a weak shrubby stalk, five or six feet high, sending out many long slender branches, closely garnished their whole length with small heart-shaped leaves, sitting close to the branches; slightly indented and waved on their edges. The flowers come out between the leaves in roundish bunches: they have an uncertain number of stamens, and are all included in one common scaly involucre or cover. The leaves continue all the year green.

[Mr. Miller had not an opportunity of observing the female flowers.

Native of the Cape of Good Hope. Cultivated by Mr. Miller in 1759^o.

9. This is a shrub, with alternate petioled leaves; leaflets sessile, lanceolate, acuminate, tomentose underneath. Fruits in a raceme, berried, rugged.—Native of the Cape of Good Hope^p.]

PROPAGATION AND CULTURE:

1. The first sort growing naturally in bogs, cannot be cultivated in a garden without bog earth in a moist situation.

2. American Candleberry Myrtle is propagated by seeds sown in autumn; for if they are kept out of the ground till the spring, they seldom grow till the year after. The plants require water in dry weather, and should be screened from frost whilst young. When they have obtained strength, they will resist the cold of this country very well. This shrub delights in a moist soft soil.

4, 7, 8, 9. As these do not produce seeds here, they are propagated by layers, but they do not take root very freely, so that the plants are not very common in Europe; for I do not find that the cuttings of these plants will easily take root, having made several trials of them in all the different methods; nor have the Dutch gardeners had better success, so that the plants are as scarce there as in England.

When the layers are laid down, that part of the shoot which is laid should be tongued at a joint, as is practised in laying Carnations; and the young shoots only should be chosen for this purpose, for the old branches will not put out roots. These layers are often two years before they will have taken root enough to transplant, for they should not be separated from the old plants till they have made good roots, because they are very subject to miscarry if they are not well rooted.

When they are taken off from the old plants, they should be each put into a separate small pot, filled with soft, rich, loamy earth; and if they are placed under a common frame, shading them from the sun in the middle of the day, it will forward their taking new root; then they may be placed in a sheltered situation during the summer, and in the autumn removed into the green-house, and treated in the same way as other plants from the same country. The best season for laying down the branches, I have observed to be in july, and by the same time the following year they have been fit to remove.

[MYRICA. See *Cliffortia*, *Liquidambar*, *Tamarix*.

—*asplenifolia*. See *Comptonia*.

MYRIOPHYLLUM (of Pliny. *Μυριοφυλλον* of Dioscorides. From *μυριος* myriads, and *φυλλον*, a leaf.)

Lin. gen. n. 1066. *Reich. n.* 1163. *Schreb. n.* 1440.

Vaill. mem. par. 1719. t. 2. f. 3. *Juss.* 18. *Gertn.* t. 68. *Pentapterophyllum*. *Dill. gen.* 7.

Class. 21. 7. *Monoecia Polyandria*.

Nat. order of Inundatae. Naiades, *Juss.*

^f Hort. kew. ^g Kalm. ^h Hort. kew. ⁱ Linn. mant.
^k Vahl. ^l Thunberg. ^m Gærtner.

ⁿ Hort. kew. ^o Idem. ^p Linn. amoen.

GENERIC CHARACTER.

* Male Flowers.

CAL. *Perianth* four-leaved; leaflets oblong, erect: outermost larger, innermost less.

COR. none.

STAM. *Filaments* eight, capillary, longer than the calyx, flaccid. *Anthers* oblong.

* Female Flowers below the males.

CAL. *Perianth* as in the male.

COR. none.

PIST. *Germis* four, oblong. *Styles* none. *Stigmas* pubescent.

PER. none.

SEEDS four, oblong, naked.

OBS. *M. verticillatum* has often, spicatum more seldom, hermaphrodite flowers.

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. none, (or two-petalled, G.)

MALE. Stam. eight.

FEM. Pist. four. Style none. Seeds four, naked. (Stigmas two or four, sessile. Nuts two or four, corticated, G.)

SPECIES.

1. *Myriophyllum spicatum*. Spiked Water-Milfoil.

Lin. spec. 1409. Syst. 856. Reich. 4. 154. hort. cliff. 446. fl. suec. n. 867. lapp. n. 343. Gærtn. fruct. 1. 331. Hudf. angl. 419. Wither. arr. ed. 3. 389. Engl. bot. 83. Lightf. scot. 581. Relb. cant. n. 708. Sibth. oxon. n. 391. Scop. carn. n. 1180. Leers herb. n. 732. Pollich pal. n. 905. Fl. dan. t. 681. Sauv. monsp. 160. Villars dauph. 3. 757. Gmel. sib. 3. 35. t. 5. f. 2. it. 2. 198. t. 33. Kniph. cent. 5. n. 59.

Pentapteris spica nuda. Hall. belv. n. 993.

Millefolium aquaticum pennatum spicatum. Baub. pin. 141. prodr. 73. 1. Park. theat. 1257. 7. Raii hist. 191. syn. 2. 279. 4.

M. pennatum aquaticum. Baub. hist. 3. 783. 1.

Potamogeton foliis pennatis. Tournef. inst. 233. Raii syn. 3. 150. Petiv. brit. t. 6. f. 5.

β. *Millefolium aquat. penn. minus, foliolis singularibus latiusculis flosculis subjectis*. Mor. hist. 3. 622. f. 15. t. 4. f. 7. Raii syn. 151.

Potamogeton pennis tenuissimis. Petiv. brit. t. 6. f. 6.

Spike interrupted, leafless.

2. *Myriophyllum verticillatum*. Whorled Water-Milfoil.

Lin. spec. 1410. Syst. 856. Reich. 4. 154. hort. cliff. 446. fl. suec. n. 868. Hudf. angl. 420. Wither. arr. ed. 3. 390. Engl. bot. 218. Relb. cant. n. 709. Sibth. oxon. n. 392. Pollich pal. n. 906. Fl. dan. t. 1046. Sauv. monsp. 160. Villars dauph. 3. 757. Gmel. sib. 3. 36.

Pentapteris floribus alaribus. Hall. belv. n. 992.

Myriophyllum aquaticum minus. Clus. hist. 2. 252. 1. Ger. emac. 827. n. 6. Vaill. aët. par. 1719. 31.

Millefolium aquat. minus. Park. theat. 1257. t. 1526. f. 3. Baub. hist. 3. 783. Raii hist. 1322. syn. ed. 2. 279. Petiv. brit. t. 6. f. 8.

M. aquat. flosculis ad foliorum nodos. Baub. pin. 141. Loef. pruss. 165.

Pentapterophyllum aquaticum, flosc. ad fol. nodos. Dill. giff. 112. & app. 178. t. 7. Raii syn. 316.

Flowers in leafy whorls.

DESCRIPTIONS, &c.

These are perennial herbs, inhabitants of the water. Leaves in whorls, pinnate, linear. Flowers axillary, sessile, solitary, in the upper whorls male, in the lower female. In the second species they are frequently hermaphrodite¹. Jussieu has placed these plants among the *Acotyledones*; they belong however clearly to the *Dicotyledones*, for the two lobes of the seed are much more easily discerned and separated than in *Callitriche*².

1. Stem branched. Leaves in whorls under water, pinnate; pinnae capillary, deep green. Flowering spike rising above the water, bearing six or eight whorls of sessile flowers; the upper male, somewhat crowded, the lower female, more distant. Calycine leaflets oval, concave, purplish on the outside, soon deciduous. Anthers yellowish green. Calyx of the female flowers smaller. Stigmas spreading, cruciform³.

¹ Jussieu.

² Gartner.

³ Woodw. Mss.

Gmelin observes, that there are always four leaves in a whorl; Pollich that there are four, six, and even more; that four sessile flowers make a whorl; that there are eight, nine, or ten whorls in a spike, the four uppermost of which have male flowers.

Withering remarks, that the stems are reddish, divided within into about sixteen cells, and that some of the males contain the rudiments of four germs.

Professor John Martyn, in a M. S. note in the margin of Ray's history, describes the flowers as having four petals, with a small four-parted calyx, both sitting on the germ; the petals very fugacious, falling as soon as they open, and discovering the anthers on very slender filaments in the male flowers; soon after the calyx also falls off, and discovers the four-cleft style in the female flowers.

Gartner names the seeds nuts; sometimes there are two of these, but more frequently four; they are small, subglobular, before they are ripe united by means of the rind, but afterwards separable: rind thin, membranaceous: shells hard, somewhat bony, thick, whitish, one-celled. Seeds solitary, subcylindric, pale.

Native of most parts of Europe, in still water, as ditches, ponds and lakes. It flowers from May to July.

β. More branched: spikes smaller: broadish entire leaves at the base of the whorls.—Found by Bobart near Loddon-bridge, not far from Reading; also in the river on Hounslow-heath⁴.

2. In muddy ditches with little water, the stems simple, six or eight inches high. Leaves not more than an inch long, with pinnae one and a half or two lines in length. In ponds the stems branch, and are two feet or more in length; the leaves under water one and a half or two inches long, with slender capillary pinnae. Spike six or seven inches long, with from twelve to sixteen whorls or more, the lower ones about half an inch distant, the upper ones nearer, with four or five pinnate leaves at each whorl, about half an inch long; the pinnae about a line in length. Flowers in the axils of the leaves similar to those of the preceding: the flowers of the upper whorls are usually male, those of the lower female; sometimes the upper are male, the middle hermaphrodite, and the lower female⁵.

Linnaeus says that he has seen plants with male and female flowers distinct, and that he has also seen it with hermaphrodite flowers, but not so frequently. According to Turra, the flowers are hermaphrodite, and the leaves in fours.

Villars observes that the leaves of this are less fine and distinct than those of the first sort; that the flowers come out among them, instead of being separate: and that the stems do not stand so high out of the water.

This also is an inhabitant of ditches and stagnant waters, but not found so extensively as the other, and less common in Britain. With us it has been observed in two or three places near Cambridge; by the bridge on the Botley road, near the lane going to Medley, in Oxfordshire; near Bungay, in Suffolk; near Yarmouth and at Hedenham, in Norfolk; and in the river near Peterborough. It flowers in June and July.

MYRIOPHYLLUM. See *Hottonia*.

MYRIOTHECA. See *Marattia*.

MYRISTICA. (*Mupiolixos*, odor, unguentorum illitus; from *Mupov*, unguentum, ointment.)

Lin. gen. Schreb. n. 1562. Thunb. nov. gen. 83. diff. de Myristica, Ups. 1788. Gærtn. t. 41. Swartz prodr. 96. Bot. mag. 6. 22. t. 1—3. Juss. 81. Virola. Aubl. t. 345. Juss. 81.

Class. 22. 14. Dioecia Syngenesia.—Monadelphia Triandria. Swartz.

Nat. order of *Lauri*, Juss.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* one-leaved, coriaceous, trifid: segments ovate, acute.

COR. none.

⁴ Doody in Ray syn.

⁵ Woodw. Mss.

STAM. *Filament* one, columnar, cylindric, erect, shorter than the calyx. *Antbers* three to ten, (twelve or thirteen, *Bot. mag.*) linear, connate, growing round the upper part of the filament.

* *Female*, on a distinct tree: (on the same trunk. *G. T.*—on different trees. *Lamarck* and *Jussieu*.)

CAL. *Perianth* as in the male, deciduous.

COR. none.

PIST. *Germ* superior, ovate. *Style* very short. *Stigma* bifid: *segments* ovate, spreading.

PER. *Capsule* drupaceous, fleshy, roundish, one-celled, at length two-valved, bursting earlier on one side. *Aril* between the pericarp and the nut, somewhat fleshy, oily, subdivided into longitudinal segments.

SEED. *Nut* roundish, one-celled, valveless, with a thin shell. *Nucleus* roundish, variegated with flexuose curvatures.

ESSENTIAL CHARACTER.

Cal. trifid. Cor. none.

MALE. *Filament* columnar. *Antbers* terminating, united.

FEM. *Caps.* superior, drupaceous, two-valved. *Nut* involved in an aril, called the *Mace*.

SPECIES.

1. *Myristica aromatica*. *Aromatic* or *true Nutmeg-tree*.

Swartz prodr. 96. *obs.* 217.

M. officinalis. *Lin. syst.* 493. *suppl.* 265. *Gærtn. fruct.* 1. 194.

M. moschata. *Woodv. med. bot.* 363. *t.* 134.

Nux myristica. *Rumph. amb.* 2. 14. *t.* 4.

N. moschata fructu rotundo. *Baub. pin.* 407. *Pluk. phyt.* *t.* 209. *f.* 1. *Raii hist.* 1523. *Ger.* 1353. *emac.* 1536, 1537.

Muscadier. *Sonnerat it. guian.* *t.* 116—118.

Calyxes ovate trifid at the top, leaves elliptic pubescent underneath, fruits even.

2. *Myristica febrifera*.

Swartz prodr. 96.

Virola febrifera. *Aubl. guian.* 904. *t.* 345.

Leaves cordate oblong tomentose underneath, fruits tomentose.

3. *Myristica fatua*.

Swartz prodr. 96.

Leaves oblong-lanceolate pubescent underneath, calyxes and fruits villose.

DESCRIPTIONS, &c.

1. The Nutmeg is a large tree, with erect branches, and a smooth ash-coloured bark; the inner bark is red. Leaves petioled, alternate, quite entire, shining, paler underneath, nerved. Peduncles axillary, two or three-flowered, solitary; but only one flower arrives at maturity. Calyx fleshy, smooth, segments spreading, shorter than the tube. Filament solid, the length of the calyx. Anthers eight, ten or twelve, growing longitudinally round the upper half of the filament. Calyx in the female smaller. Covering of the fruit (or mace) subdivided irregularly somewhat like a net, fulvous. The leaves are aromatic; and if the trunk or branches be wounded they yield a glutinous red liquor^a.

Linneus was not acquainted with the true character of the Nutmeg-tree, and it is imperfectly described in the *Supplementum Plantarum*, from a specimen sent by Sonnerat. The fructification was first accurately described by Thunberg in the Stockholm acts for 1782: and afterwards by Swartz, from specimens preserved in spirits in the collection of Sir Joseph Banks, which came from Banda and the Isle of France.

Gærtner has described the fructification thus:

Flowers of distinct sexes on the same trunk. Calyx trifid, in the female inferior. Corolla none. Stamen one, thick: anthers sessile at top. Style one. Fruit a superior berry, elliptic-spheroidal, with a shallow longitudinal groove on one side, fleshy, very smooth, one-celled: flesh thick, rather solid, finally drying up into a coriaceous crust, opening on the side. Seed one, ovate-globular, nucamentaceous, arilled, by help of this aril fixed to the bottom of the cell. The aril or cover, which is commonly called *Mace*, is fleshy-coriaceous, reddish saffron-coloured or yellow, one-leaved

at bottom, multifid at top; the segments linear, flexuose, branched, widening upwards and sometimes gashed at the top. Integument double: the *outer*, a thin brittle shell; pale chestnut-coloured, shining, reticulated by the impressions of the aril: the *inner* membranaceous-crustaceous, subrusescens, very closely cleaving to the kernel, and deeply immersed in its substance, by its internal processes. Albumen of the same form with the seed, fleshy-farinaceous, as it were chewed, variegated whitish and bay, having a cavity at bottom for the embryo, and sometimes a void space in the middle, fragrant and gratefully aromatic. Embryo small, erect, hollowed out like a dish, milk-white: cotyledons fleshy-foliaceous, waved, from upright spreading into a two-parted almost hemispherical cup, joined. Radicle inferior, in form of a very small tubercle, under the cotyledons. The fruit would be a drupe, were it not for the Aril.

The Nutmeg-tree is a native of the East Indies, and especially of the island of Banda, in latitude 4° 30' S. longitude 128° 10' E.—It has in a manner been extirpated in all the islands except Banda, which might easily supply every nation upon earth; it is however certain that there a few trees of this spice upon the coast of New Guinea. There may perhaps be both Cloves and Nutmegs upon other islands to the eastward; for those neither the Dutch nor any other Europeans seem to think it worth while to examine^b.

Monf. Poivre sent persons in June 1770 to the least frequented part of the Moluccas in search of what the avarice of the Dutch had hitherto withheld from the rest of the world; and to him the French Colonies in the isles of France and Bourbon are indebted for the Nutmeg, Clove and Cinnamon.

By an account sent to Monf. de Sartines in 1779, by the King of France's gardener at the island Bourbon, it appears that the King's garden there possessed at that time thirty-eight male aromatic Nutmeg-trees, and eight female, the produce of two importations. The first female, produced by the nuts of the first importation, bore six Nutmegs the preceding year. These were all of the long form, and surrounded by the Mace on all sides. Since that time a second and third female tree, produced by the nuts of the last exportation, have yielded nuts of the same long shape. A fourth tree shew nuts, which were very large, and likely to be of the long sort. A fifth yielded nuts one-third smaller: the Mace went only half round them, leaving them at liberty to break from it: they were round, and had a longitudinal stripe on one side.

The gardener relates that he had twenty-nine Nutmeg-trees in his orchard, of which two only were female; the case is the same in other plantations, and all these males came from long nuts planted in 1772.

It being probable that the woods in the Molucca islands produce more of the trees which bear long nuts, than of those which bear round ones, the natives probably gave the former, and the merchants took them without suspecting any fraud. It might therefore have happened, that not a single fruiting tree of the true sort had been imported; and in fact, there was not one fruiting tree of the first importation any where but in the King's garden, and that produced long nuts. So that had not Monf. Poivre sent a second time to the Moluccas, the French colonies might never have had a second female tree.

The gardener distinguishes the trees into three sorts. The Male or barren Nutmeg. The Royal Nutmeg, or female producing the long nuts. And the Queen Nutmeg, yielding the precious round nuts, intended to reproduce the females, but which gives separately, the one long nuts intended to give males, the other round nuts intended to produce the two sorts of females; namely, that producing the long, and that producing the round nut.

The only difference between the Royal and Queen Nutmeg is in the fruit. That of the Royal is thicker, longer and more pointed, the green shell is thicker, and it is longer in ripening: the green shell, after opening, preserves its freshness eight or nine days: the

^a Swartz.

^b Cook's voy. 744.

Mace is more substantial, and three or four times as long as that of the Queen Nutmeg; and its stripes or thongs, of which there are from fifteen to seventeen principal ones, are of a livelier red; they are also broader, longer and thicker, and not only embrace the nut throughout its whole length, but pass it and cross under it, as if to hinder it from falling. The Royal Nutmeg is generally from fifteen to sixteen lines long, thick in proportion, and has no longitudinal stripe. It remains on the tree a long time after the opening of the green shell, and gives birth to insects in the shell that feed upon it.

The Queen Nutmeg produces much smaller nuts, only nine or ten lines long, not so thick by a third, and well marked by a longitudinal groove on one side; they are round and resemble a small Peach: the green shell is not thick: the Mace, which is composed of nine or ten principal stripes, grows only half down the nut, leaving it at liberty to escape and plant itself. By thus detaching itself, the nut prevents the insects from destroying it: the green shell also, changing at the end of two or three days, soon falls, and separates from the nut. This green shell, when preserved, has the fine taste of the nut itself.

A small establishment for these spices has also been formed by the French since 1769, on the isle of Secheyles, in latitude 4° 38' S.^d

The Nutmeg-tree has been introduced into the British territories in the East Indies. Captain W. C. Lennon of the Mary, acquaints Dr. Anderson, at Madras, on the 20th of August, 1796, that he had brought safe from Amboyna and Banda, some Clove and Nutmeg plants of the best kinds, and that it was chiefly owing to Captain Osborne of the Centurion, that he was enabled to bring them in safety to Pulo Penang. He had on board seven Nutmeg and four Clove trees, of which two of the former were planted at Madras; the rest were sent to Marmalou, excepting two of the Nutmeg trees, which had been forwarded by Captain Pakenham for Mr. Andrew Ross.

A premium has been offered by the Society of Arts, Manufactures and Commerce of London, ever since the year 1783, for the greatest quantity of merchantable Nutmegs, not less than five pounds weight, the growth of our islands in the West Indies; but hitherto without success.

Sir George Staunton relates, that a person belonging to the Embassy to China had a present from the medical garden at Batavia of a young growing Nutmeg plant, and of a nut supposed capable of germination; that he committed them to the care of a gentleman bound for England, in order to be put in his Majesty's botanic garden at Kew; but that the Nutmeg-plant suffered in the passage, and was left at St. Helena.

Sir George says that the Nutmeg-tree, with a smooth brown bark, rises perfectly straight. Its strong and numerous branches proceed regularly in an oblique direction upwards. They bear large oval leaves pendulous from them, some a foot in length; the upper surface smooth and of a deep agreeable green; the under surface marked with a strong nerve along the middle, from which others proceed obliquely, it is of a uniform bright brown colour, as if strewed all over with a fine brown powder, and the whole leaf is very fragrant.

2. A tree of forty or sixty feet high; branching at the top: the branches long, tortuous, upright and declining; scattered here and there: the leafy and flowering branchlets downy and ferruginous: the leaves cordate-oblong, sharp, green above, and smooth; below downy, and reddish: they are perfectly entire and have short footstalks: the flowers are borne in clusters and are axillary and terminal: the raceme is large, downy, and ferruginous. The flowers heaped, five or six, sessile. The fruit varies in size and form on different trees; being twice as large in some: it is oblong, the valves being produced into an obtuse cylinder. From the kernel is extracted a species of yellowish suet or fat, which serves for various medical and œcono-

mical purposes; and is made into candles. From the wounded bark flows a red acrid juice.

Native of marshy woods and hills in Guiana^f.

3. Native of Tobago.

The number of anthers in the first species is scarcely to be distinguished, being assimilated by the polliniferous grooves, and not having three more distinct as in this and *sebifera*. Aublet has figured his *Virola* with six stamens, which must be a mistake, as appears from the specimens, which have been carefully examined by Swartz.

Gærtner has given three other species of *Myristica*:

1. *Myristica dactyloides*. 195. t. 41. f. 2.

M. fructu inodoro. *Lin. zeyl. n.* 588.

Nux indica oblonga, intrinsecus similis nuci moschatae. *Baub. hist.* 1. 399.

Panam-Palca. *Rheed. mal.* 4. 9. t. 5.

Nux moschata malabarica. *Valent. mus.* 1. *epist. orient.* 83. t. 4.

N. myristica major spuria malabarica. *Raii hist.* 1524.

Berry ovate oblong, yellowish green, with a fleshy, soft thick rind. Mace like that of the true Nutmeg in shape and colour, but not so pleasant in taste and smell. Shell of the same shape with the seed, of a black bay colour. Seed without smell, ovate-cylindrical, ash-coloured or dirty reddish, variously wrinkled; convex on one side, and marked with a groove on the other. Albumen farinaceous, may be grated like suet, insipid, and has a large cavity for the embryo a little above the base. Embryo largish, concave: cotyledons fleshy-foliaceous, from upright spreading, with the edges fringed, plaited and channelled.—Native of Malabar and Ceylon.

2. *Myristica Irya*. *Gærtner*. 195. t. 41. f. 3.

Iria Iryaghas. *Lin. zeyl. n.* 589.

Nux zeylanica, moschatae rotundae similis, inodora minor. *Herm. mus.* 49. *Burm. zeyl.* 172.

Shell globular, depressed a little, crustaceous, thin, brittle, dirty white, marked with superficial capillary vessels, regular, not wrinkled. Seed globular, wrinkled with tubercles, brown bay. Albumen void of scent, of a white suety substance, that may be grated, appearing as if it had been chewed by the reddish-bay processes of the integument, and having a very void space in the middle. Embryo at the bottom of this cavity, small, greenish: cotyledons ovate, fleshy-foliaceous, flattish, from horizontal spreading, radicle conical, inferior.—Native of Ceylon.

3. *Myristica Iriaghedhi*. *Gærtner*. 195. t. 41. f. 4.

Iriaghedhi. *Lin. zeyl. n.* 590.

Nux moschata spuria, quæ pseudo nux moschata zeylanica. *Herm. mus.* 58.

N. mosch. sp. sylvestris, caryophylli arboris fol. oppositis. *Burm. zeyl.* 173. t. 79.

Shell ovate-oblong, very like the preceding in its whole structure. Seed of the same shape with the shell, deeply striated and wrinkled, brick-coloured, when it is moistened, of a bright vermilion. Albumen very much ruminated or chewed, elegantly variegated with white and red, having no smell: the white part is suety and may be grated; the red is branny and friable. Embryo like the preceding.—Native of Ceylon.

PROPAGATION AND CULTURE.

The Nutmeg-tree not having been yet introduced among us, we cannot give any particular directions for the stove culture of it. In its native soil, it grows in woods, and seems to be propagated by birds. We have no instruction for the culture of it in the East or West Indies, where it has been introduced, farther than what we are told by the French gardener in isle Bourbon: that what he calls the Royal and Queen Nutmegs are the only trees that always bear, and consequently the only ones to be planted; and that their produce is as sure as if they were hermaphrodite trees. The kernel of the first will produce only a male or barren tree; but the nut of the latter will always produce a fruitful one. So that if planters have one hundred Queen Nutmegs, and one Royal one, they will be sure of having one hundred fruiting trees, and one

^c Maty's Review for Aug. 1783.

^d Rochon's Madagascar.

^e Vol. 1. 269.

^f Aublet.

male tree to fecundate them. Without attending to this, they might have had a great quantity of male trees to a small quantity of females; and they would not have discovered the mistake till after five or six years, when the trees came to flower.

MYRMECIA. (*Myrmecia* is an *Ant's nest*.)

Lin. gen. Schreb. n. 177. Tachia. Aubl. guian. 75. t. 29. Juss. 142.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Gentianæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, tubular, long, five-toothed: toothlets erect, acute.

COR. one-petalled: tube long: opening inflated: border five-cleft; segments ovate, acute, revolute.

Nectary five small glands surrounding the base of the germ.

STAM. *Filaments* four, filiform, inserted at bottom into the tube, and longer than it. *Anthers* linear, erect.

PIST. *Germ* oblong, superior. *Style* filiform, longer than the stamens. *Stigma* bilamellate.

PER. *Capsule* long, two-celled, two-valved, covered by the permanent calyx.

SEEDS numerous, very small, viscid, adhering to the partition.

ESSENTIAL CHARACTER.

Cal. tubular, five-toothed. Cor. one-petalled, with an inflated mouth, and five-cleft border. Germ with five glands at the base. Stigma bilamellate. Caps. two-celled, two-valved, many-seeded.

SPECIES.

1. *Myrmecia Tachia*.

Lin. syst. ed. Gmel. 247.

Tachia. Aubl. guian. 75. t. 29.

DESCRIPTION, &c.

This is a shrub with a trunk of five or six feet in height; thick at the base, and gradually diminishing as it ascends: it throws out here and there long, rough, four-cornered branches, which are opposite and tubular: at each knot of these branches grow two opposite leaves disposed crossways: they are ovate, sharp, perfectly entire, smooth, subsessile, and embrace the stem. From the bosom of one or other of these leaves proceeds a sessile flower, of a yellow colour. It generally happens that at the bosoms of those leaves which do not produce flowers a tear of yellow resin makes its appearance. The hollow trunk and branches of this shrub are commonly the retreat of a great many ants, for which reason it is called by the natives by the name of Tachi, which is said to signify an ant's-nest.

MYROBALANUS. See *Phyllanthus* and *Spondias*.

MYROBATINDUM. See *Lantana*.

MYRODENDRUM. (*From μύρον ointment, and δένδρον a tree.*)

Lin. gen. Schreb. n. 901. Houmiria, Juss. 435.

Houmiri. Aubl. guian. 564. t. 225.

Class. 13. 1. Polyandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-toothed, acute.

COR. *Petals* five, oblong, acute, spreading, much larger than the calyx.

STAM. *Filaments* twenty, capillary, inserted into the receptacle. *Anthers* roundish.

PIST. *Germ* roundish, small, superior. *Style* long, curved inwards, villose. *Stigma* capitate, five-lobed.

PER. five-celled.

SEEDS solitary.

ESSENTIAL CHARACTER.

Cor. five-petalled, spreading, much larger than the five-toothed calyx. Stigma capitate, five-lobed. Per. five-celled, with one seed in each cell.

SPECIES.

1. *Myrodendrum balsamiferum*.

Lin. syst. ed. Gmel. 817.

Houmiri balsamifera. Aubl. guian. 564. t. 225.

DESCRIPTION, &c.

A tree of fifty or sixty feet high, and two feet in diameter. The bark thick, reddish, and rough: the wood hard and brown: it throws out from the top several large branches, which divide into branchlets beset with alternate, entire, smooth, green, firm, long

leaves, terminating in a point. These leaves are largest at their base, where they partly embrace the branchlets: the young leaves are reddish: those of the young trees are six inches long, and two broad. The flowers are borne in heads or clusters from the bosoms of the leaves at the extremities of the branchlets, and are of a white colour.

The bark of this tree affords a red balsamic fluid resembling *Styrax* in scent: this liquor after it has exuded from the bark becomes hard, brittle; and transparent; and when burnt affords a very agreeable odour. The negroes and the natives of Guiana use the bark for the purpose of slips to make flambeaux. The natives also use the wood in building their houses. The tree is called Red-wood by the Creoles; and by others is called Houmiri, and Touri. It grows in the forests of Guiana. The resin, according to Aublet, might be used medicinally in the same manner as the Balsam of Peru.

MYRODIA. (*Unguentorum odor. From μύρον, and οἶω, to smell. Smelling of perfumes.*)

Lin. gen. Schreb. n. 1147. Swartz prodr. 102.

Quararibea. Aubl. t. 278. Cavan. diff. 3. 175.

t. 71. f. 2. Juss. 274.

Class. 16. 1. Monadelphia Polyandria.

Nat. order of *Columniferae*. *Malvaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, turbinate-urceolate, coriaceous, toothless, bursting at top into unequal teeth, permanent.

COR. *Petals* five, inserted into the receptacle, narrower below, oblong, oblique, blunt, from spreading recurved, longer than the calyx.

STAM. *Filaments* uniting into a long slender tube, widening at top, plaited-five-toothed, sheathing the style. *Anthers* nine to fourteen, kidney-form, clustered towards the top of the tube, sessile.

PIST. *Germ* ovate, in the base of the calyx. *Style* filiform, thickened at top, plaited, a little longer than the filaments. *Stigma* large, capitate or two-lobed.

PER. *Drupe* subglobular, dry, stipaceous, with a retuse top, umbilicate with the remains of the style, two-celled or three-celled.

SEEDS solitary, angular on one side, convex on the other.

ESSENTIAL CHARACTER.

Cal. single, one-leafed. Cor. five-petalled. Pist. one. Column of anthers undivided. Drupe dry, inclosing two nuts.

SPECIES.

1. *Myrodia turbinata*.

Swartz prodr. 102.

Leaves elliptic, calyxes turbinate somewhat silky within.

2. *Myrodia longiflora*.

Swartz prodr. 103.

Quararibea guianensis. Aubl. guian. 692. t. 278.

Cavan. diff. 3. 175. t. 71. f. 2.

Leaves oblong, calyxes cylindric villose within, column of stamens very long.

DESCRIPTIONS, &c.

1. Native of the West Indies, as Monserrat, St. Lucia and St. Christophers. The anthers are fourteen in number.

2. This is a shrub about six feet high, with a trunk of three or four inches in diameter; the bark is grayish and chapped: the wood white and of a slight texture: the shrub emits long, straight, flexible, divided branches, garnished with smooth, alternate, green, entire, smooth, weak leaves: their footstalk is short, swollen, cylindric, and accompanied by two stipules which fall off soon: the largest leaves are about nine inches long, and three broad. The flowers spring from the bosom of the leaves, or even from the footstalks themselves, and are three, four or five in number: these footstalks are often marked with small greenish scales. The flowers are white. It is a native of Guiana, and grows on the banks of rivers, flowering in may.

MYROSMA. (*Μύρον σμύνη, the smell of perfume.*)

Lin. gen. Schreb. n. 6. suppl. 3. Juss. 63.

Class. 1. 1. Monandria Monogynia.

Nat. order of *Scitamineæ*. *Cannæ*, Juss.

GENERIC

M Y R

GENERIC CHARACTER.

- CAL.** *Perianth* superior double: *outer* three-leaved: *leaflets* equal, membranaceous, oblong, channelled, quite entire: *inner* three-parted; *segments* equal, spreading, oblong, quite entire, with a dusky spot at the top.
- COR.** one-petalled, unequal: *tube* very short; *border* five-parted; the two upper segments shorter, oblong, unequally emarginate; the three lower longer, trifid at the top and gashed; the middle one shorter.
- STAM.** *Filament* one, free or growing to the margin of the middle division of the lower segment of the corolla, membranaceous at the base, awl-shaped. *Anther* ovate, compressed.
- PIST.** *Germ* three-sided, inferior. *Style* thick, bent down, short, three-cornered, cloven longitudinally, hirsute before. *Stigma* open, with the lip dilated.
- PER.** *Capsule* three-celled, three-valved, three-cornered.
- SEEDS** several, angular.

ESSENTIAL CHARACTER.

- Cal.* double: *outer* three-leaved, *inner* three-parted, *Cor.* five-parted, irregular. *Caps.* three-cornered, three-celled, many-seeded.

SPECIES.

1. *Myrosma cannæformis*.

Lin. suppl. 80. *syn.* 51. *ed. Willd.* 13.

DESCRIPTION, &c.

This is a shrub growing like the Canna. Root horizontal, ascending obliquely at top, fleshy, ovate, short, slightly compressed as in Amomum, girt with rings, covered with alternate, embracing, ovate, appressed, broad, fibrous sheaths. Leaves oval, smooth, veined; the lower one with elongated, dilated, radicate petioles, forming the stem; the upper ones with petioles out of the stem. The petioles thus elongated become slender, compressed, channelled longitudinally, but towards the insertion of the leaf they are elevated into a cylindrical ring, hairy in front, curving the leaf inwards a little. Stems or scapes round, somewhat hairy, ending in a joint, whence springs a leaf very like the stem-leaves, and a peduncle involved in the sheath of the petiole. Peduncle solitary, scarcely longer than the petiole, round. Raceme like the ament of a Hop, imbricate with the alternate scales of the bractes. Bractes two-leaved, two-flowered: outer leaf wider, ovate, membranaceous, embracing; inner shorter, narrower, oblong.

This genus is allied to *Phrynium* (Pontederia ovata), but it differs in the fruit^b.

Native of Surinam.

MYROSPERMUM. See *Myroxylum*.

MYROXYLON. Forst. See *Xylofma*.

MYROXYLUM. (From *μυρον*, and *ξύλον* wood. Sweet-wood.)

Lin. suppl. 34. *Lin. gen.* Schreb. n. 709.

Myrospermum. Jacq. amer. 120. *Juss.* 365.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Lomentaceæ*. *Leguminosæ*, Juss.

GENERIC CHARACTER.

- CAL.** *Perianth* one-leaved, bell-shaped, five-toothed, permanent, with very small obsolete teeth.
- COR.** *Petals* five, unequal, inserted into the receptacle; the uppermost wide, ovate, obcordate, reflex; the rest narrow-lanceolate, straight, scarcely spreading: *claws* narrow, linear, the length of the calyx.
- STAM.** *Filaments* ten, filiform, smooth, pressed to the germ, the length of the calyx. *Anthers* erect, lanceolate, grooved, terminating in a short point.
- PIST.** *Germ* superior, longer than the flower, hanging down from it, sabre-shaped, compressed. *Style* ascending, short, filiform. *Stigma* blunt, simple.
- PER.** *Legume* sword-shaped, narrowed at the base, widening towards the top, apical, not opening.
- SEED** single, round, compressed, in the top of the legume.

ESSENTIAL CHARACTER.

- Cal.* bell-shaped. *Pet.* five, the uppermost larger. *Germ* longer than the corolla. *Legume* one-seeded.

SPECIES.

1. *Myroxylum peruiferum*.

Lin. syst. 395. *suppl.* 233.

^a Linn. suppl.

^b Willdenow.

M Y R

Myrospermum fructescens. Jacq. amer. 120. *piet.* t. 118.

Hoitziloxitl. Hern. mex. 51. *ic.*

Cabureida. Pif. bras. 57. 119.

DESCRIPTION, &c.

This is a very beautiful tree, with a smooth thick bark, which is very resinous, as all parts of the tree are. Leaves alternate abruptly pinnate. Leaflets in two pairs, mostly opposite, ovate-lanceolate, with the end produced, blunt, emarginate; they are entire, veined and very smooth: rachis running along the whole length of the lower surface of the leaf, raised, pubescent: common petiole round, pubescent. Racemes axillary, erect, pointing one way, longer than the leaves; peduncle roundish, pubescent; flowers scattered. Bracte supporting each peduncle, very small, ovate, erect, concave, appearing to the naked eye to be a tubercle. Pedicels erect. Calyx hoary green, on the outside of the orifice surrounded by the petals and anthers which are white, within containing the green legume, and having a singular appearance. The substance of the leaves is full of linear dots, which are transparent and resinous.

The Balsam of Peru is the produce of this tree. The elder Linneus could never obtain a satisfactory answer to the enquiries which he made concerning the tree that yielded this balsam; at length it was discovered by Joseph Cælestine Mutis in the hottest provinces of South America, and he sent a branch of it in flower to the younger Linneus about the year 1781.

According to Jacquin, it is an inelegant shrub, not much branched, erect, eight or ten feet in height. Leaves pinnate, alternate, eight inches long, deciduous, on the younger branches. Leaflets commonly three pairs with an odd one, oblong, blunt, quite entire, smooth, alternate, an inch long, on a short petiole. Racemes loose, terminating, erect, simple or bifid; pedicels one-flowered, erect. Corolla whitish rose-colour, without any scent. Membrane of the fruit veined, large, brownish gray. Seed commonly one, seldom two arriving at maturity, a few more are abortive; the seeds and the cell yield a balsam that has a strong unpleasant smell, whence Jacquin gave this tree or shrub the name of *Myrospermum* or Balsam-feed. He found it growing abundantly in open coppices at the foot of the mountain de la Popa near Carthagena.

MYRRHA. See *Cicuta*.]

MYRRHIS. See *Athamanta*, *Cherophyllum*, *Scandix*, *Sium*.

[**MYRSINE.** (*Myrsinum* of Pliny. *Μυρσίνη* of Dioscorides.)

Lin. gen. n. 269. *Reich.* n. 289. *Schreb.* n. 369.

Gertn. t. 59. *Juss.* 152.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Bicornes*. *Sapotæ*, Juss.

GENERIC CHARACTER.

- CAL.** *Perianth* five-parted, small: *leaflets* subovate, permanent.
- COR.** one-petalled, half-five-cleft: *segments* half-ovate, converging, blunt.
- STAM.** *Filaments* five, scarcely visible, inserted into the middle of the corolla. *Anthers* awl-shaped, erect, shorter than the corolla.
- PIST.** *Germ* subglobular, almost filling the corolla. *Style* cylindric, longer than the corolla, permanent. *Stigma* large, woolly, hanging on the outside of the flower.
- PER.** *Berry* roundish, depressed, one-celled.
- SEED** one, subglobular, fixed obliquely to the bottom of the berry. G.

Obs. Unity is frequently subtracted in all parts of the fructification.

The unripe berry has five seeds, but when ripe it has only one.

ESSENTIAL CHARACTER.

- Cor.* half-five-cleft, converging. *Germ* filling the corolla. *Berry* one-seeded, with a five-celled nucleus.

¹ Linn suppl.

M Y R

SPECIES.

1. *Myrsine africana*. *African Myrsine*.
Lin. spec. 285. *ffst.* 236. *Reich.* 1. 551. *hort.*
cliff. 72. *Berg. cap.* 53. *Zinn. goett.* 202. *Fabric.*
helmst. 407.
M. glabra. *Gärtn. fruct.* 1. 282.
Vitis idæa æthiopica, myrti tarentinæ folio, flore atro-
purpureo. *Comm. hort.* 1. 123. *t.* 164.
Buxus africana rotundifolia ferrata. *Pluk. phyt.* *t.* 80.
f. 5.
Frutex æthiopicus baccifer, foliis myrtilli. *Breyn.*
cent. 9. *t.* 5. *Raii hist.* 1636. & 1504. *lin. ult.* &
penult.
Leaves elliptic acute.
2. *Myrsine retusa*. *Round-leaved Myrsine* or *Tamaja*.
Ait. hort. kew. 1. 271.
M. scabra. *Gärtn. fruct.* 1. 282.
Leaves obovate obtuse emarginate-toothblotted at top.

DESCRIPTION, &c.

1. Flowers axillary, in threes, on short peduncles. Corolla pale, rugged with testaceous dots; ciliate, closed. Stamens opposite to, not alternate with, the segments of the corolla. Stigma pencil-shaped. Berry of the same form and shape with that of *Uva urfi*, blue. Nucleus of the same shape, globular, depressed a little*. *Gärtner* describes the berry as globular, depressed, pulpy, very dark blue with a bloom on it, smooth, one-celled. Rind before it is fully ripe subcoriaceous, easily separating from the inner fleshy spongy substance, but afterwards very thin and cohering with the pulp. Seeds regularly five, placed round the receptacle in a ring, but only one or at most two ripening; that is globular, depressed, or hemispherical, hollowed near the umbilicus, the rest smooth, rufescent, and very minutely dotted†.

Native of the Cape of Good Hope. Cultivated in 1691, in the Royal garden at Hampton-court. It flowers from march to may.

2. Native of the Azores, where it was found by Mr. Francis Masson. It was introduced in 1788, and flowers in june^m.

Berries the size of red Currants, spherical, rugged all over with small tubercles. Rind subcoriaceous, not coloured, pale or inclined to straw-colour; in other respects like the preceding, only every thing smaller‡.

MYRSINITES. See *Euphorbia*.

MYRTI AFFINIS. See *Liquidambar*.

MYRTIFOLIA. See *Celastrus*.

MYRTI FOLIO. See *Myrtus*.

MYRTILLUS. See *Vaccinium*.

MYRTLE. See *Myrtus*.

——— Candleberry, and Dutch. See *Myrica*.

MYRTLE-LEAVED SUMACH. See *Coriaria*.

MYRTOIDES. See *Myrtus*.

MYRTO-CISTUS. See *Hypericum*.

MYRTO-GENISTA. See *Sophora*.]

MYRTUS (of *Pliny* and other Latin authors. *Μύρτος* of *Aristotle* and other Greek authors. *Μύρτιον* of *Galen*, *Plutarch*, &c. *Μύρτιον* in *Athenæus*, *Plato*, *Aristophanes*. Fabled to be so named from *Myrsine* an Athenian damsel, and favourite of *Minerva*, who was metamorphosed into this shrub.)

Lin. gen. n. 617. *Reich.* n. 672. *Schreb.* n. 844.

Tournef. t. 409. *Juss.* 324. *Gärtn. t.* 38. *Murcia*.

Fl. zeyl. 83. *Greggia. Soland.* *Gärtn. t.* 33.

Mouriri. Aubl. t. 180.

Class. 12. 1. *Icosandria Monogynia*.

Nat. order of *Ilceperideæ*. *Myrti*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, four or five-cleft, bluntish, superior, raised internally into a subvillose ring, permanent.

COR. *Petals* four or five, ovate, entire, large, inserted into the calyx.

STAM. *Filaments* very many, capillary, the length of the corolla, inserted into the calycine ring. *Anthers* roundish, small.

PIST. *Germ* inferior, two-celled or three-celled; the seeds

* *Linn. fyst.*

† *Gärtn. 282.*

‡ *Hort. kew.*

§ *Gärtner.*

M Y R

fixed to the partition. *Style* simple, filiform. *Stigma* blunt.

PER. *Berry* oval, umbilicated with the calyx, one, two or three-celled.

SEEDS few, kidney-form.

ESSENTIAL CHARACTER.

Cal. five-cleft, superior. *Pet.* five. *Berry* two or three-celled. *Seeds* several, gibbous.

SPECIES.

1. *Myrtus communis*. *Common Myrtle*.
Lin. spec. 673. *Reich.* 2. 476. *hort. cliff.* 42.
ups. 123. *mat. med.* 122. *Gärtn. fruct.* 1. 184.
Scop. carn. n. 584. *Allion. pedem. n.* 1791.
α. *M. romana*. *Common broad-leaved Myrtle*.
Mill. fig. 123. *t.* 184. *f.* 1. *Kniph. cent.* 4. *n.* 52.
Plenck, ic. 374.
M. latifolia romana. *Baub. pin.* 468.
M. altera. *Dod. pempt.* 772.
β. *M. tarentina*. *Box-leaved Myrtle*.
Mill. dict. n. 6. *Baub. hist.*
M. minor vulgaris. *Baub. pin.* 469. *Raii hist.*
1503.
M. minor. *Ger. emac.* 1412. *f.* 5.—& *rotundiore*
folio. *Park. parad.* 427. 2. 3. *fig.* 429. 3.
γ. *M. italica*. *Italian or upright Myrtle*.
Mill. dict. n. 5.
M. communis italica. *Baub. pin.* 468. *Raii hist.*
1502.
δ. *M. boetica*. *Orange-leaved Myrtle*.
Mill. dict. n. 4.
M. latifolia boetica 2. *Baub. pin.* 469. *Clus. hist.*
1. 65. *Ger. emac.* 1411. *f.* 2. *Blackw. t.* 114.
ε. *M. lusitanica*. *Portugal Myrtle*.
M. acuta. *Mill. dict. n.* 3.
M. sylvestris fol. acutissimis. *Baub. pin.* 469. *Clus.*
hist. 1. 66. *f.* 1.
ζ. *M. belgica*. *Broad-leaved Dutch Myrtle*.
Mill. dict. n. 2.
M. latifolia belgica. *Baub. pin.* 469.
η. *M. mucronata*. *Rosemary-leaved Myrtle*.
M. minima. *Mill. dict. n.* 7.
M. fol. minimis & mucronatis. *Baub. hist.* 469.
Clus. hist. 1. 67.
Flowers solitary, involucre two-leaved.
- [2. *Myrtus tomentosa*. *Woolly-leaved Myrtle*.
Ait. hort. kew. 2. 159. *Vahl symb.* 2. 56. *Curt.*
magaz. 250. *Pluk. amalb.* 21. *t.* 372. *f.* 1.
M. canescens. *Lour. cochinch.* 311.
Peduncles one-flowered, leaves triple-nerved tomentose un-
derneath.
3. *Myrtus alpina*. *Alpine Myrtle*.
Swartz prodr. 77.
Peduncles solitary terminating one-flowered very short,
leaves ovate, branchlets in fours fastigiate, stem arbo-
reous.
4. *Myrtus procera*. *Tall Myrtle*.
Swartz prodr. 77.
Peduncles clustered axillary one-flowered, leaves ovate
acuminate flat smooth, branches rod-like, stem arboreous.
5. *Myrtus ligustrina*. *Privet Myrtle*.
Swartz prodr. 78.
Peduncles solitary and branched terminating one-flowered,
leaves lanceolate blunt convex lucid.
6. *Myrtus crenulata*. *Notch-leaved Myrtle*.
Swartz prodr. 78.
Peduncles solitary axillary commonly three-flowered, leaves
roundish crenulate smooth.
7. *Myrtus cerasina*. *Cherry Myrtle*.
Vahl symb. 2. 57.
Arbor baccifera myrti folio latiore, fructu nigro cerasino
dipyreno. *Sloan. jam.* 2. 107. *Raii dendr.* 66.
Peduncles lateral and terminating one-flowered, leaves ob-
long shining dotted underneath.
8. *Myrtus tenuifolia*. *Fine-leaved Myrtle*.
Smith in Linn. trans. 3. 280.
Peduncles axillary solitary one-flowered, leaves linear mu-
cronulate.
9. *Myrtus brasiliiana*. *Brazilian Myrtle*.
Lin. spec. 674. *Reich.* 2. 477. *Plum. spec.* 18. *ic.*
207. *f.* 1.
Flowers solitary, peduncles naked, petals subciliate.]
10. *Myrtus*

10. *Myrtus biflora*. Two-flowered Myrtle.
Lin. spec. 674. *Reich.* 2. 478. *amoen.* 5. 398.
Brown. jam. 248. t. 25. f. 3.
Caryophyllus fruticosus. *Mill. dict.* n. 3.
Peduncles two-flowered, leaves lanceolate.
- [11. *Myrtus trinervia*. Three-nerved Myrtle.
Smith in Linn. transf. 3. 280.
Peduncles axillary three-flowered, leaves ovate acuminate three-nerved tomentose underneath.
12. *Myrtus angustifolia*. Narrow-leaved Myrtle.
Lin. syst. 461. *Reich.* 2. 478. *mant.* 74. *Burm. afr.* 237. t. 83. f. 2. (Phillyrea).
Peduncles umbelled, leaves linear-lanceolate subsessile.
13. *Myrtus laevis*. Smooth Myrtle.
Lin. syst. 461. *Thunb. jap.* 198.
Peduncles umbelled, leaves ovate acuminate.
14. *Myrtus lucida*. Shining Myrtle.
Lin. spec. 674. *Reich.* 2. 478.
Peduncles subtriflorous, leaves subsessile lanceolate attenuated.
15. *Myrtus Cumini*.
Lin. spec. 674. *Reich.* 2. 478. *fl. zeyl.* n. 185.
Jambosa ceramica. *Rumph. amb.* 1. 130. t. 41. *Burm. ind.* 117.
Arbor zeylanica cuminum redolens. *Burm. zeyl.* 27.
Peduncles many-flowered, leaves lanceolate-ovate.
16. *Myrtus lineata*.
Swartz prodr. 78.
Flowers axillary subsessile, leaves ovate-acuminate rigid marked with lines hoary underneath.
17. *Myrtus cordata*. Heart-leaved Myrtle.
Swartz prodr. 78. *Vahl symb.* 2. 57.
Flowers axillary and lateral subsessile, leaves sessile cordate ovate shining.
18. *Myrtus pallens*. Ash-coloured Myrtle.
Vahl symb. 2. 57.
Racemes terminating pubescent, pedicels one-flowered, leaves broad-lanceolate attenuated dotted above.
19. *Myrtus dumosa*.
Vahl symb. 2. 57.
Racemes axillary very short, leaves petioled broad-lanceolate acuminate acute.
20. *Myrtus buxifolia*. Box-leaved Myrtle.
Swartz prodr. 78.
Racemelets very short clustered axillary, leaves wedge-shaped oblong blunt somewhat convex.
21. *Myrtus glabrata*. Polished Myrtle.
Swartz prodr. 78.
Racemelets very short axillary many-flowered, leaves elliptic acuminate convex coriaceous very smooth.
22. *Myrtus disticha*.
Swartz prodr. 78.
Peduncles axillary many-flowered shorter than the leaves, leaves distich bent down ovate-lanceolate, branches spreading.
23. *Myrtus monticola*.
Swartz prodr. 78.
Peduncles many-flowered very short axillary solitary, leaves ovate blunted flat very smooth.
24. *Myrtus axillaris*.
Swartz prodr. 78.
Peduncles many-flowered very short axillary clustered, leaves ovate-acuminate shining flat.
25. *Myrtus Gregii*. Round-leaved Myrtle.
Swartz prodr. 78. *Ait. hort. kew.* 2. 159.
Greggia aromatica. *Gärtn. fruct.* 1. 168.
Peduncles many-flowered axillary, leaves ovate elliptic acute quite entire pubescent underneath.
26. *Myrtus dioica*.
Lin. spec. 675. *Reich.* 2. 479.
Peduncles trichotomous-panicled, leaves oblong, flowers dioecous.
27. *Myrtus virgultosa*.
Swartz prodr. 79. *Vahl symb.* 2. 58. *Plum. ic.* 208. f. 1.
Peduncles axillary and terminating panicled or racemed, leaves broad-lanceolate attenuated.
28. *Myrtus splendens*.
Swartz prodr. 79.
Peduncles axillary solitary trichotomous, leaves elliptic acuminate flat veined scariose shining, branches rod-like.]

29. *Myrtus zeylanica*. Ceylon Myrtle.
Lin. spec. 675. *Reich.* 2. 479. *fl. zeyl.* n. 182.
Vahl symb. 2. 58. *Lour. cochinch.* 312? *Herm. lugdb.* 434. t. 435. *mus.* 65. *Burm. ind.* 115. *zeyl.* 166. 230. *Raii hist.* 1504.
Myrtoides foliis ovatis. *Lin. hort. cliff.* 489.
Racemes axillary and terminating, pedicels commonly four-flowered, leaves ovate attenuated dotted above.
30. *Myrtus androsæmoides*.
Lin. spec. 675. *Reich.* 2. 479. *fl. zeyl.* n. 184.
Vahl symb. 2. 58. *Lour. cochinch.* 312.
Racemes axillary and terminating-subcompound, pedicels three-flowered, leaves ovate-oblong sessile.
31. *Myrtus caryophyllata*.
Lin. spec. 675. *syst.* 462. *Reich.* 2. 480. *fl. zeyl.* n. 183. *mat. med.* 122. *Swartz obs.* 202.
Peduncles trichotomous terminating, calyxes undivided, leaves ovate-lanceolate undotted.
32. *Myrtus acris*.
Swartz prodr. 79.
M. caryophyllata. *Jacqu. obs.* 2. 1. t. 25. *amer. pict.* 76.
Caryophyllus 1. *Brown. jam.* 247. *Pluk. phyt.* t. 155. f. 3.
Peduncles axillary and terminating corymbed trichotomous longer than the leaves, leaves elliptic convex coriaceous veined dotted, stem arboreous.]
33. *Myrtus coriacea*. Sumach-leaved Myrtle.
Swartz prodr. 79. *Vahl symb.* 2. 59.
Myrtus cotini folio. *Plum. ic.* t. 208. f. 2.
Caryophyllus cotinifolia. *Mill. dict.* n. 4.
Peduncles trichotomous terminating, leaves roundish-elliptic convex coriaceous veinless dotted shining on both sides.
- [34. *Myrtus fragrans*. Fragrant Myrtle.
Swartz prodr. 79. *Vahl symb.* 2. 59.
Eugenia montana. *Aubl. guian.* 495. t. 195.
Peduncles axillary trichotomous and simple, leaves ovate slightly convex somewhat coriaceous dotted smooth, stem arboreous.
35. *Myrtus chinensis*. Chinese Myrtle.
Lour. cochinch. 315.
Peduncles many-flowered, leaves ovate-lanceolate ferrate hairy.]
36. *Myrtus Pimenta*. Pimento, Jamaica Pepper, or Allspice.
Lin. spec. 676. *syst.* 462. *Reich.* 2. 480. *fl. zeyl.* n. 186. *hort. cliff.* 501. *mat. med.* 122. *Woodv. med. bot.* 77. t. 26. *Gärtn. fruct.* 185. *Swartz obs.* 202. *Sloan. jam.* 2. 76. t. 191. f. 1. *Plenck, ic.* t. 375.
Caryophyllus Pimento. *Mill. dict.* n. 2. *Brown. jam.* 247. 2. *Pluk. phyt.* t. 155. f. 4.
Amomum odore Caryophylli. *Bauh. hist.* 2. 195. *Raii hist.* 1507. *Blackw. t.* 355.
 α. Long-leaved Pimento.
 Leaves oblong-lanceolate acuminate, point blunt.
 β. Short-leaved Pimento.
 Leaves oval blunt.
Flowers trichotomous-panicled, leaves oblong-lanceolate.

DESCRIPTIONS, &c.

[The genus *Myrtus* is composed of small trees and shrubs. Flowers in some solitary, with two scales at the base and axillary, in others forming opposite corymbs or panicles, axillary or terminating; some are four-petalled with a four-cleft calyx, others have the calyx undivided. The leaves in a very few are sometimes alternate. Perhaps the genus might better be divided from the number of cells in the berry and the situation of the flowers*. Accordingly *M. Chytraculia* and *Syzygium* having a one-celled berry are dismissed from this genus, and will be found under that of *Calyptranthes*.

Dr. Smith observes, that few genera are more confused in the works of Linneus than this of *Myrtus*. All that properly belong to it are those that have a corolla of five petals with a five-cleft calyx, and a two-celled or three-celled berry. These characters distinguish it from *Eugenia*, *Psidium* and *Calyptranthes*.

* Jussieu.

The 11th, 18th, 19th, 25th, 29th, 30th, and 36th species have a four-cleft calyx, and four petals to the corolla, but these numbers are by no means constant.

1. The common Myrtle is well known as an elegant evergreen shrub, native of Asia, Africa, and the southern parts of Europe; unfortunately just too tender to abide our winters without some protection in England, except in the most southern and western parts of the island. Trunk irregular, branching, covered with a brown rough scaling bark. Leaves ovate or ovate-lanceolate; entire, smooth on both sides, dark-green paler underneath, opposite and decussated. The flowers come out singly from the axils, and have a two-leaved involucre under them. Corolla white. Berry inferior or below the calyx, subovate, crowned with the permanent calyx, fleshy and spongy, dark purple or black-blue, three-celled. Seeds in each cell four or five, seldom more, kidney-form gibbous, whitish, shining, somewhat bony at the back, the belly filled with a fungous substance, fixed to the inner angle of the cells: they have a single, cartilaginous or somewhat bony, thick cover, no albumen, the embryo conformable to the cavity of the seed, roundish, curved, milk-white: cotyledons semicylindric, short, incumbent: radicle twice the length of the cotyledons, semicircular-curved, inferior^b. They flower in July and August. The cultivation of the Myrtle in England, is assigned in the Kew catalogue to the year 1629, when Parkinson informs us that he had three sorts (varieties) in his garden; the broad-leaved and two varieties of the box-leaved: Gerard however, in 1597, says that Myrtles never bear any fruit in England, which surely implies the cultivation of it among us before that period. And Bradley informs us, that the Myrtle was introduced by Sir Francis Carew and Sir Walter Raleigh in 1585, when they resided in Spain, and discovered the preparations for the Spanish Armada against us^c. Mr. Evelyn also, in the year 1678, says, "I know of one" (a Myrtle) near eighty years old, which has been "continually exposed, unless it be, that in some exceeding sharp seasons a little dry straw has been thrown upon it^d." Perhaps he may allude to the tree at Bedington. But that was the Spanish broad-leaved or Orange-leaved variety, which Miller and Bradley report to have been above eighteen feet high, and to have spread about forty-five feet^e.

Box-leaved and Orange-leaved are said by Johnson (*Ger. emac.* 1413.) to have been nourished in the garden of Mistress Tuggie in Westminster, in 1633.

This shrub was a great favourite among the ancients, for its elegance, and its evergreen sweet leaves. It was sacred to Venus, either on this account, or perhaps because it flourishes most in the neighbourhood of the sea. Myrtle-wreaths adorned the brows of bloodless victors, and were the symbol of authority for magistrates at Athens. Both branches and berries were put into wine, and the latter were used in the cookery of the ancients. The Myrtle was also one of their medicinal plants. All parts of it are astringent, but it is discarded from modern practice.

The principal varieties are erected into species by Mr. Miller. Their differences, as he has given them, are these.]

α. The common broad-leaved or Roman Myrtle grows to the height of eight or ten feet in England, but is much higher in Italy, where it is the principal underwood of some of the forests. The leaves are broader than most of the other varieties, being an inch in breadth; they are an inch and half long, of a lucid green, end in acute points, and are subsessile or on very short foot-stalks. The flowers are larger than those of the other varieties, on pretty long slender peduncles, from two to four at the same axil. Berries ovate or oblong-ovate, very dark purple so that they seem to be black when ripe, inclosing from three to six hard kidney-shaped seeds. This variety is called by some the Flowering Myrtle, because it flowers more freely in England than the others. By others the Roman Myrtle, because it abounds about Rome, where

however I did not observe any great quantity of it. The woods between Leghorn and Pisa have Cork-trees for the timber, and Myrtle for the underwood.

β. The Box-leaved Myrtle has the leaves oval, small, sessile, of a lucid green, and ending in obtuse points; the branches weak, and frequently hanging down, when permitted to grow without shortening; the bark is grayish: the flowers are small, and come late in the summer: the berries are small and round.

γ. The common Italian Myrtle has ovate-lanceolate leaves, ending in acute points; the branches grow more erect than in either of the preceding, as do also the leaves, whence it is called by the gardeners Upright Myrtle. The flowers are not large, and the petals are marked with purple at their points, whilst they remain closed. The berries are small, oval and of a purple colour.

There is a variety of this with white berries: and the Nutmeg Myrtle seems to be only a variety of this, several plants raised from the seed of it being so like the Italian Myrtle, as hardly to be distinguished from it.

δ. Orange-leaved, or as it is called by some, bay-leaved Myrtle, has a stronger stalk and branches, and rises to a greater height. The leaves are ovate-lanceolate, in clusters round the branches, and of a dark green. The flowers are of a middling size, and come out sparingly from between the leaves. The berries are oval, and smaller than those of the first. It is not so hardy as that.

ε. The leaves of the Portugal Myrtle are much smaller than those of the next, being less than an inch long, and not more than half an inch broad, lanceolate-ovate acute, of a dull green, and set pretty close on the branches. The flowers are smaller. The berries small and oval.

ζ. The broad-leaved Dutch Myrtle has leaves much less than those of the common sort, and more pointed, standing close together on the branches; the midrib on the under side of the leaves is of a purple colour; they are of a darker green and sit closer to the branches. The flowers are smaller and on shorter peduncles. They come out a little later than the common sort.

The Double-flowering Myrtle is probably a variety of this; the leaves and growth of the plant, the size of the flowers, and the time of flowering agreeing better with this than any of the others.—Mr. Miller, in his plate, has figured the Double Myrtle as a variety of the Italian.

η. Rosemary-leaved, or as some call it Thyme-leaved Myrtle, has the branches growing pretty erect; the leaves small, narrow, acute, sessile, and of a lucid green. Flowers small, appearing late in the season.

The above varieties are constant; others there are which are propagated in the gardens and nurseries for sale, which are less considerable and more variable.

[It may suffice to give the names of these:]

1. Gold-striped broad-leaved Myrtle.
2. Broad-leaved Jews Myrtle, having frequently the leaves in threes, on which account it is said to be in esteem among the Jews in their religious ceremonies.
3. Gold-striped Orange-leaved Myrtle.
4. Silver-striped Italian Myrtle.
5. Striped Box-leaved Myrtle.
6. Silver-striped Rosemary-leaved Myrtle.
7. Silver-striped Nutmeg Myrtle.
8. Cock's-comb or Bird's-nest Myrtle.

The Myrtle is a rare instance of the same name prevailing in the Greek and Latin and all the modern European languages, with a very slight difference. Thus in German it is *Myrte* or *Myrtenbaum*; in Dutch, *Myrtus*; in Danish, *Myrter*; in Swedish, *Myrten*; in French, *le Mirte*; in Italian and Spanish, *Mirto*; in Portuguese, *Murta* or *Myrta*.

2. Branches round, tomentose. Leaves an inch and half long, elliptic, blunt, above dark and veined, reflex at the edge, the nerves more conspicuous underneath, smooth above, hoary underneath, on very short petioles. Peduncles axillary and terminating, solitary, opposite, tomentose. Bractes two, small, oblong, at the base of the calyx, which is turbinate and tomentose, with

^b Gærtner. ^c Husb. and Gard. vol. 3. part 2. p. 61.

^d Sylva, b. 2. ch. 5. p. 174. fol. 1706.

^e Mill. dict. ed. 1724. Bradl. p. 64.

with four rounded segments. Petals oblong, tomentose-hairy without, purple within^f.

Loureiro thus describes it under the name of *M. canescens*; stems shrubby, erect, six feet high, manifold, smooth, whitish, even; with spreading branches. Leaves ovate, sometimes acute, quite entire, three-nerved, hoary; on petioles connate with the stalk. Flowers purplish, solitary, scattered, having a large, berried, five-cleft calyx, with rounded, spreading, unequal segments, and an involucre of two smaller leaves underneath. Petals five, roundish, spreading, longer than the calyx. Stamens nearly equal to the corolla. Berry ovate, crowned, tomentose, black-purple, three-celled, with a juicy, blackish, sweet-astringent, esculent pulp, and many, minute, roundish seeds.

Native of China and Cochinchina. Introduced about 1776, by Mrs. Norman. It flowers in June and July^g.

3. Native of Jamaica.

4, 5, 6. Natives of Hispaniola^h.

7. The whole of this shrub is smooth. Branches round, with an ash-coloured bark. The young twigs have linear-lanceolate scales, at first imbricate, but afterwards remote and deciduous. Leaves petioled, an inch long, blunt, the upper surface somewhat veined and shining, with a groove along the middle, the under veinless, pale, dotted in clusters. Peduncles sometimes four from the same bud; usually axillary opposite and terminating, but often below the leaves, one-flowered, filiform, an inch and half long. Segments of the calyx oblong, blunt. Petals oblong, blunt, small, white.—Native of the Caribbee islandsⁱ.

The fruit has a very thin black skin, with a very small purple sweetish pulp, including two white stones, flat on one side, convex on the other, together making a sphere. It is so like a black Cherry, that it has that name in Jamaica^k.

8. This is an elegant little shrub, with leaves somewhat more than an inch in length, and about a line in breadth, slightly revolute, downy beneath. Flower-stalks silky, shorter than the leaves, each bearing a small white flower, often tinged externally with red, and not unlike the common Myrtle blossom, though scarcely half so large. Calyx nearly smooth. Petals downy. Germ very silky.—Native of New South Wales^l.

9. Leaves ovate, obtuse, petioled, smooth. Flowers axillary, on a leafless peduncle. Petals four or five, lacerate-ciliate, obovate, concave, reflex. Stamens about forty.—Native of Brasil^m.

This plant stands in the latter editions of Linneus in three different places, being his *Eugenia uniflora*, *Myrtus brasiliensis* and *Plinia pedunculata*ⁿ. See *Eugenia* and *Plinia*.]

10. This rises with a divided trunk to the height of eight or ten feet, sending out many opposite branches, covered with a gray bark. Leaves shorter and rounder at the points, smoother and of a firmer texture than in *M. Pimenta*. The flowers come out from the side of the branches between the leaves, on slender foot-stalks, about an inch in length, two generally from the same point. Berries round, of a brighter colour than the *Pimenta*. The leaves and fruit not having the aromatic flavour of *Pimenta* are not in use.

This tree retaining its leaves, which are of a splendid green, all the year, it makes a good appearance; but the flowers being small, and growing thinly upon the branches, do not make any great figure. It is a native of Jamaica, whence Mr. Miller received it, and cultivated it some years before 1759.

[Browne says, it is a beautiful little shrub, rising commonly to the height of three or four feet, sometimes more.

11. Leaves large and handsome. Flowers small, generally three together, on short hairy forked flower-stalks. Although the teeth of the calyx, and the petals also, are generally four only, it is a true *Myrtus*, and not an *Eugenia*, the fruit being a berry with many

shining gibbous curved seeds. It has but one cell when ripe, but the germ appears to be divided into two or three cells.—Native of New South Wales^o.

Loureiro has a different species under the same name. He describes it as a tree twelve feet in height, with spreading branches. Leaves ovate, acuminate, quite entire, three-nerved, smooth on both sides, petioled. Flowers white, subterminating, in long racemes. Calyx berried, four-cleft. Corolla four-petalled. Berry roundish, crowned, brown, smooth, one-celled, with a few, unequal, angular seeds. The berries are scarcely half an inch in diameter, and are eatable.—Native of Cochinchina.

12. This resembles *M. biflora*. It is a small tree with round branches and square smooth twigs. Leaves like those of *Phillyrea angustifolia*, subsessile, long, linear-lanceolate, quite entire, smooth, several times longer than the internode. Peduncles lateral, opposite, short, scarcely longer than the internode, having an umbellet at top usually simple, seldom compound, small, many-flowered. Petals roundish. Stamens erect, bristle-shaped, longer than the petals.—Native of the Cape of Good Hope^p.

13. Stem shrubby, entirely smooth. Branches and branchlets alternate, erect. Leaves from the alternate buds, single in pairs or in threes, sharply serrate, veined, smooth on both sides, pale underneath, spreading, unequal, an inch long and more, on petioles half a line in length. Flowers on the branchlets terminating, in a simple umbel. Peduncles filiform, warted with scars, an inch long. Perianth five-toothed, smooth. Berry two-celled or three-celled, with one seed in each cell. It is nearly allied to *Cratægus villosa* and *levis*. From the first however it differs in being wholly smooth, in having one pistil, and aggregate leaves: from the second, in having one pistil, and ovate slender leaves, longly acuminate.—Native of Japan^q.

14. The leaves are of a singular structure, being from ovate remarkably attenuated into a lanceolate top. Flowers five-petalled.—Native of Surinam^r.

15. This is a tree with round, ash-coloured branches. Leaves lanceolate or ovate-lanceolate, smooth, quite entire, not very acute, on longish petioles. Corymbs trifid, compound, lateral^s.—Native of the East Indies.

16. Native of Hispaniola^t.

17. Branches ash-coloured, smooth, as is the whole plant, compressed at top. Leaves an inch long, somewhat leathery, margined, very blunt and smooth, veined, dotted underneath and paler. Flowers axillary and on the leafless branches, sessile, three or four on each side^u.—Native of the West Indies.

18. Branches round, ash-coloured, compressed a little at top. Leaves two inches long, blunt, somewhat coriaceous, very smooth and even, veinless, having a groove along the middle, and a nerve within the edge as in *M. zeylanica*. Petioles very short, purplish. Peduncles in pairs, scarcely half an inch long, villose ash-coloured. Pedicels the same colour, and a little longer than the peduncle, decussated, commonly one-flowered. One ovate minute bracte at the base of each pedicel, and two others very like it at the base of the calyx; which is villose ash-coloured and coriaceous, with four oblong segments. Petals twice as long as the calyx, very minutely ciliated. Stamens the length of the petals.

19. Branches with a coated chinky bark. Leaves two inches long, membranaceous, with numerous, simple, transverse veins, having a longitudinal nerve within the edge on each side, paler underneath, on short petioles; the young ones are villose-filky. Racemelets solitary or in pairs opposite, scarcely a quarter of an inch in length, four-flowered. Pedicels one-flowered, opposite. A minute bracte at the base of each pedicel, and two minute ones at the base of the calyx; which is oblong, subvillose, with oblong segments, almost the length of the germ. Petals four.—It differs from *M. glabrata* of Swartz in having flat membranaceous leaves, and few-flowered racemes: from *M. disticha* of the same author, by its few-flowered peduncles, and leaves

^f Vahl.
^k Sloane.

^g Hort. kew.

^h Swartz.
ⁱ Smith in Linn. transf.

^j Smith in Linn. transf.

^l Swartz.

^m Vahl.

ⁿ Linn. spec.

^o Idem.

^p Linn. mant.

^q Linn. zeyl.

^r Thunberg.

^s Swartz.

^t Linn. spec.

^u Vahl.

not bent down. This and the preceding are natives of South America, and were communicated to Vahl by Mr. Forsyth^{*}.

20. Native of the West Indies.

21. Native of Hispaniola.

22, 23, 24. Natives of Jamaica.

25. Calyx four-parted, with rounded, concave segments. Corolla four-petalled. Germ two-celled. Berry one-celled, obovate-globular, rugged with dots, coriaceous, pale straw-colour. Seed one, large, kidney-oblong, fleshy. Cotyledons so entangled together that they can scarcely be separated[†]—Native of Antigua, Barbados, Dominica. Introduced in 1776 by John Greg, Esq.[‡]

26. Leaves thick. Peduncles axillary and terminating, brachiate-panicled, the length of the leaves. Petals few.—Native of America. Communicated to Linneus by Miller[§].

27. Branches rod-like, smooth, with an ash-coloured bark, the young ones villose. Leaves petioled, an inch and half or more in length, sharpish at the base, smooth above and shining, pale underneath and veined; the younger ones somewhat dotted above. Peduncles pubescent, in pairs from each axil, shorter by half than the leaves. Pedicels opposite, remote, a quarter of an inch long, filiform, one-flowered. Bracte ovate, minute, at the base of each pedicel, and two under each calyx. Flowers small. Segments of the calyx rounded, ash-coloured at the base. Petals twice as long as the calyx, dotted[¶].—Native of Jamaica, Santa Cruz, &c.

28. Native of Hispaniola[¶].]

29. This has a strong upright stalk, covered with a smooth gray bark, dividing towards the top into many slender stiff branches. Leaves near two inches long, and an inch and quarter broad, of a lucid green, and on very short foot-stalks. The flowers come out at the ends of the branches, several on one common peduncle, which branches out; and each flower stands on a very slender pedicel: they are very like the flowers of the Italian Myrtle.

[Branches round, ash-coloured: branchlets compressed, purplish, subalternate. Leaves on very short petioles, sometimes subalternate, an inch and half long, subcoriaceous, blunt, veinless, very smooth, having a longitudinal groove in the middle. Peduncles opposite, four-cornered, two inches long, smooth, having raised wandering dots: pedicels opposite, four-cornered, remote, scarcely half an inch long; flowers commonly four from the top of each pedicel, on other short pedicels. Calyx turbinate, wrinkled with raised gray scattered tubercles, having four rounded segments[¶]. In Linneus's Flora Zeylanica, the calyxes are said to be five-toothed, the corollas five-petalled, and the berries white. According to Loureiro, the calyx is four-cleft, the corolla four-petalled; the stamens about one hundred in number; the berry white, small, roundish, one-celled, containing about eight seeds: but he doubts whether his plant be the same with Herman's.

Native of Ceylon; probably of other parts of the East Indies and of Cochinchina. Cultivated by Mr. Miller before 1759.

30. The whole plant is smooth. Branches obscurely four-cornered at top. Leaves very large, being a hand or more in length, veined, a little attenuated at top, blunt, not dotted on either side. Terminating racemes two, sometimes four together; the axillary ones opposite, solitary; all brachiate, three inches long. Peduncles four-cornered; partial ones opposite, spreading very much, remote; the lower ones trifid, with three-flowered pedicels. Bracte awl-shaped, very short at the base of each peduncle and pedicel; none at the base of the calyx; which is obovate, the size of a pepper-corn and four-toothed[¶].

Loureiro describes the species to which he gives this name, as a very branching small tree or shrub, five feet high, with reddish-white flowers, the calyx five-toothed, the corolla five-petalled. Berry dusky-red.

Native of Ceylon, and perhaps of Cochinchina.

^{*} Vahl symb. [†] Gartner. [‡] Hort. kew. [§] Linn. spec.
[¶] Vahl. [¶] Swartz. [¶] Vahl. [¶] Idem.

31. This is a tree with round branches. Leaves smooth, quite entire, blunt, subpetioled. Corymbs terminating the branches, compound, divided three ways. Calyxes undivided, quite entire[¶]. Berries two-celled, two-seeded[¶].

Native of Ceylon and other parts of the East Indies; not of America.

32. This may contend the palm of elegance with most trees. It grows slowly, and flowers late, twice in a year. By age it acquires thickness and height beyond mediocrity. Trunk handsome, straight, forming a very lofty thick beautiful pyramidal head. Bark in the younger trees brown, then ash-coloured, finally white entirely, or with large yellow spots; it is very smooth and even, especially in old trees, but here and there hangs down in slender shreds; the flavour is astringent, not without something of aromatic. Timber very hard, red, compact, ponderous, and capable of being polished; used for the cogs of wheels in the sugar mills, and other works where considerable friction is required. The younger branches are acutely four-cornered and green. Leaves numerous, quite entire, shining, bright green, with transverse veins, blunt, attenuated into a short petiole; they are always opposite, commonly three or four inches long, of a very sweet aromatic smell, and on account of their agreeable astringency are used for sauce with food. Flowers small, white with a slight tinge of redness. Berries round, the size of peas, crowned with the remains of the calyx, having an aromatic smell and taste, which render them agreeable for culinary purposes; they contain about seven or eight seeds.

Native of the West Indies; Martinico, Guadaloupe and Grenada, where it is called *Bois d'Inde*, and is supposed to have been introduced from the East Indies[¶]. It is however a different species from the *M. caryophyllata* of that country.

Browne says it is common in Antigua and Jamaica, as well as Barbadoes, and grows generally to a considerable size; that it fills the woods with the fragrant smell of its leaves, nearly resembling that of Cinnamon, but that the bark has no warmth of that sort, though the berries resemble Cloves very much, both in form and flavour. It is commonly called Wild Cinnamon or Wild Clove tree in Antigua and Jamaica. It is the Bayberry of Hughes, plate 10.

33. The whole of this plant is smooth. Leaves petioled, an inch long, emarginate, from a reflex margin becoming convex, the upper surface shining very much, veinless, transversely but obliquely marked with dusky nerved lines; the under surface less shining: the younger leaves veined on both sides, with minute raised dots scattered over the under surface, which vanish in the older leaves, and they have dusky spots impressed on the upper surface. Peduncles purplish, twice as long as the leaves, subracemose, in pairs. Pedicels opposite, commonly four, very remote, three-flowered. Flowers pedicelled. Calyx purplish, with roundish segments. Petals oblong, small. Fruit globular, the size of a pepper-corn[¶].

Native of the West Indies.] Sent to Mr. Philip Miller by Mr. Robert Millar, surgeon, from Carthage in New Spain.

[34. Branches subdichotomous, smooth, purplish at the end. Leaves subpetioled at the ends of the branchlets, an inch and half long, bluntish, with numerous simple veins not reaching the edge on either side, and minute raised dots scattered over them. Peduncles from the top, two, three-flowered, the length of the leaves, compressed: pedicels three-flowered; flowers sessile[¶].—Native of Jamaica and Guiana.

35. This is an upright shrub, a foot and half high, with few, ascending branches. Leaves alternate, subsessile, with short very acute serratures. Flowers white, subterminating. Calyx five-cleft, with the segments acute, spreading. Corolla five-parted, with the parts ovate, concave, united at the base into a very short tube. Filaments about thirty, equal to the corolla. Anthers roundish. Germ roundish. Style fili-

[¶] Linn. zeyl. [¶] Juss. gen. [¶] Jacquin. [¶] Vahl,
[¶] Idem.

form, equal to the stamens. Stigma thickish. Berry roundish, crowned, two-celled; with a few ovate seeds. Native of China near Canton¹.]

36. This tree grows to the height of thirty feet or more, with a straight trunk, covered with a smooth brown bark, dividing upwards into many branches which come out opposite, garnished with oblong leaves, resembling those of the Bay-tree in form, colour, and texture, but longer, and placed by pairs: when these are bruised or broken, they have a very fine aromatic odour like that of the fruit. The branches grow very regular, so that the trees make a fine appearance, and as they retain their leaves through the year, the trees are worthy of being propagated for ornament and shade about the habitations of the planters. The flowers are produced in large loose bunches from the side of the branches, towards their ends, each branch is also terminated by a larger bunch than the other; the flowers are small, and of an herbaceous colour.

[Mr. Miller says they are male and female upon distinct trees, and describes both. Swartz informs us that the Pimento is a polygamous tree, having the barren and fertile flowers either together, or on a distinct tree; that the calyx, which is called the fruit, or is inferior, is present in most of the species, but by no means suffices for the character of a distinct genus, rather performing the office of a bracte; and that the berry is most commonly one-seeded, though sometimes it seems to be three-seeded.

Browne says, that some of these trees are frequently observed to be barren, which has introduced a notion among the people of Jamaica, of their being male and female trees in general, and that some of the male or barren trees were requisite in every walk; all those however that he observed bore only hermaphrodite flowers, and he was credibly informed that those called male trees, when lopped and broken like the rest for one or two years, bear very well; which he is the more apt to believe, as he never observed a distinct male or female flower on any of them.

He describes the root as branched and spreading, the trunk smooth and short, seldom above eight or ten inches in diameter, the top generally pretty much divided, and rising in close tufts, the leaves and bark very warm, and full of aromatic particles, which makes the planters very cautious of fire in all Pimento walks, where, if it should once catch, it would run with great fury.

Linneus says, that the calyx of the fruit is inferior and four-toothed, but the calyx of the flower superior and four-parted; and that the berry has two seeds.

Gartner describes the berry as spherical, crowned with the calyx, which is flattish, depressed and five-notched; it is fleshy, two-celled, and gratefully aromatic: receptacle in the upper part of the partition. Seeds two, rounded-kidney-form, somewhat convex on one side, flat on the other, rufescent, not shining. Integument single, somewhat membranaceous, thin. No albumen. Embryo roundish. Cotyledons linear-acuminate, very short. Radicle very long, thick, spirally convoluted, ascending or superior.

The Pimento tree is a native of the West Indies, and flowers in June, July and August. The berries are chiefly imported into England from Jamaica, whence the name Jamaica Pepper. It is also named All-spice, from a notion of its taste being compounded of several other spices.—Mr. Miller cultivated it in 1739^m.

This tree begins to bear fruit in three years after it is planted, but does not arrive at maturity under seven; it then repays very abundantly the patience of the planter, yielding one thousand pounds weight of fruit from an acre. They are generally gathered in July, in their green state, by twisting off the twigs with the hand, or a pole cleft at one end; and are laid on cloths spread over the barbacues or terraced floors raised a little above the ground, inclosed with an upright ledge of eight or ten inches in height, and divided by transverse partitions into four or more square compartments, that each may contain a day's picking. During the first and second day they are turned often, that the

whole may be more exposed to the sun; but when they begin to dry, they are frequently winnowed, and laid in cloths to preserve them better from rain and dews, still exposing them to the sun every day, and removing them under cover every evening, till they are sufficiently dried, which usually happens in ten or twelve days, and is known by the darkness of their complexion, and the rattling of the seeds, they appear at this time wrinkled and changed to a very dark brown. In this state, being ready for the market, they are stowed in bags or casks. Some planters kiln dry them with great success. Such of the berries as come to full maturity, like many other seeds, lose that aromatic warmth for which they are esteemed, and acquire a taste perfectly like that of Juniper berries; which renders them a very agreeable food for the birds, the most industrious planters of these trees.

The berries have an agreeable aromatic subastringent taste, which recommends them both in the kitchen, and the druggist's shop. A delicate aromatic oil is distilled from them, which answers all the purposes for which the oils of Cinnamon and Cloves have been generally used, and is thought by some to be better than either, as it joins an astringency with its warmth. All parts of the tree are more or less aromatic and subastringent, but the leaves seem to abound most in volatile warm particlesⁿ.]

Mr. Miller was informed by an eminent merchant, through whose hands great quantities of the commodity passed, that the Dutch purchased All-spice of the English at a low price, and grinding it, sold it again to us at an advanced price for powder of Cloves: and that they draw an oil from it, which they vend for oil of Cloves. Mr. Miller had a phial of this oil sent him from Jamaica, which was shown to some of the best judges of drugs in London, who having tried it, declared they thought it as good as any oil of Cloves they had seen. He suggests, as worthy of trial, to dry the fruit when first formed, as a succedaneum for oriental Cloves.

[All-spice, which was at first brought over for dietetic purposes, has been long employed in the shops as a succedaneum to the more costly oriental aromatics. It is moderately warm, of an agreeable flavour, somewhat resembling that of a mixture of Cloves, Cinnamon and Nutmeg. Distilled with water it yields an elegant essential oil, so ponderous as to sink in the water, in taste moderately pungent, in smell and flavour approaching to oil of Cloves, or rather a mixture of Cloves and Nutmegs. To rectified spirit it imparts by maceration or digestion, the whole of its virtue: in distillation it gives over very little to this menstruum, nearly all its active power remaining concentrated in the inspissated extract.

Pimento can scarcely be considered as a medicine: being however an agreeable aromatic, it is not unfrequently employed with different drugs, requiring such a grateful adjunct. In the London Pharmacopœia both an aqueous and spirituous distilled water of the berries is directed, and the powder of them is an ingredient in Syrup of Buckthorn. The Edinburgh College order also the Essential Oil^o.]

PROPAGATION AND CULTURE.

1. All the varieties of the Common Myrtle may be propagated from cuttings, the best season for which is the beginning of July, when you should make choice of some of the straightest and most vigorous young shoots, which should be about six or eight inches long, and the leaves on the lower part must be stripped off about two or three inches high, and the part twisted which is to be placed in the ground; then having filled a parcel of pots (in proportion to the quantity of cuttings designed) with light rich earth, you should plant the cuttings therein, at about two inches distance from each other, observing to close the earth fast about them, and give them some water to settle it to the cuttings; then place the pots under a common hot-bed frame, plunging them either into some old dung, or tanners-bark, which will prevent the earth from drying too fast; but you must carefully shade them

¹ Loureiro.

^m Hort. kew.

ⁿ Browne, 248. and Long, vol. 3. p. 702.

^o Woodville.

with mats in the heat of the day, and give them air in proportion to the warmth of the season, not forgetting to water them every two or three days, as you shall find the earth in the pots require it.

With this management, in about six weeks, the cuttings will be rooted, and begin to shoot, when you must inure them to the open air by degrees, into which they should be removed towards the latter end of august, or the beginning of september, placing them in a situation where there may be sheltered from cold winds, in which place they may remain till the middle or latter end of october, when the pots should be removed into the green house, but should be placed in the coolest part thereof, that they may have air given to them whenever the weather is mild, for they require only to be protected from severe cold, except the Orange-leaved, and the striped Nutmeg Myrtles, which are somewhat tenderer than the rest, and should have a warmer situation.

During the winter season, they must be frequently, but gently watered; and if any decayed leaves appear, they should be constantly picked off, as also the pots kept clear from weeds, which, if permitted to grow, will soon overspread the young plants, and destroy them.

If these pots are placed under a common hot-bed frame in winter, where they may be screened from frost, and have the free air in mild weather, the young plants will succeed better than in a green-house, provided they do not receive too much wet, and are not kept closely covered, which will occasion their growing mouldy, and dropping their leaves.

The spring following these plants should be taken out of the pots very carefully, preserving a ball of earth to the roots of each of them, and every one should be placed into a separate small pot filled with rich light earth, observing to water them well to settle the earth to their roots, and place them under a frame until they have taken root; after which they should be inured to the open air, and in may they must be placed abroad for the summer, in a sheltered situation, where they may be defended from strong winds.

During the summer season they will require to be plentifully watered, especially being in such small pots, which in that season soon dry; therefore you should observe to place them where they should receive the morning sun, for when they are too much exposed to the sun in the heat of the day, the moisture contained in the earth of these small pots will soon be exhaled, and the plants greatly retarded in their growth thereby.

In august following you should examine your pots, to see if the roots of the plants have not made way out through the hole in the bottom of the pots, which if you observe, you must then shift them into pots a size larger, filling them up with the like rich earth, and observe to trim the roots which were matted to the side of the pots, as also to loosen the earth from the outside of the ball with your hands, some of which should be taken off, that the roots may the easier find passage into the fresh earth; then you must water them well, and place the pots in a situation where they may be defended from strong winds; and at this time you may trim the plants, in order to reduce them to a regular figure; and if they are inclinable to make crooked stems, you should thrust down a slender straight stick close by them, to which their stems should be fastened, so as to bring them upright.

If care be taken to train them thus while they are young, the stems afterwards when they have acquired strength, will continue straight without any support, and their branches may be pruned, so as to form either balls or pyramids, which for such plants as are preserved in the green-house, and require to be kept in small compass, is the best method to have them handsome; but then these sheered plants will not produce any flowers, for which reason that sort with double flowers should not be clipped, because the chief beauty of that consists in its flowers; but it will be necessary to suffer a plant or two of each kind to grow rude, for the use of their branches in nosegays, &c. for it will

greatly deface those which have been constantly sheered to cut off their branches.

As these plants advance in stature, they should annually be removed into larger pots, according to the size of their roots; but you must be careful not to put them into pots too large, which will cause them to shoot weak, and many times prove the destruction of them; therefore when they are taken out of the former pots, the earth about their roots should be pared off, and that within side the ball must be gently loosened, that the roots may not be too closely confined; and then place them into the same pots again, provided they are not too small, filling up the sides and bottom of them with fresh rich earth, and giving them plenty of water to settle the earth to their roots; which should be frequently repeated, for they require to be often watered both in winter and summer, but in hot weather they must have it in plenty.

The best season for shifting these plants is either in april or august, for if it be done much sooner in the spring, the plants are then in a slow growing state, and so not capable to strike out fresh roots again very soon; and if it be done later in autumn, the cold weather coming on will prevent their taking root; nor is it adviseable to do it in the great heat of summer, because they will require to be very often watered, and also to be placed in the shade, otherwise they will be liable to droop for a considerable time; and that being the season when these plants should be placed amongst other exotics, to adorn the several parts of the garden, these plants, being then removed, should not be exposed until they have taken root again, which, at that time (if the season be hot and dry) will be three weeks or a month.

In october, when the nights begin to be frosty, you should remove the plants into the green-house; but if the weather proves favourable in autumn (as it often happens) they may remain abroad until the beginning of november; for if they are carried into the green-house too soon, and the autumn should prove warm, they will make fresh shoots at that season, which will be weak, and often grow mouldy in winter, if the weather should be so severe as to require the windows to be kept closely shut, whereby they will be greatly defaced; for which reason they should always be kept as long abroad as the season will permit, and removed out again in the spring before they shoot out; and during the winter season that they are in the green-house, they should have as much free air as possible when the weather is mild.

The Common broad-leaved, broad-leaved Dutch, and Portugal Myrtles may be planted, abroad in warm situations, and upon a dry soil, where they endure the cold of our winter very well, with only being covered in very hard frosts with mats, and the surface of the ground about their roots covered with a little mulch to prevent the frost from entering the ground; but in Cornwall and Devonshire, where the winters are more favourable than in most other parts of England, there are large hedges of Myrtle which have been planted several years, and are very thriving and vigorous, some of which are upwards of six feet high; and I believe, if the double flowering kind were planted abroad, it would endure the cold as well as any of the other sorts, it being a native of the southern parts of France. This, and the Orange-leaved, are the most difficult to take root from cuttings; but if they are planted towards the latter end of june, making choice of only such shoots as are tender, and the pots are plunged into an old bed of tanner's bark which has lost most of its heat, and the glasses shaded every day, they will take root extremely well. The Orange-leaved, and those with variegated leaves, are somewhat tenderer than the ordinary sorts, and should be housed a little sooner in autumn, and placed farther from the windows of the green-house.

29. This plant is with difficulty propagated, which occasions its present scarcity, for as it does not produce ripe seeds in Europe, it can only be increased by layers or cuttings. By the former method the layers are commonly two years before they take root, and the cuttings frequently fail, though the latter is preferred,

when performed at a proper season and in a right method; the best time to plant the cuttings is in May: in the choice of them, it should be the shoots of the former year, with a small piece of the two years wood at bottom; these should be planted in small pots, filled with soft loamy earth, for small pots are to be preferred to large ones for this purpose, and they should be plunged into a very moderate hot-bed of tanners bark; and if the pots are each covered with small bell or hand-glasses, such as have been used for blowing Carnations to exclude the air, it will be of great service to promote the cuttings putting out roots, though they are covered with the glasses of the hot-bed above them; the cuttings should be shaded from the sun in the heat of the day, and gently refreshed with water, as the earth in the pots is found to dry, but they should by no means have too much wet: those cuttings which succeed, will have taken root by July, when they should be gradually inured to bear the open air, into which it will be proper to remove them about the middle of that month, that they may be strengthened before winter, but it will not be proper to transplant the cuttings till spring; the pots must be removed into a temperate stove in autumn, and during the winter the cuttings must be gently refreshed with water. In the spring they should be carefully taken up, and each planted in a small pot filled with light earth from a kitchen-garden, and plunged into a moderate hot-bed to forward their taking fresh root; then they should be gradually hardened, and in July placed in the open air in a sheltered situation, where they may remain till the end of September, and then be removed into the stove.

This plant will not live through the winter in England in a green-house, but if it is placed in a moderate degree of warmth, it will flower well in winter; and in July, August and September the plants should be placed abroad in a sheltered situation.

[The other tender Myrtles from the East and West Indies may be treated in the same manner.]

36. This tree is propagated by seeds, which in the natural place of its growth are conveyed, and sown by birds, to a great distance; and, it is very probable, the seeds passing through them, are rendered fitter for vegetation, than those which are immediately gathered from the tree; for I have received great quantities of the berries which were perfectly ripe and fresh, great part of which I sowed in different ways, and communicated some of them to several other curious persons, who did the same, but none of them have yet succeeded; and upon informing my friend Mr. Williams of this, he told me that a friend of his, whose plantation was on the south side of Jamaica, desired him to save a large quantity of the ripe berries for him to sow on his plantation, which he accordingly did, but his friend forgot to send for them till near two years after; during which time, they had lain in a large heap, and had fermented, and, on sowing those berries, the plants came up with the first rains in great abundance; so that it may be of great service to these seeds, either to pass through animal bodies, or to be fermented before they are sown.

The plants cannot be preserved in England unless they are placed in a stove during the winter season, but they will thrive in a moderate degree of warmth: they should be planted in a soft light soil, and in winter must have but little water. In the summer they should have a large share of air, and in July, if the season proves warm, they may be placed in the open air, in a warm sheltered situation; but upon the approach of cold nights, they must be removed into the stove again. The exposing of these plants to the open air for one month only, will be of great service to clean their leaves from insects or filth, which they are subject to contract, by remaining long in the stove; but if the season should prove very wet or cold, it will not be safe to trust these plants long abroad; therefore their leaves should be now and then washed with a sponge to clean them, which will not only render them more lightly, but also promote their growth. This tree is pretty difficult to propagate in England, where the seeds do not ripen: the only method in which this has been done, is by laying down the young

branches, flitting them at a joint in the same manner as is practised in making layers of Carnations. If this is carefully performed, and the layers are regularly but gently watered, they will put out roots in one year; then they may be carefully separated from the old plants, and each planted in a small pot filled with light earth, and plunged into the tan-bed, either in the stove or under a frame, being careful to shade them until they have taken new root, after which they may be treated as the older plants. This plant, being an Evergreen, makes a fine appearance in the stove at all seasons of the year; and the leaves having such an agreeable fragrant when rubbed, renders them as worthy of a place in the stove, as any other tender exotic plant which is preserved for ornament.

As these plants do not rise so readily from seeds in England, the best way to obtain them is to get some person of skill in America, to take up a number of young plants, and plant them close in boxes of earth; setting them in the shade till they have taken new root; then remove them into an open situation where they may have time to establish their roots before they are shipped for England; and in their passage they must be guarded from the spray of the sea, and salt water, and should have very little water given them; for most of the plants which are sent to England, are killed in their passage by having too much wet. If these directions are observed, the plants may be brought in good health to England, provided they come over any time in the summer, that they may have time to get fresh root before the cold season begins; and when once they are well established in their roots here, they may be preserved many years in vigour; but I have not seen many of the plants in flower here as yet.

[MYRTUS. See *Calyptanthus*, *Eugenia*, *Melaleuca*, *Myrica*.

MYSTAX. See *Hugonia*.

MYXA. See *Cordia* and *Rumphia*.]

N.

[NABEA. See *Rhamnus*.

NACIBEA. See *Manettia*.

NAGAM. See *Heritiera*.

NAGA-MU-VALLI. See *Bauhinia*.

NAGASSARIUM. See *Mesua*.

NAGEIA and NAGI. See *Myrica*.

NAGHAS. See *Mesua*.

NAJAS. (*A water plant, from Najas, nymph of the springs; from nas, fluo.*)

Lin. gen. n. 1096. Reich. n. 1198. Schreb. n. 1488.

Juss. 19. Fluvialis. Vaill. art. par. 1719. t. 1.

f. 2. Mich. 8.

Class. 22. 1. Dioecia Monandria.

Nat. order of *Inundatæ*. *Naiades*, Juss.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* one-leafed, truncate at the base, cylindric, attenuated above: at the mouth with two opposite reflex segments.

COR. one-petalled, equal: tube the length of the calyx: border five-parted, with oblong revolute segments.

STAM. *Filament* none. *Anther* oblong, erect.

* Female.

CAL. none.

COR. none.

PIST. *Germ* ovate, ending in an attenuated *Style*. *Stigmas* simple, permanent.

PER. *Capsule* ovate, one-celled.

SEEDS ovate-oblong.

N A M

ESSENTIAL CHARACTER.

MALE. Cal. cylindric, bifid. Cor. four-cleft. Filament none.

FEM. Cal. none. Cor. none. Pist. one. Caps. ovate, one-celled.

SPECIES.

1. *Najas marina*.

Lin. spec. 1441. Reich. 4. 220. hort. cliff. 437. fl. suec. n. 877. Gouan monsp. 500. Pallas it. 1. 369. Hall. helv. n. 556.

N. major & minor. Allion. pedem. n. 2105 & 2106.

Fluvialis vulgaris latifolia. Vaill. art. 1719. p. 17. t. 1. f. 2.

F. latifolia (& angustifolia) fructu monospermo. Mich. gen. 11. t. 8. f. 1, 2.

F. pisana, fol. denticulatis. Baub. hist. 3. 579.

Potamogeton fluviatile, Sargazo simile, lucens, fol. margine dentatis. Pluk. phyt. t. 216. f. 4. Raii suppl. 121.

β. Fluvialis species, angusto brevique folio, undequaque spinis infecta. Raii suppl. 132.

γ. F. spec. fol. angusto, ad margines denticulis spinosis inciso, flagellum Christi dicta. Raii suppl. 121.

DESCRIPTION, &c.

Stem wide, having triangular spines scattered over it. Leaves firm narrow with very similar toothed spines on each side. Flowers solitary from the axils of the leaves, male and female near each other: the males drooping on a short petiole; the females sessile erect.

According to Jussieu, it has three whorled sheathing leaves, the flowers axillary sessile, the filament in the male flowers long, with a four-valved anther, which is the four-cleft corolla of Linneus; in the female flowers two stigmas, and one nut or four seeds.

Native of the sea coast of Europe; in the canal between Pisa and Leghorn; and in the Rhine near Basle.

NAI-CORANA. See *Dolichos*.

NAKED LADIES. See *Colchicum*.

NALUGU. See *Aralia*.

NAMA, (of Pliny. *Napa* of Theophrastus: *fluentum*, *latex*, *a stream or spring of water*.)

Lin. gen. n. 317. Reich. n. 346. Schreb. n. 444. Gertn. t. 44. Juss. 134.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Succulentæ*. *Convolvuli*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted, permanent: segments lanceolate, acute, straight, somewhat spreading.

COR. one-petalled, wheel-salver-shaped: tube short: border five-parted: segments ovate, obtuse, the length of the calyx.

STAM. Filaments five, filiform, ovate at the base, inserted into the middle of the tube of the corolla, alternate with and shorter than the segments. Anthers oblong, bifid at the base, revolute, incumbent.

PIST. Germ ovate, superior. Styles two, capillary, erect, the length of the stamens. Stigmas capitate.

PER. Capsule ovate-oblong, blunt, compressed, grooved on each side, two-celled, two-valved, shorter than the calyx.

SEEDS numerous, very small, fastened to a flat receptacle in the middle of the partition.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-parted. Caps. one-celled, two-valved.

SPECIES.

1. *Nama jamaicensis*.

Lin. spec. 327. Reich. 1. 633. Brown. jam. 185. t. 18. f. 2. (good). Swartz obs. 109.

DESCRIPTION, &c.

Root simple, thready. Stem herbaceous, from two inches to half a foot in length, subdivided, procumbent, pubescent, tender, three-winged from the decurrent petioles. Branchlets from the axils of the leaves procumbent. Leaves opposite, wedge-shaped at the base, ovate-roundish, entire, pubescent. Petioles decurrent at the sides, the wings converging to the side opposite to the petiole. Flowers axillary, two to four, in clusters, small, white, on short peduncles. Calycine seg-

^a Haller.

N A P

ments linear, erect, somewhat hirsute. Tube of the corolla narrower at the base, a little longer than the calyx: segments of the border roundish, erect, convex, incumbent not spreading. Filaments from the base of the corolla, wider at bottom, awl-shaped. Anthers roundish. Germ oblong, conical. Styles contiguous: Stigmas blunt. Capsule oblong, blunt, four-cornered, acuminate, one-celled, two valved; containing many, minute, roundish, brown seeds.

According to Gartner, the capsule is roundish (retiuscula) marked with a groove on each side, two-celled, two-valved, the valves when ripe becoming bifid: partition contrary to the valves, formed by their margins bent in. Receptacle composed of two membranaceous linear acuminate laminae, placed in the axis of the capsule and at the meeting of the partitions, free, and supporting the seeds in a double row in each cell. Seeds subglobular, small, scrobiculate or striated lattice-wise.

Browne says, that this little plant spreads about the root, and seldom grows above five or six inches in length; that the whole of it is somewhat hairy, with the stalk and branches margined.

It is an annual plant, native of Jamaica, in cultivated grounds, and ruins of rocks.

NAMA ZEYLANICA. See *Hydrolea*.

NANDINA. (From the Japanese vernacular name Nandin.)

Lin. gen. Schreb. n. 596. Thunb. nov. gen. 14. flor. jap. 9. Juss. 429. Gertn. t. 92.

Class. 6. 1. Hexandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth many-leaved, imbricate in six rows: scales about six in each row, ovate, acute, smooth, caducous.

COR. Petals six, oblong, concave, acute, longer than the calyx, caducous.

STAM. Filaments six, very short. Anthers oblong, erect, the length of the corolla.

PIST. Germ ovate, smooth, superior. Style three-cornered; very short. Stigma three-cornered.

PER. Berry juiceless, globular, smooth.

SEEDS two, hemispherical smooth.

ESSENTIAL CHARACTER.

Cal. many-leaved, imbricate. Cor. six-petalled.

SPECIES.

1. *Nandina domestica*.

Lin. syst. 344. Thunb. jap. 147. Gertn. fruct. 2. 69. Kämpf. ic. select. t. 13. 14.

Nandsjokf, vulgo Natten vel Nandin. Kämpf. amoen. 5. 776.

DESCRIPTION, &c.

Root perennial. Stems several, shrubby, upright, loose, branched at top, a fathom in height, the thickness of a finger or thumb. Branches covered with the sheaths of the leaves, flexuose, leafy at top. Leaves superdecompound, ternate. Leaflets subsessile, ovate, setaceous-acuminate, quite entire with a reflex margin, smooth. Petioles grooved, smooth. Flowers terminating, paniced. Panicle superdecompound. Peduncles and pedicels angular. Berry superior, the size of a Pea, coriaceous, terminated by the short style and the headed three-lobed stigma, red on the outside turning to a rufescent bay colour, covered with a white membrane within and one-celled. Seeds two, meniscoid or concavo-convex, round, marked on one edge with a depressed streak, running from the base to the tip, ash-coloured or rufescent. Sometimes only one seed comes to perfection, and then the other adheres to its base like a withered scale, the perfect seed retaining its meniscoid form: but sometimes the seeds have an excavation on each side.

Native of Japan, where it is generally cultivated in their gardens, flowering in may and june.

NAPÆA. (Napaæ nymphs of the woods, from *ναπος* or *ναπν*, saltus.)

Lin. gen. n. 838. Reich. n. 1244. Juss. 273. Gertn. t. 136. Clayton. Sida. Cavan. diff. 1. Schreb. gen. n. 1129.

^b Swartz.

^c Idem.

^d Thunberg.

^e Gartner.

^f Thunberg.

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Class. 22. 13. Dioecia Monadelphia. f. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*. *Malvaceae*, Juss.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* bell-shaped, five-cleft, round, permanent.
COR. *Petals* five, oblong, concave, patulous, convex with oblong claws.

STAM. *Filaments* very many, capillary, of a middling length, connected in a column. *Anthers* roundish, compressed.

PIST. *Germ* conical, minute. *Style* cylindric, ten-cleft, capillary. *Stigmas* none.

PER. abortient.

* Female on a distinct individual.

CAL. and COR. as in the male.

STAM. *Filaments* as in the male, but shorter. *Anthers* small, effete.

PIST. *Germ* conical. *Style* as in the male, longer than the stamens. *Stigmas* blunt.

PER. *Capsules* ten, converging into an ovate form, sharpish, awnless.

SEEDS solitary, kidney-form.

ESSENTIAL CHARACTER.

Cal. five-cleft.. Pet. five.

MALE. *Stam.* monadelphous, very many, fertile. *Styles* several, barren.

FEM. *Stam.* monadelphous, very many, barren. *Styles* several, longer than the stamens. *Caps.* orbicular, depressed, ten-celled. *Seeds* solitary.

SPECIES.

1. *Napaea laevis*. *Smooth Napaea*.

Lin. syst. 896. *Reich.* 4. 282. *amoen.* 3. 18. *Fabric. helmst.* 281.

N. hermaphrodita. *Lin. spec.* 965. *Mill. dict.* n. 2. *Kniph. cent.* 8. n. 73.

Sida fol. palmatis, laciniis lanceolato-attenuatis. *Lin. hort. cliff.* 346. *ups.* 198.

Malva virginiana, *Ricini folio*. *Herm. lugdb.* 22. t. 23. *Peduncles* naked smooth and even, leaves lobed smooth.

2. *Napaea scabra*. *Rough Napaea*.

Lin. syst. 896. *Reich.* 4. 282.

N. dioica. *Lin. spec.* 965. *amoen.* 3. 18. *Mill. dict.* n. 1. *Gartn. fruct.* 2. 259. *Gron. virg.* 102. *Fabric. helmst.* 282.

Abutilon fol. profunde dissecto, pedunculis multifloris, mas & femina. *Ehret. pict.* t. 7. 8. *Trew. nov. act. nat. cur.* 1. 437. t. 10. f. 1, 2. *Banist. virg.* 1928. (*Althaea*).

Peduncles involucre angular, leaves palmate rugged.

DESCRIPTIONS, &c.

1. Root perennial, frequently creeping. Stems smooth, about four feet high. Leaves alternate, upon pretty long slender foot-stalks, deeply cut into three lobes, which end in acute points, and are regularly ferrate; those on the lower part of the stem are near four inches long, and almost as much in breadth, but they diminish gradually to the top of the stem. At the base of the leaf comes out the peduncle, about three inches long, dividing at top into three smaller, each sustaining one white flower, smaller than in the second sort, with a longer column of stamens, the anthers standing out beyond the corolla.

[Linneus says, that the leaves are cordate, five-lobed, acuminate, flat; and that the peduncles have three or four flowers.]

2. Root perennial, composed of many thick fleshy fibres, striking deep into the ground, and connected at the top into a large head, from which come out many rough hairy leaves, near a foot diameter each way, deeply cut into six or seven lobes, irregularly indented on their edges, each lobe having a strong midrib, all meeting at the foot-stalk, which is large and long, arising immediately from the root. Flower-stalks seven or eight feet high, dividing into smaller branches, having one leaf at each joint, of the same form as those below, but diminishing in size towards the top, where they seldom have more than three lobes, which are divided to the foot-stalk. Towards the upper part of the stalk comes out from the side at each joint a long peduncle, branching out towards the top, and sustaining several white flowers, which are tubulous at bottom

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where the segments of the petal are connected, but spread open above, and are divided into five obtuse segments. The male plants are barren; but in the female plants the flowers are succeeded by [ten capsules, placed in a ring, semicircular, finishing at top in a recurved dagger-point, compressed wedge-shaped, convex on the back, with a raised line along the middle, flat at the sides and subcrenulate towards the dorsal margin, one-celled, valveless, or sometimes but seldom opening by two valves. Common receptacle central, pyramidal, grooved and finishing in a dagger-point: proper none or very short. Seeds solitary, kidney-form, triangular-compressed, brown, very obscurely striated. Integument triple; the outmost very thin, the middle cartilaginous; the inmost membranaceous².

The female flowers have stamens, but the anthers are very small, effete and barren. The leaves are subpeltate, but open to the very petiole and wrinkled; they have from two to seven lobes. Flowers in heads. Fruit orbicular, depressed, consisting of eight or ten joints^h.

Schreber, following Cavanilles, has united these plants to *Sida*, to which they are very nearly allied. But we may thus, as has been before remarked, thrust all the plants of every natural order into one genus. Besides the circumstance of having fertile and barren hermaphrodite flowers on distinct individuals, the petals are not oblique, the pedicel is not jointed, and the calyx is wider at the baseⁱ. Gartner remarks, that *Napaea* differs from *Sida* in having more than one capsule, and a manifest common receptacle; from *Abutilon* in having only one seed in each capsule, and that not clearly valved.]

Both these plants grow naturally in Virginia and other parts of North America. From their bark a sort of hemp might be procured, such as many of the malvaceous tribe afford. They flower from July to September, the seeds ripen in autumn, and then the stalks decay.

[Mr. Miller cultivated them in 1759^k.]

PROPAGATION AND CULTURE.

These plants are easily propagated by seeds, sown on a bed of common earth in the spring. Keep them clear from weeds till autumn, and then transplant them where they are to remain. They delight in a rich moist soil, in which they will grow very luxuriantly, and must be allowed room. The first sort may also be increased by parting the roots in autumn. They are not plants of any great beauty.

[NAPECA. See *Rhamnus*.]

NAPELLUS. See *Aconitum*.

NAPO-BRASSICA. See *Brassica*.

NAPUS. See *Brassica*.]

NARCISSO-LEUCBIUM. See *Leucoium*.

NARCISSUS, (of Pliny, &c. *Ναρκισσος* of Theophrastus and Dioscorides. The youth Narcissus was fabled by the poets to be metamorphosed into this flower: but it is commonly derived from *ναρκωσις*; being endued, as is supposed, with a narcotic quality.)

Lin. gen. n. 403. *Reich.* n. 436. *Schreb.* n. 550. *Tourn.* t. 185. *Juss.* 55.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathaceae*. *Narcissi*, Juss.

GENERIC CHARACTER.

CAL. *Spathe* oblong, obtuse, compressed, opening on the flat side, shrivelling.

COR. *Petals* six, ovate, acuminate, flat, equal, inserted into the tube of the nectary externally above the base.

Nectary one-leaved, cylindric-funnel-form, coloured on the border.

STAM. *Filaments* six, awl-shaped, fixed to the tube of the nectary, shorter than the nectary. *Anthers* oblongish.

PIST. *Germ* roundish, obtusely three-sided, inferior. *Style* filiform, longer than the stamens. *Stigma* bifid, concave, obtuse.

PER. *Capsule* roundish, obtusely three-cornered, three-celled, three-valved.

SEEDS many, globular, appendicled.

² Gartner.

^h Linn. spec.

ⁱ Juss. gen.

^k Hort. kew.

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ESSENTIAL CHARACTER.

Pet. six, equal. *Nect.* funnel-form, one-leafed. *Stam.* within the nectary.

SPECIES.

1. *Narcissus poeticus*. Poetic or White Narcissus.
Lin. spec. 414. *Reich.* 2. 17. *hort. cliff.* 134. *upf.* 74. *Engl. bot.* 275. *Wither. arr. ed.* 3. 331. *Hall. herb. n.* 1250. *Scop. carn. n.* 394. *Villars dauph.* 2. 248. *Knorr. i. t. N.* 4. *Kniph. cent.* 7. n. 62.
N. angustifolius. Narrow-leaved Narcissus.
Curt. magaz. 193.
N. albus circulo purpureo. *Baub. pin.* 48.
N. medio purpureus. *Dod. pempt.* 223. 1. *Baub. hist.* 2. 600. *Dalech.* 1517. *Ger. emac.* 123. 1. *Raii hist.* 1133.—*præcox*. *Ger.* 108. 2. *præcocior.* 109. 3. *præcoccissimus*. 109. 4.—*præcox*. *Park. parad.* 76. t. 75. f. 3.
β. *N. medio purpureus multiplex*. *Baub. pin.* 54.
Double White Narcissus.
N. medio purp. flore pleno. *Ger. emac.* 124. 5.
Spathe one-flowered, nectary wheel-shaped very short scariose crenulate.
2. *Narcissus biflorus*. Two-flowered Narcissus, or pale Daffodil.
Engl. bot. 276. *Wither. arr. ed.* 3. 332. *Curt. magaz.* 197.
N. poeticus. *Huds. angl.* 141.
N. medio luteus. *Mill. dict. n.* 4. *Dod. pempt.* 223. 2. *Ger.* 110. 6. *emac.* 124. 7.—*vulgaris*. *Park. parad.* 74. t. 75. f. 1. *Raii hist.* 1135. *syn.* 371.
N. pallidus circulo luteo. *Baub. pin.* 51.
N. albidus medio luteus cum aliquot floribus. *Baub. hist.* 2. 604. 1.
β. *N. tenuior*. *Curt. magaz.* 379.
Spathe two-flowered, nectary wheel-shaped very short scariose crenulate, leaves acute on the keel, the edges turned inwards.
3. *Narcissus Pseudo-Narcissus*. Common Daffodil.
Lin. spec. 414. *Reich.* 2. 17. *hort. cliff.* 134. *upf.* 74. *Huds. angl.* 141. *Wither. arr. ed.* 3. 332. *Engl. bot.* 17. *Relb. cant. n.* 262. *Sibth. oxon. n.* 329. *Hall. herb. n.* 1252. *Scop. carn. n.* 395. *Leers herb. n.* 243. *Villars dauph.* 2. 248. *Krock. filef. n.* 500.
N. sylvestris pallidus, calice luteo. *Baub. pin.* 52. *Raii hist.* 1131. *syn.* 371. *Petiv. brit. t.* 67. f. 9.
N. luteus sylvestris. *Dod. pempt.* 227. 1.
N. luteus. *Trag.* 757.
Pseudonarcissus anglicus. *Ger.* 115. 2. *emac.* 133. 2. —*vulgaris*. *Park. parad.* 100.
Bulbocodium vulgatus. *Baub. hist.* 2. 592. 2.
β. *N. sylvestris multiplex calice carens*. *Baub. pin.* 54.
Common Double Daffodil.
γ. *N. incomparabilis*. Peerless Daffodil.
Mill. dict. n. 3. *Curt. magaz.* 121. *Park. parad.* 68. 1, 2.
Spathe one-flowered, nectary bell-shaped erect curled equalling the ovate petals.
[4. *Narcissus bicolor*. Two-coloured Narcissus.
Lin. spec. 415. *Reich.* 2. 18. *Gouan illustr.* 22. *Krock. filef. n.* 501.
N. albus calice flavo alter. *Baub. pin.* 52. *Raii hist.* 1032. 10. *Rudb. elyf.* t. 70. f. 7.
N. alb. oblongo calice luteo præcox minor. *Park. parad.* 73. 1.
β. *N. major*. Great Daffodil.
Curt. magaz. 51.
N. major totus luteus calyce prælongo. *Baub. pin.* 52. *Raii hist.* 1130. 2.
Narcissi sylvestris alia icon. *Dod. pempt.* 227. 2.
Pseudonarcissus aureus hispanicus maximus. *Park. parad.* 99. t. 101. f. 1.
Spathe one-flowered, nectary bell-shaped with the margin spreading curled equalling the petals.
5. *Narcissus minor*. Least Daffodil.
Lin. spec. 415. *Reich.* 2. 18. *Curt. magaz.* 6.
N. parvus totus luteus. *Baub. pin.* 53. *Rudb. elyf.* 2. 72. f. 11.
N. sylvestris pallidus minimus. *Barr. ic.* 976.
Pseudonarcissus minor hispanicus. *Clus. hist.* 165. 3.—*minimus*. *Park. parad.* 105. 3. *Ger. emac.* 133. 4.

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- Bulbocodium minus*. *Baub. hist.* 2. 597. *Raii hist.* 1131.
Spathe one-flowered, nectary obconical erect curled six-cleft equalling the lanceolate petals.
6. *Narcissus moschatus*. Musk Narcissus.
Lin. spec. 415. *Reich.* 2. 18.
N. totus albus, nutante flore, longa tuba. *Barr. ic.* 945. 946. 954. 953. 921. 922.
N. albus, calice flavo, moscari odore. *Baub. pin.* 52. *Rudb. elyf.* 2. 69. f. 6. & 73. f. 15. 16.
N. flavus tubo rotundo. *Baub. pin.* 52. *Rudb. elyf.* 2. p. 68. f. 3, 4.
Spathe one-flowered, nectary cylindric truncate subrepand equalling the oblong petals.
7. *Narcissus triandrus*. Rush-leaved Narcissus, or reflexed Daffodil.
Lin. spec. 416. *Reich.* 2. 19. *Curt. magaz.* 48.
N. juncifolius, albo flore reflexo. *Clus. app. alt.* *Park. parad.* 92. 2. t. 93. f. 2.
N. albus oblongo calice. *Baub. pin.* 53. *Rudb. elyf.* 2. p. 72. f. 12. *Raii hist.* 1131.
Pseudonarcissus albo flore. *Ger. emac.* 134. f. 5.
Spathe one or two-flowered, flowers drooping, petals reflexed, three of the stamens longer.
8. *Narcissus orientalis*. Oriental Narcissus.
Lin. syst. 317. *Reich.* 2. 19. *mant.* 62.
N. niveus calyce flavo odoris fragrantissimi. *Rudb. elyf.* 2. p. 52. f. 2. *Baub. pin.* 50.
N. latifolius simplex medio luteus. *Clus. hist.* 1. 154.
β. *N. orientalis, calyce rotundo aureo luteo*. *Rudb. elyf.* 2. p. 54. f. 5. *Baub. pin.* 50.
N. orient. medio croceus major. *Best. eyf.*
γ. *N. albus major odoratus*. *Rudb. elyf.* 2. p. 50. f. 1. *Baub. pin.* 49.
N. latifolius major alter. *Clus. hist.* 1. 155.
Spathe one or two-flowered, nectary bell-shaped trifid emarginate three times shorter than the petals.
9. *Narcissus trilobus*.
Lin. spec. 417. *Reich.* 2. 19.
N. angustifolius pallidus, calyce flavo. *Baub. pin.* 51. *Rudb. elyf.* 2. p. 61. f. 3.
Spathe submultiflorous, nectary bell-shaped subtrifid quite entire shorter by half than the petals.
10. *Narcissus odoratus*. Sweet-scented Narcissus, or Great Jonquil.
Lin. spec. 416. *Reich.* 2. 19. *amoen.* 4. 311. *Curt. magaz.* 78.
N. polyanthos flore minore stellato toto luteo. *Rudb. elyf.* 2. p. 60. f. 7.
N. angustifolius five juncifolius maximus amplo calice. *Park. parad.* 90. t. 89. f. 5.
Spathe one or two-flowered, nectary bell-shaped six-cleft even shorter by half than the petals, leaves semicylindric.
11. *Narcissus calathinus*.
Lin. spec. 415. *Reich.* 2. 20.
N. angustifolius flavus magno caule. *Baub. pin.* 51. *Rudb. elyf.* 2. p. 60. f. 5.
N. IX. qui angustifolius 1. *Clus. hist.* 158.
Spathe many-flowered, nectary bell-shaped almost equalling the petals, leaves flat.
12. *Narcissus Tazetta*. Polyanthus Narcissus.
Lin. spec. 416. *Reich.* 2. 20. *hort. cliff.* 134. *Knorr. del. i. t. N.* 3. *Thunb. jap.* 131.
N. medio luteus copioso flore odore gravi. *Baub. pin.* 50. *Rudb. elyf.* 2. p. 57. f. 11.
N. luteus polyanthos lusitanicus. *Baub. pin.* 50.
N. latifolius, flore prorsus albo 1. 2. *Clus. hist.* 1. 155.
N. medio luteus polyanthos. *Ger.* 110. 7.—*item*, 8. 9. 10. *emac.* 124. 8. & 125. 9. 10.
N. narbonensis vulgaris. *Park. parad.* 80. 2. t. 81. f. 3.—*item*, *N. narb. f. medio luteus præcox*. 80. 1. & *N. narb. major amplo flore*. 82. 3.
N. multos ferens flores medio-luteus narbonensis. *Baub. hist.* *Raii hist.* 1134.
Spathe many-flowered, nectary bell-shaped plaited truncate, three times shorter than the petals, leaves flat.
13. *Narcissus Bulbocodium*. Hoop-petticoat Narcissus.
Lin. spec. 417. *Reich.* 2. 20. *hort. cliff.* 134. *Curt. magaz.* 88.
N. montanus alter flore fimbriato. *Baub. pin.* 53. *Raii hist.* 1139. *Ger. emac.* 137. 7.

N. mon-

- N. montanus juncifolius calice aureo.* *Baub. pin.* 53. *Rudb. elyf.* 2. p. 75. f. 5. 7.
Pseudonarcissus juncif. luteus minor. *Park. parad.* 106 t. 107 f. 7.
Spathe one flowered, nectary turbinate larger than the petals, genitals declining.
 14. *Narcissus ferotinus.* *Late-flowering Narcissus.*
Lin. spec. 417. *Reich.* 2. 21. *Loeff. it.* 19. *Clus. hist.* 1. 162.
N. albus autumnalis minimus. *Baub. pin.* 51. *Rudb. elyf.* 2. p. 64. f. 8. *Raii hist.* 1138.
N. autumnalis minor. *Clus. hist.* 251. t. 252. *Ger.* 113. 15 *emac.* 131. 24.
Spathe one-flowered, nectary six-parted very short, leaves awl-shaped.
 15. *Narcissus Jonquilla.* *Common Jonquill.*
Lin. spec. 417. *Reich.* 2. 21. *hort. cliff.* 134. *Sauv. monsp.* 19. *Curt. magaz.* 15.
N. juncifolius luteus minor. *Baub. pin.* 51.—item, oblongo calice luteus major. *Baub. pin.* 51.
N. junc. minor & 2. *Clus. hist.* 1. 159. *Raii hist.* 1138.
N. juncifolius. *Ger.* 112. 11, 12. *emac.* 127. 15, 16.
 β. *Flore pleno.* *Double Jonquill.*
Spathe many-flowered, nectary bell-shaped short, leaves awl-shaped.

DESCRIPTIONS, &c.

1. The White Narcissus has a smaller and rounder bulb than the common Daffodil. The leaves are longer, narrower and flatter. The stalk or scape does not rise higher than the leaves, which are of a gray colour. At the top of the stalk comes out one flower from the spathe, nodding on one side. Corolla snow white, spreading open flat, the petals rounded at the points. The nectary or cup in the centre is very short, and fringed on the border with a bright purple circle. The flowers have an agreeable odour, appear in May, and seldom produce seeds. The double white Narcissus is a variety of this.

[The leaves are rounded on the keel, and reflected at the edge¹. Villars remarks, that in moist mountain pastures the roots come in bundles, producing a considerable packet of narrow erect leaves of an ash-coloured green colour. The scape bears one flower, seldom two, hanging down, spreading, composed of six lanceolate petals separate from each other, and having a little red (crimson) circle in the middle, waved or fringed.

Curtis makes two varieties of this; the common one described above, which he calls *angustifolius*, flowering in April, and the *majalis*, flowering six weeks later.

It is a native of Italy, the South of France, Switzerland, and Carniola. Said also to be found wild in England on sandy heaths, as at Shorne between Gravesend and Rochester: at Wood Bastwick and other places in Norfolk^m.

It was cultivated here in 1570, as appears from Lobelⁿ.

From the descriptions of Theophrastus, Dioscorides and Pliny, there is little doubt of this species being the Narcissus of those authors and of the poets. The next species, if it be really distinct, was probably not considered as a separate species by the ancients, since Ovid describes his Narcissus to have a yellow cup; whereas Dioscorides makes it purple, and Pliny sometimes one, sometimes the other^o.

2. The pale Daffodil or Primrose peerless, as it is called by our old authors, usually produces two flowers, it frequently occurs however with one, more rarely with three, in a high state of culture it probably may be found with more. When it has only one flower it may easily be mistaken for one of the varieties of the preceding, which Mr. Curtis calls *majalis*; but it may be thus distinguished from it: the petals are of a yellowish hue, or rather a pale cream colour; the nectary is wholly yellow, not having the orange or crimson rim; and it flowers at least three weeks earlier; the top also of the flowering stem in this, very soon after

it emerges from the ground, bends down and becomes elbowed; whereas in the *majalis* it continues upright till within a short time of the flowers expanding^p.

Native of several parts of Europe. Gerard says that it grows wild in fields and by the sides of woods in the west of England. Clusius also reports that he had been credibly informed of its being a native of England. Ray had sometimes observed it wild, but suspected that it might have originally come out of gardens. James Sherard, M. D. found it near Hornsey-church; Mr. Blackstone in several places near Harefield; Mr. Vernon at Bellow-hill near Whitchurch, Cheshire; Mr. Wood near Halifax. It flowers towards the end of April.

β. Mr. Curtis has figured a Narcissus under the name of *M. tenuior*, which seems to be scarcely a distinct species, though it has only one flower on the scape. The root is the size of a small nutmeg, of a pale brown colour. Leaves about a span long, very narrow, at their base scarcely a quarter of an inch wide, tapering gradually to a point, which is somewhat obtuse, the outer side is convex and somewhat fluted, the inner concave, not glaucous. Stalk somewhat longer than the leaves, round, slightly flattened, especially on its upper part, supporting on its summit one flower, of a fragrance less powerful than that of the Jonquill, and more so than that of *odorus*. Spathe membranous, length of the peduncle, which is about an inch long. Flower, when fully blown, standing horizontally: tube greenish, nearly cylindrical, somewhat longer than the peduncle: border flat, divided into six segments, of a pale yellow or sulphur colour, ovate, three alternate segments larger, each terminating in a short dagger-point. Nectary yellow, in form like that of *N. biflorus*, plaited, the margin, as the flower advances becoming brown. Anthers of the three longer stamens visible in the mouth of it.

Mr. Curtis first observed this Narcissus in the month of May 1794, in a single, but mostly in a double state, in the garden of Mr. James Maddock, florist at Walworth, who obtained it from Holland. It appears to have been long cultivated by the Dutch, and from its hardness is probably of European origin. It is inferior in size and beauty to many others; but as a species Mr. Curtis thinks it very distinct.] Mr. Miller also has a variety, which he names *N. albus*, n. 5. the petals, he says, are whiter and reflexed; the border of the cup is gold-coloured.

3. Common English Daffodil has a large bulbous root, from which come out five or six flat leaves, about a foot long, and an inch broad, of a grayish colour, and a little hollow in the middle like the keel of a boat. The stalk rises a foot and half high, having two sharp longitudinal angles; at the top comes out one nodding flower, inclosed in a thin spathe. The corolla is of one petal, being connected at the base, but cut almost to the bottom into six spreading parts; in the middle is a bell-shaped nectary, called by gardeners the cup, which is equal in length to the petal and stands erect. The petal is of a pale brimstone or straw colour, and the nectary is of a full yellow. Seeds roundish, black.

[The scape is a little longer than the leaves. Petals ovate-lanceolate, the three outer longer and narrower than the three inner. The rim of the nectary is a little plaited and snipt. Germ three-sided. Seeds kidney-form, rough^q.

Native of many parts of Europe; Spain, Italy, Germany, Switzerland, France, England, in pastures, woods and hedges; flowering in March. Near Charlton, Woolwich and Erith in Kent; in Norfolk; Whitwell near Coton, and Whittlesford in Cambridgeshire; Noke woods in Oxfordshire; about Halifax very abundantly; in Lancashire; Hanley Castle in Worcestershire; Madely in Shropshire; about Sutton Cofield, and beyond Erdington on the road from Birmingham to Sutton, it covers almost a whole field.]

Varieties are

1. With white petals and a pale yellow cup,
2. With yellow petals and a golden cup.

¹ Engl. bot. ^m Withering and Engl. bot. ⁿ Hort. kew.

^o Virg. Georg. 4. 122. ed. Mart. note.

^p Curtis.

^q Haller, Krockner, Withering.

3. With a double flower.
4. With three or four cups within each other.
5. Tradescant's Daffodil.
6. Peerless Daffodil.

Parkinson has many varieties, as

1. *Pseudonarcissus anglicus flore pleno*, or Gerarde's double Daffodil; he having first discovered it in a poor woman's garden in the west of England: it is said to be natural in the Isle of Wight¹. This circumstance is not mentioned in Gerarde's herbal. He there says that he received the double yellow Daffodill from Robinus of Paris.
2. *Pseudonarcissus aureus maximus flore pleno, f. roseus Tradescanti*, or John Tradescant's great Rose Daffodill. The same with n. 5. above. This Prince of Daffodils, says Parkinson, belongeth primarily to John Tradescant, as the first founder thereof, and may well be entituled the Glory of Daffodils. The flower is very much spread open, consisting of smaller and shorter leaves than the next, but more in number, thicker and rounder set together, making it seem as great and double as any Provence Rose, and intermixt with divers yellow and pale leaves, as if it were in rows one under another. It abideth long in flower, and spreadeth to be the broadest in compass of any of the Daffodils².
3. *Pseudonarcissus aureus anglicus maximus*, or Wilmer's great double Daffodil. This differs from the common sort (n. 1.) only in the largeness of the leaves and flowers, and the stateliness of growth. The stalk is two feet high, the flower great and fair, each leaf of it twice as large and broad as the former, diversely intermixt with a row of paler and of deeper yellow leaves, both growing deeper by standing. This we had from Vincent Sion, born in Flanders, dwelling on the Bank side, an industrious and worthy lover of fair flowers, who cherished it in his garden for many years untill the year 1620, when it flowered, and he shewed it to Mr. John de Franqueville, of whom he supposed he received it; who finding it to be a kind never known to us before, caused him to respect it the more, as it is well worthy. And George Wilmer, of Stratford Bow, Esq. having likewise received it of him, as myself did also, would needs appropriate it to himself, and call it by his own name, which since hath so continued³.

4. *Narcissus latifolius omnium maximus amplo calice flavo*, five Nonpareille. The great Nonesuch or Incomparable Daffodill. Stalk two feet high at the least. Flower large, single, consisting of six very pale yellow large leaves, almost round at the point, with a large cup in the middle somewhat yellower, the bottom whereof is narrow and round, rising wider to the mouth, which is very large and open, unevenly cut in or indented about the edges: this cup doth well resemble the chalice, that in former days with us, and beyond the seas is still used to hold the Sacramental Wine. The flower hath sometimes ten or twelve leaves, and a cup much larger.

Narcissus omnium maximus flore & calice flavo. The great yellow Incomparable Daffodill. This differs neither in form, nor bigness of leaf or flower from the former; but in the colour of the circling leaves of the flower, which are of the same yellow colour with the cup. This sometimes brings two flowers upon a stalk distinct, and sometimes two flowers thrust together, as if they were but one⁴.

Mr. Miller considers this as a species distinct from our common Daffodil; from which it differs in having longer leaves, of a darker green, and higher flower-stalks; the segments of the petal also are rounder, and spread open flatter; the cup is about half the length of the petal, and is edged with a gold-coloured fringe. It flowers in april; and varies more than any other.

The roots, the first year, produced very double flowers; the six outer segments longer than the others and white, the middle very full of shorter petals, some white others yellow, collected into a globular figure.

¹ Park. parad. 103, 104. ² 102. n. 1. ³ 102. n. 2. & 104.

⁴ Parad. p. 68. 1. 2.

Some of these roots, the following year, produced flowers less double, with no white petals, but the larger petals sulphur-coloured, and the others yellow. From this they afterwards degenerated to half-double flowers; and at last to single flowers, with a cup half the length of the petal, in which manner they continued to flower many years: we may conclude therefore that the last was the natural state of the flower. [In this state Mr. Curtis has figured it as a distinct species. He says, that the petals are usually pale yellow, and the nectary inclining to orange, which towards the brim is more brilliant in some than in others. In its double state it is well known to gardeners by the name of Butter and Egg Narcissus; and of this there are two varieties, one with colours like the single one above-mentioned, the other with petals of a pale sulphur colour, almost white, and the nectary bright orange, which is named in the Dutch catalogues *Orange Phoenix*, is the most ornamental among the several varieties, and has flowers so large as frequently to require support. If the bulbs be not taken up yearly, they will degenerate as Mr. Miller represents.] He received roots of it from Spain and Portugal.

[Parkinson enumerates other varieties, as

5. *Narcissus maximus griseus calice flavo*. The peerless gray Daffodill: which has the six outer leaves of the flower of a glistering whitish gray colour, and the cup yellow, longer than that of the preceding.
6. *Narcissus latifolius, flavo flore, amplo calice*. The lesser yellow Nonpareille or the Lady Matteneffes Daffodill, by which name it was known in the Low Countries, Clusius having received it from her.—The leaves of this are shorter and narrower, the stalk not so high, the flower smaller, the cup and petals both pale yellow, yet more yellow than in the former, the cup smaller, and neither so small in the bottom, nor so large at the edges, nor so crumpled at the brims⁵.

But of these varieties enough.

4. This resembles the Common Daffodil, but the petals are white, the nectary is dark yellow and larger, with a spreading, waved, notched border⁶. Gouan says it is easily distinguished by its leaves scarce a palm in length and half an inch in breadth; by its large flower, with cordate-ovate petals, imbricate at the base, and sulphur-coloured; and by the nectary having a reflex mouth, twelve-cleft or thereabouts, the lobes also being toothed and curled: the scape is the length of the leaves, or a little shorter, and thick.

Native of the South of Europe, flowering in april and may. Cultivated in 1629 by Parkinson⁷.

β. This is the largest of the genus, and bears the most magnificent flowers: though it has long been known in this country, it is confined to the gardens of the curious. It approaches in its general appearance very near to the Common Daffodil, but it is a much taller plant, and has its leaves more twisted, as well as more glaucous: the flower, but especially the nectary, is much larger, and the petals are more spreading. It answers to the *bicolor* of Linneus in every respect but colour, which is always a fine deep yellow. It varies with double flowers. It is a native of Spain, and flowers with us in april. Parkinson calls it the great yellow Spanish bastard Daffodill⁸.

5. The Little Daffodil is nearly related to the Common sort, but is three times smaller in all its parts: the scape is scarcely striated: the spathe is greenish: the flowers more nodding: the petals distinct at the base, lanceolate, straight, not oblique or ovate: margin of the nectary six-cleft, waved, curled⁹.

Though the flowers are not so large as those of the other species, yet when the roots are planted in a cluster, they make a very pretty show, and have this advantage, that they flower somewhat earlier than any of the others¹⁰.

Native of Spain. Cultivated in 1629, according to Parkinson¹¹.

6. Nectary cylindric, with the mouth obscurely repand, neither toothed nor curled.—Native of Spain.

⁵ Parad. p. 69. ⁶ Linn. spec. ⁷ Hort. kew. ⁸ Curtis.
⁹ Linn. spec. ¹⁰ Curtis. ¹¹ Hort. kew.

7. This is of the same size with *N. poeticus*, but the leaves are narrower by half and channelled. Spathe one-flowered. The whole corolla snow-white. Petals ovate-oblong. Nectary bell-shaped, shorter by half than the corolla, with the margin straight, and unequally crenulate. Stamens three, seldom six. Anthers dark yellow, shorter than the nectary^e.

The *N. triandrus* of our nurseries near London is pale yellow, Mr. Curtis's figure has two flowers from a spathe, there are constantly six stamens, three reaching no farther than the mouth of the tube^f.

Parkinson's figure has three flowers from a spathe. He describes it as having three, four or more snow white flowers, standing upon long green footstalks, every flower hanging down his head, and turning up his six narrow and long leaves, even to the very footstalk again: from the middle of the flower hangeth down a long round cup, as white as the leaves, within which are contained three small white chives tipped with yellow, and a small long pointell, thrusting out beyond the brims of the cup.

Parkinson has described several others with reflexed petals, probably varieties of this. One wholly of a gold colour, both cup and petals. A second yellow with a white cup. A third white with a yellow cup^g.

Linneus makes it native of the Pyrenees, in which he is followed by Mr. Curtis: according to the Kew catalogue, it is from Portugal. Clusius says that a French herbarist, named Nicolas le Quelt or Quilt, who searched the Pyrenees and Spain every year, introduced it in 1599. It was cultivated in England in 1629, as appears from Parkinson^h. It seems afterwards to have been lost, and to have been re-introduced latelyⁱ.

8. This is a broad-leaved species, having the appearance of *N. Tazetta*. Corolla white. Nectary erect, half or one-third of the length of the petals, trifid, yellow with the lobes emarginate^k. Of this there are several varieties.

Native of the Levant. Cultivated in 1758 by Mr. Miller. It flowers in may^l.

9. This resembles *N. Jonquilla*, but the nectary is cylindric, more than half the length of the petals, not curled, but obscurely three-lobed.—Native of the South of Europe^m.

10. Flower deep yellow, three times as large as that of *N. Tazetta*, sometimes one only from a spathe, sometimes more: nectary not fringed, but divided at the mouth into six blunt lobesⁿ.

Parkinson says, it bears two or three very fair large flowers, with a large and more open cup, than any other of the Rush Daffodils, both of a fair yellow colour, yet the cup a little deeper, and a little crumpled about the edges.

This species, which, as its name implies, possesses more fragrance than many of the others, is a native of the South of Europe, flowers in april, and varies with double flowers. Mr. Miller takes no notice of it, except merely as a variety of *N. Jonquilla*^o. He cultivated it in 1758. It flowers in april and may^p.

11. This resembles *N. Tazetta* very much, but the petals are a little larger and sharper: the nectary is the same length with the petals^q.

Leaves two or three, a foot or more in length. Stem slender, strong, a foot in length. Flowers two or three from a spathe, very elegant, large and loose: petals yellow: cup half an inch long, sinuated at the edge, of a deeper yellow colour. It has the odour of the Jonquil^r.

Clusius first observed this in flower in april 1595, in the garden of Theodoric Clutius or Cluyts, prefect of the Academic Garden at Leyden: both Cluyts and Cornelius van Hille, a minister at Rotterdam, gave him bulbs of it.—Native of the South of Europe and the Levant.

12. Bulb large, roundish. Leaves three or four, long, narrow, plane. Scape or flower-stalk upright, broadish; angular, concave, from ten or twelve to

eighteen inches in height. Flowers six or seven to ten from one spathe, very fragrant, clustered, white or yellow.

Native of Spain and Portugal, the South of France, Italy and Japan;] Mr. Miller adds the islands of the Archipelago, and Parkinson the neighbourhood of Constantinople. Clusius observed it at the end of january 1565 in Spain and Portugal, and at the beginning of february at Gibraltar. Ray found it in Italy between Lerici and Massa and between Massa and Lucca, in april: also about Montpellier in february and march.]

There is a greater variety of the *Polyanthus Narcissus* than of all the other species; for the flowers being very ornamental and coming early in the spring, the florists in Holland, Flanders and France have taken great pains in cultivating and improving them.

The principal varieties are these:

1. Petals yellow, with orange, yellow, or sulphur-coloured cups or nectaries.
2. Petals white, with orange, yellow or sulphur-coloured cups or nectaries.
3. Petals white, with white cups or nectaries.
4. Double flowers of the different varieties.

[The Dutch and London Catalogues contain about an hundred subvarieties under these heads, with pompous names, which are too subject to the light breath of fashion and caprice to be enumerated here.]

The varieties with white petals and white cups are not so much esteemed as the others; there are however two or three with large bunches of small white flowers, which are valuable for their agreeable odour, and for flowering later than most of the others. There is also one with very double flowers, the outer petals white, those in the middle some white, others orange-coloured. This has a very agreeable scent, flowers early, and is generally called the Cyprus Narcissus. It is the most beautiful of all the varieties, when blown in glasses in a room.

[Gerarde describes and figures this variety under the name of *Narcissus albus polyanthos*, or double white Daffodill of Constantinople, whence he says it was sent into England unto the right honorable the Lord Treasurer among other bulbed flowers.]

13. Bulbs small. Leaves very narrow, having some resemblance to those of the Rush, but a little compressed, with a longitudinal furrow on one side; they are seldom more than eight or nine inches long. Flower-stalk slender, taper, about six inches long: petal scarce half an inch long, cut into six acute segments; the nectary or cup is more than two inches long, very broad at the brim, lessening gradually to the base, formed somewhat like the old farthingale or bell-hoop petticoat worn by the ladies. It is a native of Portugal, whence Mr. Miller received the roots; [but it was also cultivated in the time of Parkinson^s; though now amid the multitude of novelties that flow in upon us from every quarter it is not common in our flower-borders. Mr. Curtis informs us that he has seen it grow abundantly in some gardens in Hampshire. It flowers in april or may.]

14. Bulb small. Leaves few, narrow. Stalk jointed, nine inches high. Corolla white, cut into six narrow segments: cup yellow. It flowers late in the autumn. Native of Spain, [Italy and Barbary. Cultivated by Mr. Miller before 1759.

15. The Jonquil from the narrowness of its leaves, like those of Rushes, has its name, and is called by old authors *Narcissus juncifolius*: there are two or three of them usually on a plant, and they are angular, fleshy and almost round. Scape round, hollow, producing at top from three to five flowers from a spathe, sometimes no more than two, very fragrant petals orbiculate or mucronate, both they and the cup yellow. Bulb small, white, covered with dark membranes^t. Native of Spain. Cultivated by Gerarde in 1597. It flowers in april and may, and varies with double flowers^u.]

PROPAGATION AND CULTURE.

1 to 7, &c. All the hardy sorts of Daffodil and Narcissus may be planted in large borders of the flower garden, where being intermixed with other bulbs they

^e Linn. spec. ^f Curt. magaz. ^g Parad. 92. n. 2, 3, 4, 5.
^h Hort. kew. ⁱ Curt. magaz. ^k Linn. mant.
^l Hort. kew. ^m Linn. spec. ⁿ Idem. ^o Curtis.
^p Hort. kew. ^q Linn. spec. ^r Clusius.

afford an agreeable variety. They will thrive in almost any soil or situation, and even under the shade of trees, where they will produce annually in the spring great quantities of flowers for several years together without transplanting, and make a good appearance before the trees come out in leaf.

[They increase abundantly by offsets. The double sorts should be taken up yearly, to prevent their becoming single.]

12. I shall first treat of the method for raising the fine sorts of Polyanthus Narcissus from seeds, which is the way to obtain new varieties.

The not practising this has occasioned our sending abroad annually for great quantities of flower-roots, which have been kept up to a high price, on account of the great demand for them in England; whereas if we were as industrious to propagate them as our neighbours, we might soon vie with them, if not outdo them, in most sorts of flowers; as may be seen, by the vast variety of Carnations, Auriculas, Ranunculas, &c. which have been produced from seeds in England, and exceed most of those kinds in any part of Europe.

You must be very careful in saving your seeds, to gather none but from such flowers as have good properties, and particularly from such only as have many flowers upon a stalk, that flower tall, and have beautiful cups to their flowers; from such you may expect to have good flowers produced; but if you sow ordinary seed, it is only putting yourself to trouble and expense to no purpose, since from such seeds there can be no hopes of procuring any valuable flowers.

Having provided yourself with good seeds, you must procure either some shallow cases or flat pans, made on purpose for the raising of seedlings, which should have holes in their bottoms, to let the moisture pass off; these must be filled with fresh, light, sandy earth about the beginning of august (that being the season for sowing the seeds of most bulbous-rooted flowers;) the earth in these must be levelled very even; then sow the seeds thereon pretty thick, covering them over with fine sifted light earth about half an inch thick, and place the cases or pans in a situation where they may have only the morning sun till about ten o'clock, where they should remain until the beginning of october, when they must be removed into a warmer situation, placing them upon bricks, that the air may freely pass under the cases, which will preserve them from being too moist.

They should also be exposed to the full sun, but screened from the north and east winds; and if the frost should be severe, they must be covered, otherwise there will be danger of their being destroyed; in this situation they may remain until the beginning of april, by which time the plants will be up, when you must carefully clear them from weeds: and if the season should prove dry, they must be frequently watered: the cases should also now be removed into their former shady position, or shaded in the middle of the day, for the heat of the noon-day sun will be too great for the young plants.

The latter end of june, when the leaves of the plants are decayed, you should take off the upper surface of the earth in the cases (which by that time will have contracted a mossiness, and, if suffered to remain, will greatly injure the young roots) observing not to take it so deep as to touch the roots; then sift some fresh light earth over the surface, about half an inch thick, which will greatly strengthen the roots; the same should also be repeated in october, when the cases are moved again into the sun.

During the summer season, if the weather should prove very wet, and the earth in the case appear very moist, you must remove them into the sun till the earth be dry again; for if the roots receive much wet during the time they are inactive, it very often rots them; therefore you must never give them any water after their leaves are decayed, but only place them in the shade, as was before directed.

Thus you should manage them the two first seasons, till their leaves are decayed; but the second summer after sowing, you should carefully take up the roots; which may be done, by sifting the earth in the cases

through a fine sieve, whereby the roots will be easily separated from the earth; then having prepared a bed or two of good fresh light earth, in proportion to the quantity of your roots, you should plant them therein, at about three inches distance every way, and about three inches deep in the ground.

These beds should be raised above the level of the ground, in proportion to the moisture of the soil, which if dry, three inches will be enough; but if it be wet, they must be raised six or eight inches high, and laid a little rounding, to shoot off the wet.

If these beds are made in july, which is the best time to transplant the roots, the weeds will soon appear very thick; therefore you should gently hoe the surface of the ground to destroy them, being very careful not to cut so deep as to touch any of the roots; and this should be repeated as often as may be found necessary, by the growth of the weeds, observing always to do it in dry weather, that they may be effectually destroyed; and toward the latter end of october, after having entirely cleared the beds from weeds, you should sift a little rich light earth over them, about an inch thick; the goodness of which will be washed down to the roots by the winter's rain, which will greatly encourage their shooting in the spring.

If the cold should be very severe in winter, you should cover the beds either with old tan or sea-coal ashes, or in want of these with Pease haulm, or some such light covering, to prevent the frost from penetrating the ground to the roots, which might greatly injure them while they are so young.

In the spring, when the plants begin to appear above ground, you must gently stir the surface of the ground, clearing it from weeds, &c. in doing of which, you should be very careful not to injure the plants; and if the season should prove dry, you should now and then gently refresh them with water, which will strengthen the roots.

When their leaves are decayed, you should clear the beds from weeds, and sift a little earth over them (as was before directed) which must also be repeated in october, in like manner; but the roots should not remain longer in these beds than two years, by which time they will have grown so large as to require more room; therefore they should be taken up as soon as their leaves are decayed, and planted into fresh beds, which should be dug deep, and a little very rotten dung buried in the bottom, for the fibres of the roots to strike into. Then the roots should be planted at six inches distance, and the same depth in the ground.

In the autumn, before the frost comes on, if some rotten tan is laid over the beds, it will keep out the frost, and greatly encourage the roots; and if the winter should prove severe, it will be proper to lay a greater thickness of tan over the beds, and also in the alleys, to keep out frost, or to cover them over with straw, or pease-haulm, otherwise they may be all destroyed by the cold. In the spring these coverings should be removed, as soon as the danger of hard frost is over, and the beds must be kept clean from weeds the following summer: at Michaelmas they should have some fresh earth laid over the beds, and covered again with tan, and so every year continued till the roots flower, which is generally in five years from seed, when you should mark all such as promise well, which should be taken up as soon as their leaves decay, and planted at a greater distance in new prepared beds; but those which do not flower, or those you do not greatly esteem, should be permitted to remain in the same bed; therefore, in taking up those roots which you marked, you must be careful not to disturb the roots of those left, and also to level the earth again, and sift some fresh earth over the beds (as before) to encourage the roots; for it often happens in the seedlings of these flowers, that at their first time of blowing, their flowers seldom appear half so beautiful as they do the second year; for which reason none of them should be rejected until they have flowered two or three times, that so you may be assured of their worth.

Thus having laid down directions for the sowing and managing these roots, until they are strong enough to flower,

flower, I shall proceed to give some instructions for planting and managing the roots afterwards, so as to cause them to produce large fair flowers.

All the sorts of Narcissus which produce many flowers upon a stalk, should have a situation defended from cold and strong winds, otherwise they will be subject to be injured by the cold in winter, and their stems broken down when in flower; for notwithstanding their stalks are generally pretty strong; yet the number of flowers upon each renders their heads weighty, especially after rain, which lodges in the flowers, and, if succeeded by strong winds, very often destroys their beauty, if they are exposed thereto; so that a border under a hedge, which is open to the south-east, is preferable to any other position for these flowers.

The morning sun rising upon them will dry off the moisture which had lodged upon them the preceding night, and cause them to expand fairer than when they are planted in a shady situation; and if they are too much exposed to the afternoon sun, they will be hurried out of their beauty very soon; and the strong winds usually coming from the west and south-west points, they will be exposed to the fury of them, which frequently is very injurious to them.

Having made choice of a proper situation, you must then proceed to prepare the earth necessary to plant them in; for if the natural soil of the place be very strong or poor, it will be proper to make the border of new earth, removing the former soil away about three feet deep. The best earth for these flowers is a fresh, light, hazel loam, mixed with a little very rotten neats dung: this should be well mixed together, and often turned over, in order to sweeten it; then having removed away the old earth to the fore-mentioned depth, you should put a layer of rotten dung or tan in the bottom, about four or five inches thick, upon which you must lay some of the prepared earth about eighteen or twenty inches thick, making it exactly level; then having marked out by line the exact distances at which the roots are to be planted (which should not be less than six or eight inches square) you must place the roots accordingly, observing to set them upright; then you must cover them over with the before-mentioned earth about eight inches deep, being very careful in doing it, not to displace the roots; when this is done, you must make the surface of the border even, and make up the side straight, which will appear handsome.

The best time for planting these roots is in the end of august, or beginning of september; for if they are kept too long out of the ground, it will cause their flowers to be weak. You should also observe the nature of the soil where they are planted, and whether the situation be wet or dry, according to which you should adapt the fresh earth, and order the beds; for if the soil be very strong and the situation moist, you should then make choice of a light earth, and raise the beds six or eight inches, or a foot, above the level of the ground, otherwise the roots will be in danger of perishing by too much wet; but if the situation be dry and the soil naturally light, you should then allow the earth to be a little stronger, and the beds should not be raised above three or four inches high; for if they are made too high, the roots will suffer very much, if the spring should prove dry, nor would the flowers be near so fair. As also in very severe winters, those beds which are raised much above the level of the ground, will be more exposed to the cold than those which are lower, unless the alleys are filled up with rotten tan or litter.

During the summer, the only culture these flowers require is, to keep them free from weeds; and when their leaves are entirely decayed, they should be raked off, and the beds made clean: but by no means cut off their leaves till they are quite decayed, as it is by some practised, for that greatly weakens the roots.

Towards the middle of october, if the weeds have grown upon the beds, you should in a dry day gently hoe the surface of the ground to destroy them, observing to rake it over smooth again; and before the frosts come on, the beds should be covered over two

inches thick with rotten tan, to keep out the frost; after which they will require no farther care till the spring, when their leaves will appear above ground; at which time you should gently stir the surface of the earth with a small trowel, being very careful not to injure the leaves of the plants, and rake it smooth with your hands, clearing off all weeds, &c. which, if suffered to remain at that season, will soon grow so fast as to appear unsightly, and will exhaust the nourishment from the earth. With this management these roots will flower very strong, some of which will appear in march, and the others in april; which, if suffered to remain, will continue in beauty a full month, and are, at that season, very great ornaments to a flower-garden.

After the flowers are past, and the leaves decayed, you should stir the surface of the ground, to prevent the weeds from growing; and if at the same time you lay a little very rotten dung over the surface of the beds, the rain will wash down the salts thereof, which will greatly encourage the roots the succeeding year.

During the summer season they will require no farther care, but to keep them clear from weeds till october, when the surface of the beds should be again stirred, raking off all weeds, &c. and laying some good fresh earth over the beds about an inch deep, which will make good the loss sustained by weeding, &c. and in the spring you must manage as was directed for the preceding year.

These roots should not be transplanted oftener than every third year, if they are expected to flower strong and make a great increase; because the first year after removing, they never flower so strong as they do the second and third; nor will the roots increase so fast, when they are often transplanted; but if you let them remain longer than three years unremoved, the number of offsets which by that time will be produced, will weaken the large bulbs, and cause them to produce very weak flowers; therefore at the time of transplanting them, all the small offsets should be taken off, and planted in a nursery-bed by themselves, but the large bulbs may be planted again for flowering. If you plant them in the same bed where they grew before, you must take out all the earth two feet deep, and fill it up again with fresh, in the manner before directed, which will be equal to removing them into another place: this is the constant practice of the gardeners in Holland, who have but little room to change their roots; therefore they every year remove the earth of their beds, and put in fresh, so that the same place is constantly occupied by the like flowers. But those people take up their roots every year, for as they cultivate them for sale, the rounder their roots are, the more valuable they will be: the way to have them so is, to take their offsets from them annually; for when their roots are left two or three years unremoved, the offsets will have grown large, and these pressing against each other, will cause their sides to be flatted; so that where the roots are propagated for sale, they should be annually taken up as soon as their leaves decay; and the large bulbs may be kept out of the ground till the middle or end of october, but the offsets should be planted the beginning of september or sooner, that they may get strength, so as to become blowing roots the following year: but where they are designed for ornament, they should not be removed oftener than every third year, for then the roots will be in large bunches, and a number of stalks with flowers coming from each bunch, they will make a much better appearance than where a single stalk rises from each root, which will be the case when the roots are annually removed.

[Persons who are nice in these flowers, shelter them by an awning during the time of flowering to keep off sun, rain and wind, as is practised with Auriculas, Carnations and other very handsome delicate flowers, to preserve the beauty of the bloom, and to continue it longer. The Polyanthus-Narcissus may be blown in glasses in rooms during the winter and early in the spring, from october to march.]

10, 11, 15. The Jonquils should be planted in beds

or borders, separate from other roots, because these require to be transplanted at least every year, otherwise their roots are apt to grow long and slender, and seldom flower well after; which is also the case, if they are continued many years in the same soil; wherefore the roots should be often removed from one part of the garden to another, or at least, the earth should be often renewed, which is the most probable method to preserve their flowers in perfection.

The soil in which these flowers succeed best, is an hazel loam, neither too light nor over stiff; it must be fresh, and free from roots of trees or noxious weeds, but should not be dunged; for it is very remarkable, that where the ground is made rich, they seldom continue good very long, but are subject to shoot downwards, and form long slender roots.

These flowers are greatly esteemed by many people for their strong sweet scent, though there be very few ladies that can bear the smell of them, especially if confined in a room.

[Where the smell of the Jonquils can be endured, they are blown with success in glasses, as well as the Polyanthus Narcissus. The glasses should be filled up to the bottom of the bulb with fresh soft water: place them in a light warm room, near windows which have the benefit of the sun: and keep up the water to the same height, by putting in a fresh supply every fortnight or three weeks. These and other flowers may also be brought forward in a warm room in pots set in pans of water; or still more effectually in stoves or hot-beds, by which means a succession of these flowers may be obtained during the winter and spring till they appear in the natural ground.]

NARCISSUS. See *Amaryllis*, *Anthericum*, *Ferraria*, *Hemanthus*, *Leucoium*, *Pancratium*.

NARD. See *Andropogon Nardus*.

Nardo Celticæ similis. See *Valeriana*.

NARDUS, (of Pliny, *Nardos* of Theophrastus and Dioscorides. Said to be of Hebrew derivation.)

Lin. gen. n. 69. Reich. n. 75. Schreb. n. 97.

Juss. 33.

Class. 3. 1. Triandria Monogynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. none.

COR. two-valved: outer valve lanceolate-linear, long, mucronate, embracing the smaller with its belly: inner smaller, linear, mucronate.

Nectary none.

STAM. Filaments three, capillary, shorter than the corolla. Anthers oblong.

PIST. Germ oblong. Style one, filiform, long, pubescent. Stigma simple.

PER. none: the corolla grows to the seed, and does not open.

SEED one, straight, linear-oblong, acuminate at both ends, narrower at top.

ESSENTIAL CHARACTER.

Cal. none. Cor. two-valved.

SPECIES.

1. *Nardus stricta*. Common Mat-grass.

Lin. spec. 77. Syst. 102. Reich. 1. 144. Willd. 314. fl. lapp. n. 40. succ. n. 52. hort. cliff. 42. Hudf. angl. 22. Wither. arr. ed. 3. 71. Engl. bot. 290. Fl. rust. 27. Lightf. scot. 90. Relb. cant. n. 40. Sibth. oxon. n. 101. Hall. belv. n. 1410. Scop. carn. n. 67. Pollich pal. n. 53. Leers herborn. n. 38. t. 1. f. 7. Jacqu. vind. 10. Roth. germ. 1. p. 25. 2. p. 65. Hoffm. germ. 19. Krock. files. n. 83. Neck. gallob. 29. Ger. prov. 74. Villars dauph. 2. 57. Schreb. gram. 65. t. 7. Fl. dan. 1022.

Gramen sparteum juncifolium. Baub. pin. 5. Scheuch. gram. 90. t. 2. f. 10. Raii hist. 1260. syn. 393.

Gr. spart. capillaceo folio minus. Baub. prodr. 11. theat. 70. Mor. hist. 3. 217. f. 8. t. 7. f. 8.

Gr. loliaceum minimum, fol. junceis, panicula unam partem spectante. Monti 43. ic. 31.

Spartum parvum. Lob. ic. 90. 1. Baub. hist. 2. 513. 2. Ger. emac. 1631. 3. Park. theat. 1199. 5, 6, 7.

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β. Gr. spart. basileense, capillaceo folio majus. Baub. pin. 69. prodr. 29.

Spike bristle-shaped, straight, pointing one way.

2. *Nardus aristata*. Awned Mat-grass.

Lin. spec. 78. Syst. 102. Reich. 1. 145. Willd. 315.

Villars dauph. 2. 58. Allion. pedem. n. 2130.

N. incurva. Gouan hort. 33. flor. 114.

Gramen exile arundinaceum minimum, acumine reflexo. Bocc. mus. 2. 74. t. 57. Scheuch. gram. 11.

Gr. junceum nodosum min. capillare. Barr. rar. 106. t. 117. f. 1.

Calyxes awned.

3. *Nardus indica*. Indian Mat-grass.

Lin. Syst. 102. Willd. 315. suppl. 105.

Spike bristle-shaped pointing one way, a little curved inwards.

4. *Nardus ciliaris*. Ciliated Mat-grass.

Lin. spec. 78. Reich. 1. 145. Willd. 315.

Spike curved in ciliate.

DESCRIPTIONS, &c.

1. Root perennial. Culms from a span to a foot in height, slender, stiff, roughish, having one, two or three joints near the base, with a short leaf to each, and thence naked to the spike. Root-leaves numerous, longer, narrow, a little rough. Spike two or three inches long, consisting of about twenty spikelets dispersed thinly along the rachis. Florets yellowish white or purple, pubescent, alternate, sessile. Rachis or spike-stalk convex on one side, hollowed on the other, with rough alternate teeth on the edges for the insertion of the florets, and continued above them to a short bristly point.

This grass is easily distinguished by the slenderness and rushy stiffness of the stalks and leaves; and by the florets being thinly dispersed along the spike, mostly in pairs, pointing all the same way, and having each only one style. It flowers from May or June to August: Ray says from the end of April; and that it holds its spike till winter.—Native of most parts of Europe, in woody moist barren meadows; with us chiefly on or about bogs or heaths.

Being stiff, hard and short, Linneus observes that it eludes the stroke of the scythe, or takes off its edge, for which reasons it is disliked by the mowers. In England it rarely comes under the scythe.

Linneus also informs us that crows frequently stock it up, for the sake of the larva of some Tipula, which they find at the root. He says that goats and horses eat it, but that cows and sheep are not fond of it. With us it does not seem to be applied to any use.

Gerard remarks that the corolla is sometimes three-valved, the outer valve being shorter and performing the office of a calyx.

2. Root biennial. This is a very small species. The leaves curve back and roll up like hair, dry away and disappear in part. The spike makes about one-third of the culm: it is curved back at the end, which discovers the little awns of the florets, for they are so small that they are not seen without attention and practice. The florets come in pairs in a very small scale, which serves them for a calyx, and which might rank this grass with the Loliums. The florets are very slightly peduncled, two-valved, and terminated by a little awn.—Native of the South of Europe, in sandy barren soils.

3. This grass is the length of a finger, branched a little, and smooth. Leaves flat, shorter than the culm, alternate, remote. Spike imbricate, very narrow towards the flowers.—Found by Koenig, in Tranquebar in the East Indies.

4. Leaves flat. Culm a span high. Spike halved, or having only on one side, alternate erect florets, from twelve to fifteen in number; the outer valve ovate-oblong, awnless, ciliate along the edge with numerous rugged scales. Proper calyx none, but on one side of the florets a bristle, shorter than the glume.—Native of the East Indies.

Nardus gangitis & *thomæa*. See *Rottboellia*.

NARDUS. See *Ægilops*, *Agrostis*, *Cacalia*, *Valeriana*.

* Pollich, Leers, Fl. rust.

* Linn. suppl.

* Linn. spec.

NARINAM-POULLI. See *Hibiscus*.
 NARTHECIUM. See *Anthericum*.
 NARU-KILO. See *Pontederia*.
 NARUM-PANEL. See *Uvaria*.
 NARU-NINDI. See *Ceropegia*.
 NASTURTIIUM. See *Arabis*, *Cardamine*, *Cochlearia*, *He-
 liophila*, *Iberis*, *Lepidium*, *Myagrurn*, *Panax*, *Sisymbrium*,
Tblaspi, *Vella*.
 NATI-SCHANIBU. See *Eugenia*.
 NATSIATAM. See *Menispermum*.
 NATRIX. See *Ononis*.
 NAUCLEA.

Lin. gen. n. 223. Reich. n. 239. Schreb. n. 295.

Gartn. t. 30. Juss. 209.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Aggregatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. common none. Receptacle common globular, subvil-
 lose, covered all over with florets.

Perianth proper one-leafed, oblong, incrusting the
 germ: mouth contracted, entire.

COR. proper one-petalled, funnel-form, placed on the
 mouth of the perianth. Tube filiform, longer. Border
 short, five-parted: segments ovate, blunt, recurved.

STAM. Filaments five, very short, in the throat of the
 corolla. Anthers ovate, the length of the tube.

PIST. Germ inferior, oblong. Style capillary, erect, longer
 than the corolla. Stigma obovate.

PER. Capsule incrusted with the calyx, turbinate, attenu-
 ated below, blunt at the top, two-grained, two-celled:
 grains fastened by a thread at the top.

SEEDS several, small, ovate, compressed a little, mem-
 branaceous-margined, attenuated into a bristle-shaped
 tail, fastened to the future, G.

ESSENTIAL CHARACTER.

Cor. funnel-form. Seed one, inferior, two-celled. Re-
 ceptacle common globular.

SPECIES.

1. *Nauclea orientalis*.

*Lin. spec. 243. Reich. 1. 473. Gartn. fruct. 1.
 151. Lour. cochinch. 141. Fl. zeyl. n. 53. spec.
 ed. 1. 95. (Cephalanthus).*

*Platanocephalos citri foliis bijugis, capite majore. Vaill.
 aet. par. 1722. p. 259.*

*Bancalus. Rumph. amb. 3. 84. t. 55. f. 1?
 Leaves ovate obtuse, peduncles terminating solitary.*

2. *Nauclea parvifolia*.

Roxb. corom. 40. t. 52.

Leaves oval, peduncles terminating solitary or in threes.

3. *Nauclea cordifolia*.

Roxb. corom. 40. t. 53.

Leaves broad-cordate, peduncles axillary one to four.

4. *Nauclea purpurea*.

Roxb. corom. 41. t. 54.

*Leaves oblong pointed, peduncles terminating solitary or
 in threes.*

DESCRIPTIONS, &c.

1. This is a large tree, with a straight trunk, and
 spreading branches. Leaves quite entire, large, smooth,
 petioled, opposite, with thick, parallel, curved nerves.
 Flower on a long peduncle, composed of very many
 yellow florets gathered into a ball two inches in dia-
 meter. Proper perianth fleshy, unequally many-cleft.
 Corolla usually five-cleft, with as many stamens. Style
 very long, conglobate every way into a large hoary
 head, by their united force concealing the golden flo-
 rets. Stigma entire, turbinate, acuminate. Fruit a
 berry compounded of the fleshy perianths of the flo-
 rets, coalescing irregularly into a globular, lacunose
 body^a.

Gærtner describes it as a Capsule, inferior, small,
 turbinate, corticate, crowned with a callous ring the
 remains of the fallen flower, smooth, two-grained:
 rind coriaceous, opened at top by the gaping grains;
 which are cartilaginous, hard, whitish, convex on one
 side, slightly concave on the other, one-celled, open-
 ing elastically two ways at top. Receptacle triple:
 first, of the fructification globular; secondly, of the
 fruit filiform, between the grains, and inserted into

^a Loureiro.

their upper part, as in umbellate plants; thirdly, of
 the seed, a prominent nerve of the gaping future of
 the grains, by which the seeds hang. Seeds in each
 grain about sixteen, small, ovate, compressed a little,
 or somewhat angular, membranaceous-margined, atte-
 nuated at top into a bristle-shaped tail, rufescent.

Native of the East Indies, Cochinchina, and the So-
 ciety isles.

The wood is yellow, solid, beautiful and fit for all
 works within doors; exposed to air and wet it rots
 quickly^b.

2. Trunk straight, with a brownish-gray, cracked
 bark. Branches opposite, numerous, spreading, form-
 ing a large, oval, shady head. Leaves opposite, de-
 cussated, entire, smooth. Petiole channelled. Stipules
 large, oblong, obtuse, glutinous, falling. Peduncles
 single or three; when three, the middle one is shortest,
 near the apex jointed, and bracted, each supporting a
 single globular naked head of florets. Bractes two,
 opposite, near the extremity of the peduncle, oval,
 falling. Flowers small, light yellow. Receptacle
 chaffy: chaffs wedge-form, hairy at their insertions.
 Calyx very minute, entire. Divisions of the corolla
 pointed, spreading. Filaments inserted just within the
 mouth of the tube: anthers erect, oblong, pointed
 above. Style nearly twice the length of the corolla:
 stigma large resting on the style. Capsules turbinate,
 covered with a scabrous crust or bark, which splits
 irregularly when the seeds are ripe: within is the pro-
 per two-celled capsule, each consisting of one valve,
 opening round the apex, and down on the inside.
 Seeds several, very minute, oblong, tailed, inverse,
 imbricated round the outside of their receptacles with
 the insertion downwards.

This grows to a large tree, and is a native of almost
 every part of the coast of Coromandel, but chiefly
 among the mountains, flowering during the cold season.
 It is called Bota-cadamie by the Telingas.

The wood is of a light chestnut colour, firm and
 close grained. It is used for various purposes, where
 it can be kept dry; but if exposed to wet it soon
 rots.

3. Trunk erect. Bark like that of the preceding.
 Branches very numerous, horizontal, forming a very
 large shady head. Leaves opposite, decussated, pointed,
 entire, above pretty smooth, below downy, particu-
 larly when young, and beautifully netted with small
 veins; from four to twelve inches each way. Petiole
 round, a little downy, from two to three inches long.
 Stipules as in the preceding. Peduncles round, downy,
 the same length with the petioles, near the apex jointed
 and bracted, each supporting a single globular head.
 Bractes oval, falling. Flowers as in the preceding.
 Divisions of the calyx, and stigma clubbed. Capsule
 wedge-form. Seeds about six in each cell; surround-
 ing their receptacle, oblong, not imbricated: mem-
 brane winged at the extremities: lower pointed: up-
 per two-forked.

This also grows to a large tree, and is a native of
 the mountainous parts of the same coast. It flowers
 during the wet season, and the seeds are ripe about
 april.

The wood is exceedingly beautiful, its colour like
 that of the Box-tree but much lighter, and at the same
 time very close grained; it is to be had of a large size,
 from one to two feet or more in diameter; is used for
 almost every purpose where it can be kept dry, and
 answers very well for furniture, being pretty, light, and
 durable.

Daduga of the Telingas.

4. Trunk irregular, with a scabrous ash-coloured
 bark. Branches opposite, decussated. Leaves oppo-
 site, decussated, short-petioled, quite entire, very smooth
 and shining both above and below, from four to nine
 inches long. Stipules as in the two former. Pedun-
 cles as in *N. parvifolia*. Flowers larger than in either
 of the former, purple. Calyx as in *N. cordifolia*.
 Corolla, stamens, pistil and style as in the former.
 Stigma globular. Capsule turbinate, wants the outer
 covering, two-celled; the cells two-valved on the out

^b Idem.

or convex side; on the inside there is only the receptacle of the fruit, which is broad. Seeds numerous, most minute, imbricated, with their insertions upwards.

It is a small tree: a native of the moist valleys among the Circar mountains, flowering in april or the beginning of the hot season.—Bagada of the Telingas.

NAVELWORT. See *Cotyledon* and *Cynoglossum*.

NAVEW. See *Brassica*.

NECKERA. (So named from *Natalis Joseph De Necker*, author of *Deliciae Gallo-Belgicae*, &c.)

Lin. gen. Schreb. n. 1658. Hedw. fund. 2. 93.

Hypni spec. Linn.

Class. 24. 3. Cryptogamia Musci.

GENERIC CHARACTER.

CAPS. oblong. *Peristome* double: outer with sixteen sharp teeth; inner with sixteen distinct cilia, alternate with the teeth of the outer.

MALES gemmaceous on distinct plants.

SPECIES.

Neckera heteromalla of Hedwig is *Hypnum heteromallum* of Gmelin: *Sphagnum arborescens* of Hudson: and *Fontinalis secunda* of Withering.

Neckera pennata of Hedwig, is *Hypnum pennatum* of Gmelin, and *Fontinalis pennata* of Withering.

Neckera pumila of Hedwig, is *Hypnum pumilum* and *Dicksoni* of Gmelin, and *Hypnum pennatum* of Withering, and *Dickson*.

NECTANDRA. See *Gnidia*, *Porostema*, *Struthiola*.

NECTARINE. See *Amygdalus*.

NECTRIS. (*Nεκτρίς*, *nataatrix*, a floating plant; from *νέω*, to swim.)

Lin. gen. Schreb. n. 610. Cabomba. Aubl. 124.

Juss. 47.

Class. 6. 2. Hexandria Digynia.

Nat. order of *Tripetaloidæ*. *Junci*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, six-parted; the three outer segments ovate, acute, coloured within; the three inner, alternate with these, ovate, blunt, smaller, coloured on both sides.

COR. none.

STAM. *Filaments* six, capillary, inserted into the base of the calycine segments. *Anthers* ovate.

PIST. *Germ*s two, superior, oblong: *Styles* short. *Stigmas* blunt.

PER. *Capsules* two, ovate, somewhat fleshy, crowned with the permanent styles, one-celled.

SEEDS numerous, very small.

ESSENTIAL CHARACTER.

Cal. one-leafed, six-parted, coloured. Cor. none. Styles permanent. Caps. two, superior, ovate, one-celled, many-seeded.

SPECIES.

1. *Nectris aquatica*.

Lin. syst. ed. Gmel. 580.

Cabomba aquatica. Aubl. guian. 321. t. 124.

DESCRIPTION, &c.

This plant grows in ponds, lakes, and rivers that have not a rapid current, pushing out long, branched, knotted, fistulous stems, with a pair of leaves at each joint. These leaves are divided into five branches, and each of these into three others, and so on three times, finishing by two; these divisions are very fine: the top leaves float on the water; these are alternate, entire, oval, peltate, on a long petiole, like those of *Hydrocotyle*. The flowers come out from the axils of these on a long peduncle: sometimes there is a flower from the axil of one of the upper cut leaves. The three outer leaves of the calyx are green on the outside, and yellow within; the three inner are entirely yellow.—Native of Guiana and the island of Cayenne.

NEDEL-AMBEL. See *Menyanthes*.

NEGUNDO. See *Vitex*.

NEINSCHENA. See *Arum*.

NELAM-MARI. See *Hedysarum*.

NELAM-PARENDA. See *Viola*.

NELI-POLI. See *Averrhoa*.

^c Roxb. corom. ^d See Wither. arr. ed. 3. p. 789, 790, 852.

^e Aublet.

NELI-PU. See *Utricularia*.

NELI-TALI. See *Æschynomene*.

NELITRIS. See *Psidium*.

NELLA TENDALE-COTTI. See *Crotalaria*.

NELLI-CAMARUM. } See *Phyllanthus*.

NELIKA. }

NELUMBO. See *Nymphaea*.

NEMIA. See *Mamulea*.

NEOTTIA. See *Ophrys*.

NEPENTHES (of *Pliny*. *Νεπενθης* of *Hippocrates*. From the negative *ν*, and *πενθος*, *luctus*. Serene, void of grief.)

Lin. gen. n. 1019. Reich. n. 1107. Schreb. n. 1560.

Juss. 444. Gertn. t. 83.

Class. 22. 14. Dioecia Syngenesia.

GENERIC CHARACTER.

* Male.

CAL. *Perianth* one-leafed coriaceous, coloured within, spreading, four-parted: segments roundish, minutely toothletted, almost equal.

COR. none.

STAM. *Filament* one, columnar, cylindric, erect, a little shorter than the calyx. *Anthers* many (fifteen to seventeen), one-celled, connected into a convex peltate head, concave at the centre, round the upper part of the filament; three of them at the top; transverse.

* Female, on a distinct plant.

CAL. as in the Male, permanent.

COR. none.

PIST. *Germ* ovate, four-grooved, superior, the length of the calyx. *Style* none. *Stigma* large, peltate, four-lobed, hollowed out into four excavations, permanent.

PER. *Capsule* oblong, columnar, truncate, crowned with the permanent stigma, quadrangular; the sides grooved: four-celled, four-valved, gaping at the angles: partitions contrary.

SEEDS numerous, oval, inclosed in long, membranaceous, angular arils, acuminate at both ends, fastened obliquely to the inner angle of each cell in a double row.

ESSENTIAL CHARACTER.

Cal. four-parted. Cor. none.

MALE. *Filam.* one, with many *Anthers* connected into a peltate head.

FEM. *Style* none. *Stigma* large, peltate, four-lobed. *Caps.* four-celled, with many arilled *Seeds*.

SPECIES.

1. *Nepenthes distillatoria*.

Lin. spec. 1354. Reich. 4. 45. hort. cliff. 431.

fl. zeyl. n. 321. Gertn. fruct. 2. 18. Pluk. phyt.

t. 237. f. 3. (Utricularia). Rumph. amb. 5. 121.

t. 59. f. 2. (Cantharifera). Burm. zeyl. 42. t. 17.

(Bandura).

Planta mirabilis distillatoria. Grimm. in ephem. nat.

cur. an. 1. dec. 2. p. 363. t. 363.

Bandura Cingalensis Gentianæ indicæ species. P.

Amman. Raii hist. 721.

DESCRIPTION, &c.

This elegant plant rises with a fungose, thick, round stalk. Leaves alternate, sessile, wide, oblong, smooth, with a very strong nerve running along the middle, ending in a long tendril, generally twisted, to which hangs a receptacle, or long, cylindrical, membranaceous, smooth, hollow bag, which on being pressed yields a sweet, limpid, pleasant, refreshing liquor, in such quantity that six or eight of them are sufficient to slake the thirst of a man.

Flowers in a spike on long peduncles. Calyx inferior, permanent; leaflets ovate, acuminate. Anthers four, fixed to the germ. Capsule superior, oblong, swelling in the middle, narrowed to both ends, crowned with a depressed quadrangular disk formed of the four sessile stigmas, four-cornered, four-valved: the valves have a depressed line on the outside, and a longitudinal septum within. Seeds very numerous linear-oblong, narrowed to both ends, dirty straw-colour, fastened all round in a suberect position to the partition.

Native of the island of Ceylon. Linneus placed it in the class Gynandria; he doubted however about the sex, and thought it might be dioecous, as it proves to be.]

^f Linn. zeyl. & Burm. zeyl.

^g Gartner.

NEPETA (of Pliny: from Nepa, being supposed to be efficacious against the bite of the scorpion. Linneus derives it from the name of a town in Italy; between Rome and Viterbo.)

Lin. gen. n. 710. Reich. n. 768. Schreb. n. 964.

Juss. 113. Cataria. Tournef. t. 95.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of Verticillatae. Labiatae, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, cylindric: mouth five-toothed, acute, erect: upper toothlets longer; lower more spreading.

COR. one-petalled, ringent: tube cylindric, curved inwards: border gaping: opening spreading, cordate, ending in two reflex blunt very short segments: upper lip erect, roundish, emarginate; lower roundish, concave, larger, entire, crenulate.

STAM. Filaments four, awl-shaped, beneath the upper lip, approximating, two of them shorter. Anthers incumbent.

PIST. Germ four-cleft. Style filiform, length and situation of the stamens. Stigma bifid, acute.

PER. none. Calyx straight, containing the seeds in its bosom.

SEEDS four, subovate.

Obs. If the segments of the throat be numbered with the lower lip, it will be three-parted.

ESSENTIAL CHARACTER.

Cor. lower lip with an intermediate segment, crenate; throat reflex at the edge. Stam. approximating.

SPECIES.

1. *Nepeta Cataria*. Common Catmint.

Lin. spec. 796. Juss. 529. Reich. 3. 30. hort. cliff.

310. upf. 163. fl. succ. n. 514. mat. med. 146.

Huds. angl. 249. Wither. arr. ed. 3. 519. Engl.

bot. 137. Lightf. scot. 304. Relb. cant. n. 420.

Sibth. oxon. n. 514. Scop. carn. n. 743. Neck.

gallob. 249. Pollich pal. n. 549. Crantz. austr.

271. Fl. dan. t. 580. Krock. files. n. 906.

Villars dauph. 2. 365. Allion. pedem. n. 131.

Gron. virg. 65. 89. Kniph. cent. 4. n. 53. Blackw.

t. 455. Sabb. hort. 3. t. 80. Riv. mon. 52.

Cataria foliis cordatis, verticillis spicatis. Hall. herb. n. 246.

Mentha cataria. Baub. hist. 3. 2. 225. Lob. obs.

276. 1. ic. 1. 511. 1. Raii hist. 548.—vulgaris &

major. Baub. pin. 228.

Cataria herba. Dod. pempt. 99.

C. vulgaris major. Tournef. inst. 202.

Mentha felina seu Cattaria. Ger. 554. 1. emac. 682. 1.

Nepeta major vulgaris. Park. theat. 38. Raii syn.

237. Petiv. brit. t. 32. f. 1.

Herba Gattaria. Matth. 719.

β. *N. minor.* Mill. dict. n. 2. Raii hist. 548.

Mentha cataria minor. Baub. pin. 228.

Flowers in spikes, whorls subpedicelled, leaves petioled cordate tooth-ferrate.

2. *Nepeta angustifolia*. Narrow-leaved Catmint.

Vahl symb. 1. 41.

N. arragonensis. Lamarck. encycl.

Cataria tenuifolia. Clus. hist. 2. 33.

Corymbs pedicelled spiked, leaves lanceolate wrinkled tomentose bluntly ferrate.

[3. *Nepeta pannonica*. Hungarian Catmint.

Lin. spec. 797. Reich. 3. 30. Jacqu. austr. 2. 18.

t. 129. Ait. hort. kew. 2. 284. Gmel. sib. 3. 239.

Allion. pedem. n. 132. Krock. files. n. 908.

N. pann. elatior. Mor. hist. 3. 415. f. 11. t. 6. f. 6.

Mentha montana verticillata. Baub. pin. 227.

Menthastrum montanum 1. Clus. hist. 2. 32. Ger. emac. 685. f. 6. Raii hist. 549.

Cymes peduncled many-flowered, leaves lanceolate-oblong cordate naked, lateral lobes of the corolla reflex.

4. *Nepeta cærulea*. Blue-flowered Catmint.

Ait. hort. kew. 2. 285.

Cymes peduncled many-flowered rough-haired, leaves oblong cordate, villose subsessile, lateral lobes of the corolla reflex.]

5. *Nepeta violacea*. Violet-coloured Catmint.

Lin. spec. 797. Reich. 3. 31. Scop. carn. n. 744.

Pallas it. 1. 154. Sauv. monsp. 151. Barr. ic. 601.

Bosc. mus. 2. 46. t. 36. Allion. pedem. n. 133.

Cymes peduncled many-flowered hairy, leaves cordate subsessile almost naked, lateral lobes of the corolla spreading.

[6. *Nepeta ucranica*.

Lin. spec. 797. Reich. 3. 31.

Flowers panicled, leaves lanceolate ferrate sessile naked.

7. *Nepeta incana*. Hoary Catmint.

Lin. syst. 529. Thunb. jap. 244.

Panicles axillary, leaves petioled ovate ferrate tomentose.

8. *Nepeta Nepetella*. Small Catmint.

Lin. spec. 797. Reich. 3. 31. Ait. hort. kew. 2.

285. Allion. pedem. n. 134. t. 1. f. 1.

Cymes peduncled, leaves cordate oblong-lanceolate deeply ferrate tomentose.

9. *Nepeta nuda*. Naked or Spanish Catmint.

Lin. spec. 797. syst. 529. Reich. 3. 32. mant. 416.

Jacqu. austr. 1. 17. t. 24. Allion. pedem. n. 135.

Krock. files. n. 907. Hall. herb. n. 248. (Cataria).

Racemes whorled naked, leaves cordate-oblong sessile ferrate.]

10. *Nepeta hirsuta*. Hairy Catmint.

Lin. spec. 798. Reich. 3. 32. hort. cliff. 311. 3.

Lour. cochinch. 366. ed. Willd. 444.

Horminum spicatum, lavender flower & odore. Bocc. sic. 48. t. 25. f. 2.

Flowers sessile whorl-spiked, whorls involved in nap.

11. *Nepeta italica*. Italian Catmint.

Lin. spec. 698. syst. 530. Reich. 3. 32. Jacqu.

hort. 2. 51. t. 112.

Mentha cataria minor alpina. Baub. pin. 228. prodr.

110. Park. theat. 38. n. 4. Raii hist. 549.

Flowers sessile whorl-spiked, bractes lanceolate the length of the calyx, leaves petioled.

12. *Nepeta tuberosa*. Tuberous-rooted Catmint.

Lin. spec. 798. Reich. 3. 33. hort. cliff. 311. 2.

Gouan. illustr. 36. Kniph. cent. 9. n. 72.

Mentha tuberosa radice. Baub. pin. 227.

Menthastrum tuber. rad. Baub. hist. 3. 227. Raii hist. 550.

Menthastrum tuber. Clusii. Park. theat. 33. 9. Ger. emac. 685. f. 7.

Spikes terminating, bractes oblong acuminate nerve-lined coloured; leaves cordate pubescent, lateral lobes of the corolla reflex.

13. *Nepeta Scordotis*. Cretan Catmint.

Lin. spec. 798. Reich. 3. 33. amoen. 4. 317.

N. procumbens. Mill. dict. n. 11.

Scordium alterum lanuginosius verticillatum. Baub. pin. 248.

Scordotis. Alp. exot. 284. t. 283. Clus. hist. 2. 312.

Spikes terminating sessile, bractes subcordate villose, leaves cordate blunt.

[14. *Nepeta lanata*. Woolly Catmint.

Jacqu. obs. 3. 21. t. 75. Ait. hort. kew. 2. 286.

Spikes terminating, bractes ovate nerve-wrinkled subscariose, leaves oblong cordate, villose, lateral lobes of the corolla spreading.]

15. *Nepeta virginica*. American Catmint.

Lin. spec. 799. Reich. 3. 33. hort. cliff. 305. Gron.

virg. 65. Pluk. phyt. t. 85. f. 2. Mor. hist. 3.

374. f. 11. t. 8. f. ult. (Clinopodium).

Heads terminating, stamens longer than the flower, leaves lanceolate.

[16. *Nepeta malabarica*. Malabar Catmint.

Lin. syst. 530. Reich. 3. 33. mant. 566. Mor.

hist. 3. 415.

Spike whorled, bractes filiform, leaves lanceolate quite entire below.

17. *Nepeta indica*. Indian Catmint.

Lin. spec. 799. syst. 530. Reich. 3. 34.

The same with *Lavandula carnosa*.

Upper lip of the corolla quite entire very short.

18. *Nepeta multifida*.

Lin. spec. 799. syst. ed. 13. 442. Reich. 3. 34.

Amm. ruth. 69. Gmel. sib. 3. 242. t. 55. (La-

vandula).

Betonica fibriensis. Walth. hort. 122. n. 20.

Flowers in spikes, leaves pinnatifid quite entire.

19. *Nepeta botryoides*.

Ait. hort. kew. 2. 287.

N. multifida. Linn. suppl. 273. syst. 530. Lamarck encycl. 1. 713.

N. bipinnata.

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N. bipinnata. Cavan. *bisp.* 36. n. 55. t. 49.
Flowers in spikes, lateral lobes of the corolla somewhat spreading, leaves pinnatifid, segments linear almost equal.

20. *Nepeta lavandulacea.*

Lin. syst. 530. *suppl.* 272.

Spike compact, leaves ovate gash-ferrate marked with lines.]

DESCRIPTIONS, &c.

1. Common Nep or Catmint has a perennial root, from which arise many branching stalks, two feet high, [and more, upright, pubescent. Leaves of a velvet-like softness, wrinkled, ash-coloured or hoary particularly underneath. Spikes composed of interrupted whorls terminate the stem, and come out in branches from the axils of the leaves. The flowers are subsessile, and separated at the base by a small lanceolate bracte. Calyx downy with green ribs. Corolla white, with a tinge of red, and spotted with purple: tube nearly straight; middle segment of the lower lip with six or seven (sometimes more) equal teeth turned upwards, and set with a tuft of white bristles at the base. Stamens rather longer than the upper lip. Seeds ovate three-sided, blunt at both ends, crowned with a white streak, dark brown and smooth when ripe^b.] The whole plant has a strong scent between Mint and Pennyroyal. It is called Catmint, because cats are very fond of it, especially when it is withered, when they will roll themselves on it, tear it to pieces, and chew it with great pleasure. Ray observes, that plants which he transplanted from the fields into his garden were always destroyed by the cats, unless he protected them with thorns till they had taken good root and came into flower; but that they never meddled with plants raised from seed. Hence the old saying:

"If you set it,
"The cats will eat it;
"If you sow it,
"The cats don't know it."

Mr. Miller has confirmed this by his own experience; having frequently set a plant from another part of the garden, within two feet of others which came up from seeds, when the former was torn in pieces and destroyed by the cats whilst the latter remained unhurt. [The true reason of this difference is assigned by Ray; that the cat is fond of it in a languid withering state, or when the peculiar scent of the plant is excited by being handled or bruised in gathering or transplanting.

Common Catmint is a native of most parts of Europe, on banks and hedges, chiefly in a calcareous soil. It flowers from July to September.

In German it is called *Nepte*, *Katzennepte*, &c. In Dutch, *Kattekruid* or *Nept*. In Danish, *Katteurt* or *Sisenbrandt*. In Swedish, *Kattmynta*. In French, *Chataire*, *Cataire*, *herbe aux Chats*. In Italian, *Gattaria*. In Spanish, *Gatera*. In Portuguese *Neveda dos gatos*. In Russian, *Koschitza mehta*.

An infusion of Catmint is deemed a specific in chlorotic cases. Two ounces of the expressed juice may be given for a dose. Sheep are said to eat it, but all other domestic quadrupeds to refuse it^c. Sheep might have been included in the number.]

β. The smaller Catmint, which Miller makes a distinct species, grows naturally in Italy and the South of France. The stalks are more slender, and their joints farther asunder; the leaves are narrower, and the whole plant whiter: the spikes of flowers are divided into whorls, the lower two inches apart, others an inch, and the upper ones half an inch.

[2. Stem erect, a foot high, branched: the whole plant tomentose-hoary. Leaves petioled, bluntnish, half an inch long. Flowers corymbed. Corymbs pedicelled, opposite, clustered in a terminating, oblong, compact spike. Bractes small, linear. Calyx striated, with lanceolate, acute teeth. It is by no means a variety of *N. Cataria*, nor does it change its appearance when cultivated in a garden. The leaves are sharp at the base, all blunt at the tip: the calyxes are acute: whereas the leaves of *N. Cataria* are subcordate at the

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base; and the upper ones, as also the teeth of the calyx, are cuspidate. *N. angustifolia minor hispanica*, *Barrel. ic.* 735. & *Bocc. mus.* 2. 75. t. 61. probably appertains to this; but the flowers are fewer and more remote in the figure.—Native of Arragon^k.]

Miller has a species under the same name, the stalks of which do not branch so much as the common sort; they are slenderer and the joints farther asunder; the leaves are small, narrow, and almost heart-shaped, ferrate, hoary, and on short foot-stalks: the spikes of flowers are more broken or interrupted, and the whorls stand upon foot-stalks. It grows naturally in Italy.

He has another species which he calls *N. paniculata*, which grows naturally in Sicily; and rises with a strong stalk near three feet high; the lower joints are four or five inches asunder. Leaves long, narrow, heart-shaped, deeply ferrate, fitting pretty close to the stalk. Flowers in panicles, of a pale purplish colour.

[3. Root perennial, branched, woody, the size of a quill or more, brown on the outside, knobbed at the end. Stems several, from three to four feet in height, grooved, smoothish, with opposite branches forming a panicle. Leaves oblong, blunt, scarcely cordate, bluntly ferrate, smooth, the lower ones on longer petioles, the upper ones on very short ones; they are successively smaller as they approach the racemes, till they become so small that the ends of the racemes seem to be leafless. Racemes axillary and opposite containing about twenty flowers. Bractes almost bristle-shaped. Calyx somewhat villose and striated. Corolla more or less red, in the cultivated plant very deep, and elegantly dotted: upper lip blunt, erect and bifid, with oblong flat segments; lower lip hairy on both sides, with blue dots at the throat. Calyx of the fruit ovate. Seeds black. It is so nearly allied to *N. nuda*, as scarcely to be distinguished when they are not in flower. The branches are not so rod-like in the *nuda*; the corollas in that are almost white, without spots, but the principal difference is in the lower lip, the middle segment of which in the *nuda* is flat with the sides reversed, but in this remarkably concave and bagging^l.

Native of Hungary, Austria, and Siberia. Cultivated in 1683, by Mr. James Sutherland. It flowers from August to October.

4. Introduced in 1777, by Casimir Gomez Ortega, M. D. We do not know of what country it is a native. It flowers in May and June^m.]

5. Stalks about two feet high, with a few slender branches coming out from the sides. Leaves indented on their edges. Flowers in roundish whorls, peduncled, blue. There is a variety of it with white flowers.

[According to Scopoli, the stem is the height of a man, smooth, glaucous at the angles. Racemelets axillary, twice and thrice dichotomous, with a naked flower interposed between each division. Calyx rough-haired, ten-streaked, subbilabiate. Helmet or upper lip of the corolla bifid, the segments rounded; lower lip dotted, pale; tube wider behind and ferruginous. Filaments smooth. Fruiting calyx ovate, with converging, amethystine teeth. Seeds brown, convex on one side, angular on the other, appearing rough when examined by the microscope, and having a white transverse line at the base.

Native of Spain, Piedmont, Carniola, Siberia. It was cultivated in the botanic garden at Chelsea in 1723, and flowers from July to Septemberⁿ.

6. Native of the Ukraine^o.

7. Stem herbaceous, roundish at bottom, decumbent, naked, bluntly four-cornered above, erect, tomentose, undivided, a span or a little more in height. Leaves acute, tomentose on both sides but whiter underneath, spreading, half an inch long, the upper ones gradually less. Petioles tomentose, a line in length. Panicles in the upper axils, opposite, trifid, fastigiate. Peduncle a line in length: pedicels capillary. Stamens twice as long as the corolla. It differs from *N. Nepetella* in having the flowers in axillary panicles, and the leaves ovate-oblong, not cordate.—Native of Japan.

^k Vahl.

^l Jacquin.

^m Hort. kew.

ⁿ Idem.

^o Linn.

^b Withering, Pollich.

^c Withering.

The Kew catalogue has a species under the same name, the native place of which is not known. It was introduced in 1778 by Mr. Thomas Blackie, and flowers in august. The leaves are petioled oblong subcordate crenate tomentose; the flowers in cymes peduncled and many together.

8. This is only one-third of the size of the common sort. The leaves are very narrow, acutely sinuate-toothed. Flowers loosely racemed, with about five flowers in the racemelets, and not thirty as in *N. violacea*. Calyxes naked. Bractes very narrow, spreading. Corollas, when recent, red, not white or blue. Anthers blue.

Native of the South of Europe^p. Cultivated in 1758, by Mr. Miller. It flowers from july to september^q.

9. Stems two feet high, smooth, strict, four-grooved, the older ones dark purple. Leaves like those of *Stachys palustris*, blunt, veined, naked, rugged on both sides. Racemes brachiate. Bractes linear. Flowers distinct. Corollas whitish-rufescent, with the beard of the palate white, and the throat dotted with purple. According to Haller the flowers are blue and white^r.

Krocker describes a plant under the name of *nuda*, but is doubtful whither he should refer it, because it has several characters of *N. nuda*, and several of *ucranica*, and that authors disagree so much in their characters. He suspects that these two may be one and the same plant, and is rather inclined to suppose that his may be the *ucranica*; the stem being four or five feet high; the leaves strictly sessile, rather lanceolate than cordate, bluntly ferrate, not blunt at the end, but acuminate. Corolla pale blue, not white-rufescent or dotted with red, but rather with white; and lastly, the spikes being composed of rather long, opposite, many-flowered peduncles, placed in whorls, panicled, naked, without any bracte between them.

Native of the South of Europe. Cultivated by Mr. Miller in 1758. It flowers from june to august^s.]

10. Stalks about two feet high, branching from the bottom. Leaves heart-shaped, obtuse, little indented, on pretty long petioles. Stalks terminated by long spikes of flowers in whorls, separate, sessile, wrapped in a hoary down. Corolla white, appearing in july.—Native of Sicily.

[According to Loureiro, it is also a native of Cochinchina. He describes the stem as one foot high, upright, hairy and pale. Leaves lanceolate, ferrate, hirsute, sessile. Flowers white, sessile, in axillary whorls, with many hairs intermixed. Lower lip of the corolla wider, crenate, with the margin of the throat reflex. Stamens straight approximating.]

11. The stalks of this seldom rises more than a foot and half high, sending out very few branches. The whorls of flowers which form the spike are distant from each other, and sit close to the stalk. Leaves short, oval, heart-shaped. The plant is hoary and strong scented.

[Leaves blunt, crenate. Bractes lanceolate, green except at the sides where they are white, the length of the calyx, acuminate. Calyxes erect, equal. Corolla white.—Native of Italy^t. Cultivated in 1739, by Mr. Miller. It flowers from june to august^u.]

12. This has a thick knobbed root, from which come out one or two stalks, that often decline to the ground; they are about two feet and a half long, and send out two side branches opposite. Leaves oblong, crenate, sessile, deep green. The upper part of the stalk, for more than a foot in length, has whorls of flowers, the lower ones two inches asunder, but nearer all the way up: they sit very close to the stalks, and are guarded by small bractes. The corolla is blue.

[Stems simple. Leaves cordate-oblong, wrinkled, bluntnish, grossly ferrate, pubescent. Spike long, somewhat interrupted. Bractes numerous, erect, ovate, acute, nerved, coloured with red, pubescent at the edge, covering the calyxes. Flowers violet-coloured. There is a variety which is procumbent^x; and that

seems to be Mr. Miller's plant, for he says that it sometimes has an erect stalk.

Native of Spain and Portugal. Cultivated in 1683, by Mr. James Sutherland. It flowers from june to august^y.

13. Root large, from which proceed many tomentose leaves, like those of White Horehound, spreading on the ground in a circle; from the middle of these rise several stems, which are also very tomentose like White Horehound, and on the top of them are white flowers in a large thick spike. Seed black. The whole plant is larger and thicker than the common *Scordium*, for which they use it in Crete or Candia, where it grows abundantly on rocks, by way sides, and on the borders of fields^z.

14. The root consists of various fleshy roundish or fusiform tubers, the first year forming the root-leaves, and the second many flowering-stems. These are viscid, set with long white villose hairs, in height one foot or eighteen inches, either entirely erect, or procumbent at the base. Leaves bluntnish, crenate, wrinkled, viscid, the lower petioled, the upper sessile, all having a strong smell. Spikes sessile, the principal ones three or four inches long, those on the branches scarcely an inch or an inch and half in length: they are composed of whorls, the lower ones sometimes remote, the rest closely approximated, hence resembling a spike, and that the more, the nearer the upper leaves at the whorls approach to bractes: these are the length of the calyxes, purple at the edge, and are placed on a very short common peduncle in the axil of the leaf. On each of these peduncles there are three, five, or seven flowers, each supported by its bracte. Calyxes striated, hairy. Lips of the corolla slightly tinged with purple: throat pale dotted with purple and having a few villose hairs at the origin of the lower lip: the segments of the throat are not bent back: the upper lip is convex. Seeds brown, with a white hilum. The plant is more or less villose in different individuals and at different ages^a.

Its native place is not known. The seeds were sent by Willich to Jacquin; and he introduced them at Kew in 1774. It flowers in may and june^b.]

15. Stems two feet high. Leaves hairy, somewhat like those of Marjoram, but larger. Flowers in whorls, and terminating in a large roundish head. Stamens longer than the corolla, which is of a pale flesh colour. [The lower lip of the corolla is ferrate, but not concave^c.

Native of Virginia. Introduced 1788, by Thomas Walter, Esq. It flowers in august^d. If *N. virginica* of Miller be the same, he cultivated it in 1759.

16. Stems erect, obtuse-angled, tomentose. Leaves ovate-lanceolate, tomentose, ferrate, quite entire towards the base, petioled. Whorls several, forming a sort of interrupted spike, remote; with filiform bractes, generally thicker at the tip, pubescent, two under each flower, the length of the calyxes. Calyx villose, five-toothed. Corolla pale violet: upper lip lanceolate, entire, concave with the edge rolled back, erect, blunt, shorter than the filaments: lower lip longer, wider, three-parted, the middle part larger, crenulate, bent down at the edge.—Native of Malabar: where it was found by Koenig^e.

17. The upper lip of the corolla is the shortest of all in this species, and entire. Stamens the length of the lower lip. Flowers in whorls. It is allied to the preceding, and a native of the East Indies. See *Lavandula carnosa*.

18. Stem erect without branches. Lower leaves petioled, upper sessile, not crenate, oblong, three-lobed, four-lobed or five-lobed; lobes alternate, oblong. Flowers very small. Anthers two-parted.—Native of all Siberia beyond the river Jenisea^f.

19. Stems several, erect, scarcely a foot high, decussately branched; branches opposite, erect. Leaves bipinnate; pinnules linear, blunt: petioles shorter, somewhat embracing, channelled. Spikes terminating,

^p Linn. ^q Hort. kew. ^r Linn. mant. ^s Hort. kew.
^t Linn. ^u Hort. kew. ^x Linn.

^y Hort. kew. ^z Bellus ap. Clus. ^a Jacq. obs.
^b Hort. kew. ^c Linn. ^d Hort. kew. ^e Linn. mant.
^f Linn. spec.

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elongated, conical; in which are innumerable, minute, subsessile flowers, accompanied with bristle-shaped bractes, arched upwards. Calyx oblong, turbinate, striated; the two lower toothlets shorter than the upper ones. Corolla white, a little longer than the calyx: tube turbinate: border two-lipped; upper lip very short, scarcely emarginate, villose above; lower trifid, with the lateral segments blunt, not emarginate, the middle one hanging down, longer, two-lobed. Filaments short: anthers ovate, twin, concealed within the upper lip. Seeds oblong, ovate on the outside, flattish, somewhat keeled within and smooth.—Native of Siberia^g.

Cavanilles observed it in flower at Madrid. Introduced in 1779 by Messrs. Kennedy and Lee. It flowers in June and July^h.

20. Stem erect, brachiate, round, purple, with white hairs, a span or a foot in height. Leaves bluntish, deeply and bluntly serrate, like those of *Veronica officinalis*; the lower ones quite entire. Petioles almost the length of the leaves. Spike terminating, bluntish, ovate-oblong. Bractes close, ovate, acute, the length of the calyx. Flowers sessile. Calyx of a dusky blueish colour and hairy. Corolla violet-coloured, very large; upper lip acutely bifid, lower scarcely crenate. Two stamens the length of the upper lip, two beyond the throat. Anthers two-parted.—Native of Siberiaⁱ.]

PROPAGATION AND CULTURE.

All these plants are hardy herbaceous perennials, except one or two that are biennials. If the seeds be permitted to fall, the plants will rise without trouble; or being sown either in spring or autumn, will come up, and require only to be thinned where they are too close, and kept clean from weeds. Upon a poor dry soil they will not grow too rank, but continue much longer and appear handsomer than in rich ground, where they grow too luxuriant, and have not so strong a scent.

[*NEPETA*. See *Bytropogon*, *Dracocephalum*, *Hyssopus*, *Lavandula*, *Melissa*.

NEPETELLA. See *Nepeta*.

NEPHELIUM. (*Νεφελιον*, *nubecula*.)

Lin. mant. 18. *gen. Reich.* n. 1151. *Schreb.* n. 1425. & p. 837. *Gartn. t.* 140. *Juss.* 191.

Class. 21. 5. Monoecia Pentandria.

Nat. order of Tricoccæ. Corymbiferae, Juss.

GENERIC CHARACTER.

* Male flowers in a spiked raceme.

CAL. Perianth one-leafed, bell-shaped, five-toothed.

COR. none.

STAM. Filaments five, awl-shaped, longer than the calyx. *Anthers* blunt, two-parted at the base.

* Female flowers in the same raceme.

CAL. Perianth one-leafed, bell-shaped, four-toothed with two opposite teeth more remote; shrivelling.

COR. none.

PIST. Germs two, superior, roundish, muricated, larger than the calyx. *Styles* two to each, filiform, recurved, springing up between the germs. *Stigmas* thickish, blunt.

PER. Drupe ovate, hairy, with a cartilaginous rind, and a watery pulp. (*Capsules* two, muricated, one-celled, one-seeded, G.)

SEED. Nut solitary.

ESSENTIAL CHARACTER.

MALE. Cal. five-toothed. *Cor.* none.

FEM. Cal. four-cleft. *Cor.* none. *Germs* two, with two styles to each. *Drupe* (*Capsules*, G.) two muricated, one-seeded.

SPECIES.

1. *Nephelium lappaceum*.

Lin. syst. 851. *Reich.* 4. 136. *mant.* 125. *Gartn. fruct.* 2. 272.

DESCRIPTION, &c.

Leaves alternate, pinnate, two-paired, abrupt: leaflets obovate, the outer ones larger. Raceme consisting of a few spikelets, erect, shorter than the leaves^k. The fruit, according to Gærtner, consists of two capsules, one of which however is generally abortive, co-

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riaceous, thick, ovate, turgidly lenticular, muricated on the outside with awl-shaped, flexile bristles, within scrobicular-rugged, one-celled, opening at the inner edge. Seeds solitary, large, ovate, very slightly compressed, somewhat berried^l.

Jussieu ranges this plant with *Ambrosia* and *Xanthium*; but the inverted situation of the embryo alone, says Gærtner, is sufficient to forbid this union, even if they agreed in all other circumstances. He thinks that it approaches nearer to the Chestnut, because it has two styles to each capsule, and no albumen.

Native of the East Indies.

NEPTUNIA. See *Mimosa*.

NERIO AFFINIS. See *Bignonia* and *Cerbera*.]

NERIUM (of *Pliny*. *Νηριον* of *Dioscorides*. *Derivation uncertain*. From *νη* priv. & *εραμαι* amo, q. inamabilis; or *απο του νη γενν*, q. corpus minime fluidum reddat. *Raius*.)

Lin. gen. n. 297. *Reich.* n. 323. *Schreb.* n. 420.

Tournef. t. 374. *Juss.* 145. *Gartn. t.* 117.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Contortæ. Apocineæ, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, acute, very small, permanent.

COR. one-petalled, funnel-form: tube cylindric, shorter than the border: border very large, five-parted; segments wide, blunt, oblique.

Nectary, a crown terminating the tube, short, lacerated into capillary segments.

STAM. Filaments five, awl-shaped, very short, in the tube of the corolla. *Anthers* sagittate, converging, terminated by a long thread.

PIST. Germ roundish, bifid. *Style* cylindric, the length of the tube. *Stigma* truncate, sitting on an orblet, fastened to the anthers.

PER. Follicles two, round, long, acuminate, erect, one-valved, opening longitudinally.

SEEDS numerous, oblong, crowned with down, placed imbricately.

ESSENTIAL CHARACTER.

Contorted. Cor. with the tube terminated by a lacerated crown. *Follicles* two, erect.

SPECIES.

1. *Nerium Oleander*. Common Rosebay or Oleander.

Lin. spec. 305. *syst.* 253. *Reich.* 1. 594. *hort. cliff.* 76. *ups.* 53. *fl. zeyl.* n. 108. *Knorr del.* 2. N. 2. *Kniph. cent.* 6. n. 63. *Blackw. t.* 531. *Plenck, ic.* 128. *Allion. pedem.* n. 368.

N. floribus rubescentibus. *Bauh. pin.* 464.

N. f. Oleander. *Ger.* 1220. *emac.* 1406. 1. *Raii hist.* 1767.

N. f. Rhododendron flore rubro. *Bauh. hist.* 2. 141.

Oleander f. Laurus rosea. *Lob. ic.* 364. *Park. theat.* 1469. 1.

Rhododendrum. *Dod. pempt.* 851.

β. *Flore albo.* White Rosebay or Oleander.

N. flore albo. *Ger.* 1220. 2. *emac.* 1406. 2. *Park. theat.* 1470. 1.

γ. *Flore pleno.* Double Rosebay or Oleander.

Leaves linear-lanceolate in threes, transversely nerved underneath, calycine leaflets squarrose, nectaries flat three-cusped.

2. *Nerium odorum*: Sweet-scented Rosebay or Oleander.

Ait. hort. kew. 1. 297.

N. indicum. *Mill. dict.* n. 2.

N. Oleander. *Lour. cochinch.* 115.

N. ind. angustifolium, floribus odoratis simplicibus. *Herm. lugdb.* 447. *Raii hist.* 1768.

Oleander sinicus. *Rumph. amb. aust.* c. 23. t. 16. f. 1.

Tsjovanna-areli. *Rheed. mal.* 9. p. 1. t. 1.

Belutta-areli. *Rheed. mal.* 9. p. 3. t. 2.

β. *N. latifolium.* *Mill. dict.* n. 3.

N. ind. latif. flor. plenis. *Herm. lugdb.* 447. t. 449.

Raii hist. 1768.

Leaves linear-lanceolate in threes, calycine leaflets erect, nectaries many-parted, segments filiform.

[3. *Nerium salicinum*. Willow-leaved Rosebay or Oleander.

Vahl symb. 2. 45. *Forsk. descr.* 205.

Leaves linear-lanceolate in threes nerveless.

^l Gærtner.

^g Cavanilles,

^h Hort. kew.

ⁱ Linn. suppl.

^k Linn. mant.

4. *Nerium obesum*.
Vahl symb. 2. 45. *Forsk. descr.* 205.
Leaves oblong-lanceolate scattered villose underneath.
5. *Nerium zeylanicum*.
Lin. spec. 306. *Reich.* 1. 595. *amoen.* 4. 309.
Gärtn. fruct. 2. 172.
Apocynum arborescens, Nerii flore, minus. Burm.
zeyl. 23. t. 12. f. 2.
Leaves lanceolate opposite, branches straight.
6. *Nerium divaricatum*.
Lin. spec. 306. *Reich.* 1. 595. *fl. zeyl. n.* 109.
Thunb. jap. 110. *Lour. cochinch.* 115.
Apocynum zeylanicum indicum frutescens, Nerii flore
candidissimo. Herm. par. 40.
N. indicum scandens, flore albo. Burm. zeyl. 168.
t. 78. f. 2.
Leaves lanceolate-ovate, branches divaricating.
7. *Nerium antidysentericum. Oval-leaved Rosebay.*
Lin. spec. 306. *fyst.* 253. *Reich.* 1. 595. *fl. zeyl.*
n. 107. *mat. med.* 71. *Plenck, ic. t.* 129. *Lour.*
cochinch. 116.
N. indicum filiquis angustis erectis longissimis. Burm.
zeyl. 167. t. 77.
Codaga-Pala. Rheed. mal. 1. 85. t. 47.
Leaves oblong-ovate, panicles terminating.
8. *Nerium coronarium. Broad-leaved Rosebay.*
Ait. hort. kew. 1. 297. *Jacqu. collect.* 1. 138. *ic.* 1.
t. 52.
Jasminum zeylanicum folio oblongo, flore albo pleno
odoratissimo. Burm. zeyl. 129. t. 59.
Nandi Ervatam major and minor. Rheed. mal. 2. 105.
t. 54, 55.
Leaves elliptic, peduncles in pairs from the forks of the
branches, two-flowered.
9. *Nerium scandens. Climbing Rosebay.*
Lour. cochinch. 116.
Stem climbing, peduncles terminating many-flowered, seg-
ments of the corolla very long.

DESCRIPTIONS, &c.

These are beautiful evergreen shrubs or trees, upright and branching. Leaves opposite, or by threes in a sort of whorl. Flowers in clusters or corymbs from the ends of the stem and branches.]

1. This rises with several stalks to the height of eight or ten feet. The branches come out by threes round the principal stalks, and have a smooth bark, which in that with red flowers is of a purplish colour, but in that with white flowers is of a light green. The leaves for the most part stand by threes round the stalks, upon very short foot-stalks, and point upwards; they are three or four inches long, and three quarters of an inch broad in the middle, of a dark green, very stiff, and end in acute points. The flowers come out at the end of the branches in large loose bunches, and are of a bright purple, or crimson colour, or of a dirty white. The seed-vessels are brown follicles, about four inches long. It flowers in july and august; and in warm seasons the flowers are succeeded by pods, but the seeds seldom ripen well in England.

In warm dry summers this plant makes a fine appearance, the flowers then opening in great plenty; but in cold moist seasons the flowers often decay without expanding, unless the plants are placed in a greenhouse or under a glass-case. That with white flowers is the most tender.

[Other varieties are the stripe-leaved; the broad-leaved double-flowered, the striped double-flowered, and different shades of red from purple to crimson or scarlet.

Jussieu remarks that *Nerium Oleander* is not milky.

Native of the Levant, Spain, Portugal, Italy, by the sides of streams, and near the sea coast. It abounds every where in the island of Candia or Crete by rivers and torrents, and there the variety with white flowers is chiefly found; in the mountains and plains about Antioch or Scanderoon it is found abundantly; in Sicily, by all the torrents descending from mount Etna; in many parts of Italy, as between Nice and Genoa, near monte Baldo, &c. but particularly in all the low grounds of Magna Græcia in the kingdom of Naples. Belon says that in Crete and on mount Athos the

Rhododendron, which is this shrub, grows to a great size, inasmuch that in Crete it is sometimes used for building timber. It has the name *Rhododendron*, from the similitude of its flowers in size and colour to a rose: *Rhododaphne* for the same reason, and because, as Gerarde expresses it, it makes a gallant shew, like the Bay-tree. Hence also our English name *Rose-Bay*: but it is now more commonly known by its officinal name, *Oleander*; which is also adopted into all the European languages, except the French, in which it is *Laurose* or *Laurier-Rose*, that is *Bay-Rose*. The Italians have adopted *Nerio* and *Rosalauro*, as well as *Oleandro*. It was cultivated by Gerarde in 1596.

The leaves of *Oleander* are acrid and poisonous, therefore certainly not proper to be used internally without great caution. Oil, in which the leaves are infused, is recommended in the itch and other cutaneous disorders, in preference to mercurial preparations, for children and delicate constitutions^m.]

2. This rises with shrubby stalks six or seven feet high, covered with a brown bark. Leaves stiff, from three to four inches long, and not more than a quarter of an inch broad, of a light green, and the edges reflexed; they are opposite, or alternate, or by threes round the branches. The flowers are produced in loose bunches at the end of the branches; they are of a pale red, and have an agreeable musky scent. It grows naturally in India.

[This has been confounded with the first species.— It was cultivated in 1758, by Mr. Miller, and flowers from june to augustⁿ. Probably the *N. Oleander* of Thunberg and Loureiro is this species. The latter however asserts that his plant has scarcely any smell.]

3. Leaves six inches long, and one inch broad in the middle, of a much thinner texture than those of the first, and their ends are generally reflexed; they are of a light green, and irregularly placed on the branches by pairs, alternately, or by threes. The flowers are produced in very large bunches at the end of the branches, upon long peduncles; they have three or four rows of petals one within another. They are much larger than those of the common sort, and smell like those of Hawthorn. The plain flowers are of a soft red or Peach colour; but in most they are beautifully variegated with a deeper red, and make a fine appearance. The usual time of flowering is in july and august, but in a warm stove it will continue in flower till michaelmas. The flowers being double, they are not succeeded by seeds.

All these are supposed to have a poisonous quality; the young branches, when cut or broken, have a milky juice or sap, and the larger branches, when burnt, emit a very disagreeable odour.

Mr. Miller says it grows naturally in both Indies, that it was first introduced into the British islands in America from the Spanish Main, and that it is called by the inhabitants of those islands South Sea Rose. The beauty and sweetness of the flowers engaged the inhabitants to cultivate the plants, and in many places to form hedges of them, but many of the cattle that browsed on them were killed, so that they are now only preserved in gardens, where they make a fine appearance great part of the year.

[*N. odorum* was cultivated by Mr. Miller in 1758^o.] He says that the double Indian Rosebay was not known here till the beginning of last century, [by which I suppose he intended the beginning of the present century. Dr. Patrick Browne says that the South Sea Rose is cultivated in most gardens in Jamaica; that it generally bears large double flowers, but that he has sometimes found them simple and fertile, with all the characters of the genus^p.]

3. This is allied to *N. Oleander*, but differs in having the leaves blunt, somewhat veined underneath, but not with very abundant transverse nerves.

4. Trunk soft, resembling a bulb under ground, the size of a man's head. Branches the thickness of the little finger, the same substance with the trunk, attenuated above: when flowering woody and warted. Leaves at the ends of the branches, approximating,

^m Allione. ⁿ Hort. kew. ^o Idem. ^p 181. 3.
subpetioled,

subpetioled, often three inches long, mucronate, veinless; the younger ones soft on both sides. There are some rigid bristles in the axils of the leaves. Corymbs terminating, many-flowered. Flowers on short villose pedicels. Calyx scarcely two lines in length, pubescent, with lanceolate segments. Tube of the corolla narrowed at bottom for the space of two lines, then widening, an inch long, pubescent, with five villose longitudinal lines within: segments of the border rounded. Filaments in the narrower part of the tube. Anthers cohering with the stigma at top, yellow with a brown spot on the inside, ending at top in a hairy bristle the length of the corolla. Germs two, globular: style one, the length of the anthers: stigma capitate, two-toothed at top, five-toothed at the sides. Although the leaves are scattered, which is seldom the case in the *Contortæ*, yet the form of the anthers and their cohesion with the stigma prove it to be of this genus. By the corolla and naked throat it approaches to *Echites*, but the glands at the base of the germ are wanting; and since the anthers are tailed, it seems better to retain this plant among the *Neriums*, till we become acquainted with the fruit^a.

5. Stems round, very dark purple, smooth, erect, swelling at the joints. Leaves oblong, acuminate, resembling those of *Myrtle*, green on both sides. Flowers at the ends of the branches^b. Germs two, superior, coadunate into a single style. Pericarp two coriaceous follicles, very finely striated on the outside, very smooth within, fusiform, one-celled, opening on the inner side. Seeds numerous, fusiform, somewhat wrinkled, ash-coloured, crinite. Hairs simple, white and silky, four times as long as the seed, fastened by the base on both sides to the futures of the follicles, and hanging down so that the hairy vertex is turned towards the bottom of the pericarp^c.—Native of the East Indies.

6. Stem frutescent, round, decumbent or scandent, ferruginous. Branches alternate, divaricating, villose. Leaves opposite, ovate with a blunt point, quite entire with a reflex margin, parallel-nerved, paler underneath, smooth, an inch long, the last smaller. Petioles semicylindric, scarcely a line in length. Flowers in panicles at the ends of the branches. Panicle dichotomous and trichotomous. Peduncles and pedicels filiform, smooth. Calyx shorter than the tube of the corolla. Corolla white. Stigma capitate, truncate^d.

According to Loureiro it is a middle-sized tree; leaves waved, shining; flowers reddish yellow, with a reflex border, and the segments of the crown or nectary awl-shaped and short; anthers subsessile, sagittate, converging into a cone; style cylindric, thickish, sheathing another above it; stigma ovate; follicles round, long, almost united, erect.—Native of the East Indies, Japan, and Cochinchina.

7. This also is a middle-sized tree, with brachiate branches. Leaves opposite, flat, quite entire, smooth. Flowers herbaceous or greenish white, in short subterminating racemes. Segments of the crown oblong, alternately trifid and linear.

The wood of this and the preceding species is proper for the turner, and to make cabinets and other elegant furniture. It is very white and of a fine grain, like ivory, only much lighter. It mixes admirably with ebony. It is reputed to be a specific in the dysentery^e.

Native of the East Indies, Cochinchina, and some parts of the Russian empire.—Introduced in 1778, by Patrick Russell, M. D.^f

Nerium tinctorium is a middle-sized tree, from the quality of its leaves called *Nerium tinctorium*, or *Dyer's Rose-Bay*, by Dr. Roxburgh. It comes nearest *Nerium antidysentericum*, the tree which yields the Conessi bark, of our *Materia Medica*; Codago Pala of the Hortus Malabaricus, Pala Cadija of the Hindoos; they are both natives of the lower region of those mountains, which bound the Rajahmundry Circar on the north side, and are so much alike in most respects, the nectary excepted, that, without a perfect knowledge of both, the one may be mistaken for the other;

and I have no doubt but the bark of this new *Nerium* might have been gathered and sold for Conessi bark; which with the Hindoos is esteemed a specific in most complaints of the bowels, and perhaps deserves a better name, than it has hitherto acquired in Europe.

Description of Nerium tinctorium.—Trunk, very irregular in shape, when very old it is from one and a half to two feet in diameter, but when of that size, it is full of large rotten cavities; its height to the branches, when large, is from ten to fifteen feet; the bark of the old wood is scabrous, of the young pretty smooth and ash-coloured. Wood remarkably white, close-grained, very beautiful, coming near to ivory in appearance. Branches irregularly disposed, being bent in various forms: branchlets opposite. Leaves numerous, opposite, on short foot-stalks, oval, pointed, pretty smooth, entire, pale green, when full grown from five to eight inches long, and from three to four broad. Flowers about an inch and half in diameter when expanded, perfectly white, fragrant, and disposed on lax globular panicles, at the extremity of the branches. A small oval bracte below each subdivision of the panicles. Calyx below the germ, divided into five equal, semiobicular segments. Segments of the corolla linear, oblong, spreading. Nectary consists of many ramous white filaments crowning the mouth of the tube. Anthers rigid, united to one another laterally, forming a very firm conical cover for the stigma, their lower parts are covered with fine white hairs. Germs two, seemingly united. Stigma double, covered with transparent gluten, by which it adheres to the inside of the anthers. Pericarp two very long slender pendulous follicles, united at both ends; singly they are from twelve to twenty inches long, and about as thick as a common pencil.

This tree, as observed before, is a native of the lower regions of the mountains directly north from Coringa, in the Rajahmundry Circar; it contains a mild milky juice, chiefly the tender branches and young leaves, which flows out on being wounded.—*Nerium antidysentericum* contains a similar juice.

The natives make scarcely any use of this tree, except for fire-wood, and the more it is cut down, the more it increases, many shoots issuing from the old stumps. These, in one year, acquire the height of eight or ten feet, and are thick in proportion; it casts its leaves during the cold season, (perhaps it may not do so in a state of cultivation.) About the beginning of the hot season, march and april, the young leaves begin to make their appearance, together with the flowers, by the end of may, those that first began to be unfolded will have attained to their full size; about this time also it ceases flowering, and the seed vessels are fully formed, but the seeds are not ripe till january or february.

The colour the leaves sometimes acquired, in drying for the Hortus Siccus, first induced Dr. Roxburgh to think they were possessed of colouring matter, and the result of some experiments fully answered his expectations, although he has been often deceived by the same appearances in the leaves of other plants.

The method he took to extract the colour was, by collecting, promiscuously, the large and small leaves, while fresh; putting them on the fire in common unglazed earthen pots, with soft well water, and, when scalding hot, straining off the liquor, which had acquired a deep green colour, with something of the violet coloured scum that is observed on the common Indigo, not towards the end of the fermentation: with little agitation, this liquor began to granulate; to promote the granulation as well as the precipitation, he tried various liquors; viz. cold infusion of Jamblong bark (*Jambolifera pedunculata* of Linneus) which is that the Hindoos use universally on this part of the coast, to precipitate their Indigo; lime water; a lixivium of wood-ashes; a mixture of lime-water and lixivium of wood-ashes, and also a ley, made of equal parts of caustic vegetable alkali and quick-lime; these five he repeatedly tried, and as often found that lime-water and a lixivium of wood-ashes mixed together answered best; the fecula was washed, filtrated and dried in the usual manner.

^a Vahl. ^b Burm. zeyl. ^c Gærtner. ^d Thunberg.
^e Loureiro. ^f Hort. kew.

The quick and luxuriant growth of this tree, in its native soil, will be a great inducement to those who wish to cultivate it; which can require little or no trouble, and the soil that it is always found wild in, is the barren dry rocky hills, and lower region of mountains, which is totally unfit for every sort of agriculture. The lower parts of the steepy rocky mountains of Saint Helena, seem to be the very soil and situation it delights in; its size and quick growth will render it valuable there, if it be only for fire-wood; with that view Dr. Roxburgh sent a pretty large quantity of seeds to the Planter's Society on that island.

It may be said that we are already in possession of a sufficient number of good blues, consequently that it is unnecessary to attend to this new Indigo; to obviate this objection, it may be observed, that the common Indigo plant is only to be brought to perfection by nice, expensive, and labouring culture; is liable to many accidents, from changes of weather, and other causes that no human foresight can prevent: these are well known facts to every one that cultivates Indigo to any extent. This tree is not subject to these inconveniences; besides it requires not the smallest care, is found in the greatest abundance, growing wild in the most barren tracts that can possibly be imagined, and requires only to be cut down once every year, to make it produce a large supply of young shoots with very luxuriant leaves the following season; besides, the colour that this Indigo may give to cloth, &c. may be different from any other hitherto known, consequently, may prove of considerable benefit to a commercial nation like Great Britain.

Dr. Roxburgh's experiments do not yet enable him to determine, with precision, the proportion of pure colouring-matter these leaves yield, but he has reason to think it will be about one in two hundred, that is two hundred pounds of the fresh leaves, produce one pound of Indigo, which is rather more than the leaves of the common Indigo plant yield.

8. This is an elegant branched shrub, four feet high, milky, with an ash-coloured bark. The younger branches are shining, green, compressed a little, opposite at the end. Leaves long, lanceolate, acute, quite entire, shining, on short petioles, opposite. Peduncles one-flowered, thickish, in pairs from the divisions of the branchlets and decussating with them. Flowers handsome but without scent; perianth green; tube of the corolla greenish yellow; border snow-white. It approaches to *Gardenia*, but seems rather to belong to this genus².—Native of the East Indies. Cultivated in 1770 by Mr. James Gordon. It flowers most part of the summer*.

9. This is a large shrub with scandent branches. Leaves ovate-oblong, quite entire, subacuminate, smooth, opposite. Flowers large, with a white tube and a very red border. Calyx five-cornered, with fleshy, upright segments. Tube of the corolla cylindric at bottom, pitcher-shaped at top; segments of the border, subulate-linear, very long, repand. Nectary as in the other species. Anthers ending in a very long filiform tail. Germ superior, two-lobed. Style the length of the stamens. Stigmas two one over the other; the lower cylindric, the upper acute, parted, erect. Follicles horizontal, thick, blunt. Although the very long segments of the corolla cause this to be allied to *Echites caudata*, yet the throat having a nectary, whereas in *Echites* it is naked, and the Contortæ being best distinguished by their nectaries, it ranges most properly under this genus. The follicles being horizontal is no obstacle, when other circumstances agree.—Native of CochinChina².]

PROPAGATION AND CULTURE.

These plants are generally propagated by layers in this country, for although they will sometimes take root from cuttings, yet that being an uncertain method, the other is generally pursued; and as the plants are very apt to produce suckers, or shoots from their roots, those are best adapted for laying, for the old

branches will not put out roots; when these are laid down, they should be slit at a joint, in the same manner as is practised in laying Carnations, which will greatly facilitate their taking root: if these branches are laid down in autumn, and are properly supplied with water, they will have taken root by that time twelvemonth, when they should be carefully raised up with a trowel; and if they have taken good root, they should be cut off from the old plant, and each planted in a separate small pot, filled with soft loamy earth; those of the common sort will require no other care, but to be placed in a shady situation, and gently watered as the season may require, till they have taken new root; but the two other species should be plunged into a very moderate hot-bed, to forward their taking root, observing to shade them from the sun in the heat of the day; after the common sort has taken new root, the plants may be placed in a sheltered situation with other hardy exotics, where they may remain till the end of october, when they should either be removed into the green-house, or placed under a hot-bed frame, where they may be protected from frost in winter, but enjoy the free air at all times when the weather is mild.

This sort is so hardy as to live abroad in mild winters, if planted in a warm situation; but as they are liable to be destroyed in severe frost, the best way is to keep the plants in pots, or if they are very large in tubs, that they be sheltered in winter, and in the summer removed abroad, placing them in a warm sheltered situation. In the winter they may be placed with Myrtles, and other of the hardier kinds of exotic plants, in a place where they may have as much free air as possible in mild weather, but screened from severe frost; for if these are kept too warm in winter, they will not flower strong, and when the air is excluded from them, the ends of their shoots will become mouldy; so that the hardier they are treated, provided they are not exposed to hard frosts, the better they will thrive.

The other two sorts require a different treatment, otherwise they will not make any appearance; therefore the young plants when they have taken new root, should be gradually inured to bear the open air, into which they should be removed in july, where they may remain till october, provided the weather continues mild; but during this time, they should be placed in a sheltered situation; and upon the first approach of frost, they should be removed into shelter, for if their leaves are injured by frost, they will change to a pale yellow, and will not recover their usual colour till the following autumn. These sorts may be preserved in a good green-house through the winter, and the plants will be stronger than those which are more tenderly treated; but in may, when the flower-buds begin to appear, the plants should be placed in an open glass-case, where they may be defended from the inclemency of the weather; but when it is warm weather, the air should at all times be admitted to them in plenty. With this management the flowers will expand, and continue long in beauty; and during that time, there are few plants which are equal to them, either to the eye or nose, for their scent is very like that of the flowers of the White Thorn; and the bunches of flowers will be very large, if the plants are strong.

[*NERIUM*. See *Echites*, *Plumeria*, *Rhododendron*.

NERTERIA. (From *νεπτερος*, inferus, because it lies under ground. Hence it was named *Nertera* by Solander. Dr. Smith changed it to *Nerteria*.)

Smith ic. ined. 2. t. 28.

Nertera. *Lin. gen. Schreb. n.* 229. & p. 821.

Gartn. t. 26. *Gomezia*. *Lin. gen. Schreb. n.* 230.

suppl. 17. *Juss.* 198. *Gomezia*. *Mutis Mss.*

Class. 4. 2. *Tetrandria Digynia*.

GENERIC CHARACTER.

CAL. a superior, very small, undivided rim.

COR. one-petalled, funnel-form, superior: tube short, enlarging gradually: border four-cleft, with sharp segments bent back and shorter than the tube.

STAM. Filaments four, equal, inserted into the base of the corolla, filiform. Anthers oblong, two-lobed, erect.

Pist.

¹ William Roxburgh, M. D. in Dalrymple's Orient. report. n. 1.

² Jacquin.

* Hort. kew.

* Loureiro.

PIST. *Germ* inferior, oval, somewhat compressed, even. *Styles* two, filiform, slightly connate at the base, smooth. *Stigmas* acute, reflex, divaricating.

PER. *Berry* globular, umbilicate at top with a very small round scar, two-celled.

SEEDS solitary, roundish, acuminate at the base, flat on one side, convex on the other.

OBS. *This genus is allied to Manettia.*

ESSENTIAL CHARACTER.

Cor. funnel-form, four-cleft, superior. *Berry* two-celled. *Seeds* solitary.

SPECIES:

Nerteria depressa.

Smith ic. ined. 2. 28.

Nertera depressa. *Gärtn. frucht.* 124.

Gomozia granadenfis. *Lin. syst.* 167. *suppl.* 129.

DESCRIPTION, &c.

Root fibrous, annual. Stems herbaceous, procumbent, rooting at the joints, branched, leafy, filiform, somewhat angular, smooth. Branchlets axillary, opposite, erect, one-flowered, short. Leaves opposite, petioled, orbiculate-cordate, bluntish, quite entire, even; stem-leaves spreading, branch-leaves erect-appressed. Petioles roundish, grooved above, almost the length of the leaves. Flowers solitary at the ends of the branchlets, sessile, pale. Bractes two, opposite, acute, very small. Berry succulent, very smooth, red, the size of a pea.

Found by Mutis very frequently in wet marshy places of New Granada^b. It is also a native of New Zealand^c.

NETTLE. See *Urtica*.

——— Dead. See *Lamium*.

——— HEMP. See *Galeopsis*.

——— TREE. See *Celtis*.

NEUDORFFIA. See *Nolana*.

NEURADA. (*From νεύρα, a nerve.*)

Lin. gen. n. 587. *Reich. n.* 640. *Schreb. n.* 799.

Juss. 336. *Gärtn. t.* 32.

Class. 10. 5. Decandria Decagynia.

Nat. order of Succulentæ. Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, superior, very small.

COR. *Petals* five, equal, larger than the calyx.

STAM. *Filaments* ten, the length of the calyx. *Anthers* simple.

PIST. *Germ* gibbous, inferior. *Styles* ten, the length of the stamens. *Stigmas* simple.

PER. *Capsule* orbiculate, depressed, convex underneath, defended all over with ascending prickles, ten-celled.

SEEDS solitary.

ESSENTIAL CHARACTER.

Cal. five-parted. *Pet.* five. *Caps.* inferior, ten-celled, ten-seeded, prickly.

SPECIES.

1. *Neurada procumbens.*

Lin. spec. 631. *syst.* 438. *Reich. 2.* 406. *hort. ups.*

117. *Forfk. descr.* 90.

DESCRIPTION, &c.

This is an annual plant: the whole herb is white, with a nap like that of a cobweb. Cotyledons sagittate. Stems depressed, rigid, round, a palm high or more. Branches from each of the lower axils. Leaves alternate, petioled, ovate, plaited, sinuated as if gnawn, above less white or tomentose. Flowers axillary, subsessile^d. The stem seems shrubby. Stem not five-cleft but manifoldly imbricate.—Native of Egypt, Arabia, and Numidia^e.

New Jersey Tea. See *Ceanothus*.

NHANDIROBA. See *Feuillea*.

NICANDRA. (So named from Nicander, of Colophon, priest of Apollo, who lived about the time of Attalus. His Georgics are lost: this poem is commended by Cicero, and many fragments of it remain in Athenæus. He writ many other things, which are lost. There remain two poems of his *περί ἀλεξισαρμῶν* and *ἐνπριακῶν*, from which Dioscorides has taken much. These were printed at Venice in 1499, 1506, and 1523; at Cologne 1530; at Paris 1557; at Florence 1564; at Antwerp 1567;

at Geneva 1606. There is a fine manuscript of Nicander at Vienna. Haller.)

Lin. gen. Schreb. n. 714. *Potalia. Aubl.* 151.

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, turbinate, thick, coloured, four-parted: *segments* wide concave, blunt; the two opposite outer ones larger, and the two internal ones less.

COR. one-petalled: *tube* very short: *border* deeply ten-cleft: *segments* oblong, imbricate, curved inwards at top, rigid.

Nectary, a short membranaceous ring, furrounding the base of the germ.

STAM. *Filaments* ten, very short; connected with the nectary, inserted into the receptacle. *Anthers* linear, four-cornered, acute, erect, approximating.

PIST. *Germ* ovate. *Style* short. *Stigma* peltate, orbicular, six-rayed.

PER. *Berry* roundish, six-grooved, three-celled:

SEEDS very many, very small, angular.

ESSENTIAL CHARACTER.

Cal. turbinate, coloured, four-parted. *Cor.* one-petalled, ten-cleft. *Germ* encircled with a membranaceous ring. *Stigma* peltate, orbicular, six-rayed. *Berry* roundish, six-grooved, three-celled, many-seeded.

SPECIES:

Nicandra amara.

Lin. syst. ed. Gmel. 677.

Potalia amara. Aubl. guian. 394. *t.* 151.

DESCRIPTION, &c.

Stem simple, straight, hard, woody, knotty, the thickness of a finger. Leaves simple, entire, smooth, narrow at the base, wide above, rounded, and pointed at the end, a foot and half long, and five inches wide, with a protuberant midrib underneath; they are opposite and decussated: petiole rounded, attached to a sheath that embraces the stem. Flowers terminating, on one, two or three peduncles, the base enveloped in a sheath. Each peduncle bears two or three little parcels of three, four or five opposite flowers, having also a little sheath at their base: each flower has its pedicel, with two scales at its origin. The calyx is of a golden colour. The corolla is white. The fruit is yellow, fleshy, the size of a cherry.

Native of Guiana, in the extensive forests; flowering in july and august, and fruiting in october. All parts of the plant are bitter: the leaves and tender twigs are used in venereal cases, and where there is suspicion of poison: in a large dose it is highly emetic*.

NICKER TREE. See *Guilandina*.]

NICOTIANA. (*This genus takes its name from Jean Nicot of Nîmes in Languedoc, agent from the king of France to Portugal, who procured the seeds from a Dutchman, who had brought them from Florida, and sent them to France.*)

Lin. gen. n. 248. *Reich. n.* 265. *Schreb. n.* 334.

Tournef. t. 41. *Juss.* 125. *Gärtn. t.* 55.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Luridæ. Solanææ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, ovate, half-five-cleft, permanent.

COR. one-petalled, funnel-form: *tube* longer than the calyx: *border* somewhat spreading, half-five-cleft, in five folds.

STAM. *Filaments* five, awl-shaped, almost the length of the corolla, ascending. *Anthers* oblong.

PIST. *Germ* ovate. *Style* filiform, the length of the corolla. *Stigma* capitate, emarginate.

PER. *Capsule* subovate, marked with a line on each side, two-celled, two-valved, opening at top. *Receptacles* half-ovate, dotted, fastened to the partition.

SEEDS numerous, kidney-form, wrinkled.

OBS. *The acuminate and blunt figure in this genus is various.*

^b Smith.

^c Forster.

^d Lin. syst.

^e Forfk.

* Aublet.

ESSENTIAL CHARACTER.

Cor. funnel-form, with a plaited border. Stam. inclined. Caps. two-valved, two-celled.

SPECIES.

1. *Nicotiana fruticosa*. *Shrubby Tobacco*.
Lin. spec. 258. *Reich.* 1. 502. *Lour. cochinch.* 111.
Burm. ind. 54. *Rumph. amb.* 7. l. 8. c. 40.
 β . *N. alba*. *Mill. dict.* n. 5.
N. major latifolia, floribus albis, vasculo brevi.
Mart. cent. 5.
Leaves lanceolate subpetioled embracing, flowers acute, stem frutescent.
2. *Nicotiana Tabacum*. *Virginian Tobacco*.
Lin. spec. 258. *Reich.* 1. 502. *mat. med.* 64. *Woodv. med. bot.* 162. t. 60. *hort. cliff.* 56. 1. *upf.* 45.
Blackw. t. 146. *Kniph. cent.* 4. t. 55. *Ludw. est. t.* 167. *Knorr. del.* 1. T. 11. *Sabb. hort.* 1. t. 89. *Plenck, ic.* 99. *Abbot. georg. t.* 33. *Gartn. fruct.* 1. 264.
 α . *N. latissima*. *Mill. dict.* n. 1.
Oroonoko Tobacco.
 β . *N. Tabacum*. *Mill. dict.* n. 2.
Broad-leaved Virginian or Sweet-scented Tobacco.
N. major latifolia. *Bauh. pin.* 169. *Mor. hist.* 2. 492. f. 5. t. 11. f. 1.
N. major. Tabern.—f. Tabacum majus. Bauh. hist. 3. 629.
Tabacum latifolium. Camer. & Best. eyf.
Tabacco latifolium. Park. parad. 363. t. 361. f. 8. *Raii hist.* 713.
Petum latifolium. Clus. exot. 309.
Sana sancta. Lob. adv. 251. *ic.* 252.
Hyoscyamus peruvianus. Ger. 285. 1. *emac.* 357. 1.
Tornobonia. Cæsalp.
Blennochoes. Renealm. spec. 37. t. 38.
 γ . *N. angustifolia. Mill. dict.* n. 3. *fig. t.* 185. f. 1.
Narrow-leaved Virginian Tobacco.
N. major angustifolia. Bauh. pin. 169. *Best. eyf.*
Mor. hist. 492. 2, f. 2.
N. f. Tabacum fol. angustiore. Bauh. hist. 3. 629.
Tabacum angustifolium. Camer.
T. alterum minus. Dalech.
T. f. herba sancta minor. Lob. adv. 251.
Tabacco angustifolium. Park. parad. 363. *Raii hist.* 714.
Petum angustifolium. Clus. exot. 309.
Sanafanta Indorum. Ger. 285. 2. *emac.* 357. 2.
Leaves lanceolate-ovate sessile decurrent, flowers acute.
3. *Nicotiana rustica*. *Common or English Tobacco*.
Lin. spec. 258. *Reich.* 1. 503. *hort. cliff.* 56. 2. *upf.* 45. *Blackw. t.* 437. *Kniph. cent.* 3. n. 65.
Sabb. hort. 1. t. 90. *Berg. phyt.* 2. 57. *Plenck, ic.* 100.
N. minor. Bauh. pin. 170. *Best. eyf.* *Mor. hist.* 493. 4. f. 4.
Tabaccum anglicum. Park. theat. 711. t. 712.
Hyoscyamus luteus. Dod. pempt. 450. *Camer. Ger.* 284. *emac.* 356.
Priapeia quibusdam Nicotiana minor. Bauh. hist. 3. 630. f. 3. *Raii hist.* 715.
Pachyphylla. Renealm. spec. 40.
 β . *N. rugosa. Mill. dict.* n. 7.
N. minor, fol. rugosioribus amplioribus. Vaillant.
Leaves petioled ovate quite entire, flowers obtuse.
4. *Nicotiana paniculata*. *Panicled Tobacco*.
Lin. spec. 259. *Reich.* 1. 503. *Kniph. cent.* 2. n. 48. *Feuill. peruv.* 1. 717. t. 10.
Leaves petioled cordate quite entire, flowers panicled blunt club-shaped.
- [5. *Nicotiana urens*. *Stinging Tobacco*.
Lin. spec. 259. *Reich.* 1. 503.
N. arborefcens spinosissima, flore exalbido. Plum. spec. 3. *ic.* 211.
Leaves cordate crenate, racemes recurved, stem hispid stinging.]
6. *Nicotiana glutinosa*. *Clammy-leaved Tobacco*.
Lin. spec. 259. *Reich.* 1. 503. *Kniph. cent.* 10. n. 65.
N. militaris. Aët. holm. 1753. p. 41. t. 2.
Leaves petioled cordate quite entire, flowers in racemes pointing one way and ringent.
7. *Nicotiana pusilla*.
Lin. spec. 258. *Reich.* 1. 504.

N. humilis. Mill. dict. n. 10. *fig. t.* 185. f. 2.

N. humilis, primulae veris folio. Houft. Mfs.

Leaves oblong-oval radical, flowers in racemes acute.

DESCRIPTIONS, &c.

[These are herbaceous annual plants, except the first, which is suffrutescent or has a permanent base. Flowers in spikes or panicles at the ends of the stem and branches. Leaves quite entire, except in *urens*, the capsule of which opens in the same manner with that of *Acanthus*, whence Jussieu conjectures that it may be of a different genus.]

1. This rises with very branching stalks about five feet high. Lower leaves a foot and half long, broad at the base, where they half embrace the stalks, and about three inches broad in the middle, terminating in long acute points. The stalks divide into many smaller branches, terminated by loose bunches of flowers of a bright purple colour, succeeded by acute-pointed seed-vessels. The seeds were sent to Mr. Miller for Brazil Tobacco.

[Linneus observes, that it resembles *N. Tabacum* so much, as to give room to suppose, that it is scarcely any thing more than a variety of it, with a permanent base. He sets it down as a native of the Cape of Good Hope and of China. It is probably not indigenous of the former. In the latter and in Cochinchina it is cultivated every where; according to Loureiro, it has its proper vernacular names, and is regarded as indigenous.—It was cultivated here in 1699, by the Dutchess of Beaufort, according to the Kew catalogue. Sir George Staunton informs us that great quantities of Tobacco are planted in the low grounds of China, through which the embassy passed: and that there is no traditional account of its being introduced into that country, or into India, where it is likewise cultivated and used in vast abundance. In neither country are foreign usages suddenly adopted. It is possible, that like the Gin-seng, it may be naturally found in particular spots, both in the old and new world^f.

Nieuhoff (in 1662) says, that the weed called *Tobako* by the Malaysians and Javanese after the Portuguese, grows in all parts of the Indies. We are not told whether the plant cultivated in the east is shrubby or herbaceous; but Nieuhoff informs us, that about Batavia it grows to the height of eight feet, with leaves of eighteen inches long and eight broad: and Loureiro describes the stem as four feet high, somewhat shrubby, thick, round, white, hairy, upright, branched. Leaves broad-lanceolate, quite entire, waved, wrinkled, soft, juicy, subsessile, half-embracing, alternate. Flowers whitish red, on upright, terminating racemes. Border of the corolla spreading, with the segments acute.]

β . This rises about five feet high. The stalk does not branch so much as that of the former. The leaves are large and oval, about fifteen inches long and two broad in the middle, but diminish gradually in size to the top of the stalk, and with their base half embrace it. The flowers grow in closer bunches than those of the former, and are white. They are succeeded by short, oval, obtuse seed-vessels. It flowers and perfects seeds about the same time with the former. It grows naturally in the woods of the island of Tobago, whence the seeds were sent to Mr. Philip Miller by Mr. Robert Millar.

2. [Virginian Tobacco has a large, long, annual root; an upright, strong, round, hairy stalk, branching towards the top; leaves numerous, large, pointed, entire, veined, viscid, pale green; bractes long, linear, pointed; flowers in loose clusters or panicles; calyx hairy, about half the length of the corolla, cut into five narrow segments; tube of the corolla hairy, gradually swelling towards the border, where it divides into five folding acute segments of a reddish colour^g. Capsule ovate-conical, clothed with the calyx, smooth, with four depressed streaks, two-celled, opening four ways at top; partition simple, contrary to the valves. Receptacle very large, fungous, ovate-acuminate, convex on one side, and flat on the other, or reniform-concave, fastened on both sides to the partition. Seeds

^f Embassy, 2. 174.

^g Woodville.

very numerous, small, ovate, subreniform, with raised lines or nerves beautifully netted, of a yellowish bay colour^a.]

Mr. Miller has made three species of the Virginian Tobacco.

α. The great broad-leaved, which he says was formerly the most commonly sown in England, and has been generally taken for the common broad-leaved Tobacco of Caspar Bauhin and others, but is very different from it. The leaves are more than a foot and half long, and a foot broad, their surfaces very rough and glutinous, and their bases half embrace the stalk. In a rich moist soil the stalks are more than ten feet high, and the upper part divides into smaller branches, which are terminated by loose bunches of flowers, standing erect: they have pretty long tubes, and are of a pale purplish colour. It flowers in July and August, and the seeds ripen in the autumn. This is the sort which is commonly brought to market in pots, and by some is called Oroonoko Tobacco.

β. The stalks of this, which is the broad-leaved Tobacco of Caspar Bauhin, seldom rise more than five or six feet high, and divide into more branches. The leaves are about ten inches long, and three and a half broad, smooth, acute, sessile; the flowers are rather larger, and of a brighter purple colour. It flowers and perfects seeds at the same time; and is called by some sweet-scented Tobacco.

γ. Narrow-leaved Virginian Tobacco, rises with an upright branching stalk, four or five feet high. The lower leaves are a foot long, and three or four inches broad: those on the stalks are much narrower, lessening to the top, and end in very acute points, sitting close to the stalks; they are very glutinous. The flowers grow in loose bunches at the top of the stalks; they have long tubes, and are of a bright purple or red colour. They appear at the same time with the former, and their seeds ripen in the autumn.

These are all natives of America. [Tobacco was cultivated in England before 1570, as appears from Lobel¹. According to Linneus it was known in Europe from 1560. Hernandez de Toledo is said to have sent it into Spain and Portugal, when Nicot being resident in the latter from the most Christian King Francis II. sent it to Catherine de Medicis, as a plant of the new world, possessing extraordinary virtues. Gesner, in his *Epistolæ medicinales*, fol. 79. dated nov. 5. 1565, relates some trials which he made on it; and adds—"a Gallis Nicotianam vocari audio, nomine legati cujusdam qui Galliae intulerit, ab aliis Pontianam." He had then only learnt from Thevet that it was used in America for smoking.

Sir William Baker, in his *Chronicle*, (p. 400. ed. 9. 1696.) affirms that Tobacco was first brought into England from the West Indies by Ralph Lane, in the 28th year of Queen Elizabeth, 1586. But this account must be understood of smoking the herb, or else it is inconsistent with the cultivation of it in 1570, as related by Lobel.

Hakluyt, in his *Remembrances* made in the year 1582, says, that "the seed of Tobacco hath been brought hither out of the West Indies, that it groweth here, and with the herb many have been eased of the rewmes, &c."

Tobacco it is well known is of a narcotic quality, which it generally discovers, even in small quantity, when first applied. Even a small quantity, snuffed up the nose, will sometimes produce giddiness, stupor and vomiting; and when applied in different ways, in larger quantity, there are many instances of its more violent effects, even of its proving a mortal poison. In all these instances it operates in the manner of other narcotics: but along with its narcotic qualities it possesses also a strongly stimulant power, perhaps with respect to the whole system, but especially with respect to the stomach and intestines; so as readily, even in no great doses, to prove emetic and purgative.

The practices of taking Tobacco in snuff, by smoking and chewing, have now been common in Europe above two hundred years. Like other narcotics, the

use of it may be introduced by degrees, so that its peculiar effects, even from large quantities, may scarcely appear: it has however its limits, so that in persons who have been long in the habit of taking it, going only a little beyond the dose to which they have been accustomed, very violent effects are sometimes produced.

The effects of the different modes of thus using Tobacco depend chiefly upon its narcotic power, and certain circumstances accidentally attending its application to the nose and mouth. But on account of its stimulating quality, it is sometimes employed, chiefly by the vulgar, to excite vomiting, but more commonly as a purgative in glysters, or by throwing the smoke up the anus.

Externally an infusion of Tobacco leaves has been used with advantage as a lotion for obstinate ulcers; but many instances of its having been absorbed and proving a violent poison, dissuade from such a practice, especially as there are other medicines of as much efficacy, that may be employed with much more safety. Bergius recommends it for a fomentation in the paraphymosis. The smoke has been successfully used in the way of injection, for obstructions and inveterate constipations of the belly, ever since the time of Sydenham, and is also recommended in cases of suspended animation.

Respecting its poisonous effects, in *Ephem. nat. cur.* (dec. 2. ann. 10. obs. 131. p. 222.) we are told, that by the immoderate use of snuff, somnolency, and at length fatal apoplexy, was induced. Hellwig gives two instances of the same kind, occasioned by smoking seventeen or eighteen pipes of Tobacco. Its effects by absorption from external use may be seen in the same *Ephemerides* (ann. 4. p. 46. & ann. 2. obs. 108. p. 262.) and in Alston's *Materia Medica*. The oil of Tobacco applied to a wound, is said by Redi to be as fatal as the poison of a viper. Albinus however did not find that this was the case with the animals on which he tried the experiment. This oil, given to pigeons, produced fatal effects, and was constantly attended with vomiting*.]

3. The stalks of this seldom rise more than three feet high. Leaves smooth, alternate, upon short foot-stalks. Flowers in small loose bunches on the top of the stalks, of an herbaceous yellow colour, appearing in July, and succeeded by roundish capsules, ripening in the autumn.

This is commonly called English Tobacco from its having been the first introduced here, and being much more hardy than the other sorts, inasmuch that it has become a weed in many places. It came however originally from America by the name of *Petum*.

[Sir Walter Raleigh, on his return from America, is said to have first introduced the smoking of Tobacco into England. In the house wherein he lived at Islington, is his arms, with a Tobacco plant on the top of the shield^k. Parkinson says, that although this kind of Tobacco be not thought so strong or sweet for such as take it by the pipe, yet he had known Sir Walter Raleigh, when he was prisoner in the Tower, make choice of this sort, to make good Tobacco of, which he knew so rightly to cure, as they call it, that it was held almost as good as that which came from the Indies, and fully as good as any other made in England^l. It was cultivated in 1731, by Mr. Miller^m.]

β. *N. rugosa* of Miller rises with a strong stalk near four feet high; the leaves are shaped like those of the preceding, but are greatly furrowed on their surface, and near twice the size, of a darker green, and on longer foot-stalks. The flowers are of the same shape, but larger.

[It is remarkable that Tobacco has prevailed over the original name *Petum* in all the European languages, with very little variation, and even in Tartary, Japan, &c.—Tobacco is derived from the island Tobago. *Petume* is the Brazilian name.—*N. rustica* is in German, *der Turkische Tabak*, *Bauerntabak*, *Englischer*,

* Cullen, Woodville, Fontana in phil. trans. vol. 70.

^k Gent. mag. Jan. 1791. p. 17.

^l Theat. 712.

^m Hort. kew.

^a Gartner.

¹ Hort. kew.

wilder or *kleiner Tabak*. In French, *la Nicotiane à feuille ronde & oblonge, petite Nicotiane, Tabac femelle, Faux Tabac, Tabac du Mexique*. In Spanish *Tobacco cimarron*. In Portuguese, *Velenho bastardo*.]

4. The stalk of the panicked Tobacco rises more than three feet high, dividing upwards into many smaller panicked branches, which are round and a little hairy. Leaves about four inches long, and three broad, upon pretty long foot-stalks. Flowers in loose panicles at the ends of the branches: tube about an inch long and club-shaped; brim slightly cut into nine obtuse reflex segments; they are of a yellowish green colour, and are succeeded by roundish capsules.

[Linneus remarks, that it differs from *N. rustica* in having a more tender, higher, panicked stalk; narrower corollas, with a very short blunt border, and a long club-shaped tube; and acute calyxes and capsules. Native of Peru. Cultivated in 1739, by Mr. Miller^a:] who says that it was found in the valley of Lima by Pere Feuillée, in 1710, and that since that the seeds were sent from Peru by the younger Jussieu to Paris.

[5. Fructification in racemes directed one way and revolute, with bell-shaped corollas, and cordate leaves like those of *N. rustica*, but crenate, and the whole tree prickly.--Native of South America^b.]

6. Stalk round, near four feet high, sending out two or three branches from the lower part. Leaves large, heart-shaped and a little waved, very clammy, standing upon long foot-stalks. Flowers in loose spikes at the top of the stalk, of a dull purple colour: calyx unequally cut, one of the segments being twice the size of the others. The seeds were sent from Peru with the former by the younger Jussieu. [Cultivated by Mr. Miller in 1759. This and the preceding flower from July to September^c.]

According to Linneus, the leaves are more cordate and glutinous. The flowers in a few long racemes. Corolla almost of the following species, but more unequal and almost ringent, gaping at the throat. Stamens bent in towards the upper side. One segment of the calyx twice as large as the rest.]

7. This has a pretty thick taper root, which strikes deep in the ground, at the top of it come out six or seven leaves, spreading on the ground, about the size of those of the common Primrose, but of a deeper green. The stalk rises about a foot high, branching into three or four divisions, at each of which is placed one small leaf. The branches are terminated by a loose spike of flowers, which are small, and of a yellowish green colour. This sort was discovered by Dr. Houstoun at La Vera Cruz, and he sent the seeds to England.

PROPAGATION AND CULTURE.

All the sorts except *rustica* (n. 3.) and *paniculata* (n. 4.) require the same culture, and are too tender to grow from seeds sown in the full ground to any degree of perfection in this country, but must be raised on a hot-bed.

The seeds must be sown upon a moderate hot-bed in March, and when the plants are come up fit to remove, they should be transplanted into a new hot-bed of a moderate warmth, about four inches asunder each way, observing to water and shade them until they have taken root; after which let them have air in proportion to the warmth of the season, otherwise they will draw up very weak, and be thereby less capable of enduring the open air: water them frequently, but while they are very young, it should not be given to them in too great quantities; though when they are pretty strong, they will require to have it often, and in plenty.

In this bed the plants should remain until the middle of May, by which time, if they have succeeded well, they will touch each other, therefore they should be inured to bear the open air gradually; after which they must be taken up carefully, preserving a large ball of earth to each root, and planted into a rich light soil, in rows four feet asunder, and the plants three feet distance in the rows, observing to water them until they have taken root; after which they will require

no farther care (but only to keep them clean from weeds) until the plants begin to shew their flower-stems; at which time cut off the tops of them, that their leaves may be the better nourished, whereby they will be rendered larger, and of a thicker substance. In August they will be full grown, when they should be cut for use; for if they are permitted to stand longer, their under leaves will begin to decay. This is to be understood for such plants as are propagated for use, but those plants which are designed for ornament, should be planted in the borders of the pleasure-garden, and permitted to grow their full height, where they will continue flowering from July, till the frost puts a stop to them.

The third and fourth sorts are very hardy and may be propagated by sowing their seeds in March, upon a bed of light earth, whence they may be transplanted into any part of the garden, and will thrive without farther care.

The three last, being somewhat more tender than the others, should be sown early in the spring on a hot-bed; when the plants come up, transplant them on another moderate hot-bed, water them duly, and give them a large share of free air in warm weather; when the plants have obtained a good share of strength, transplant them into separate pots, and plunge them into a moderate hot-bed, to bring them forward. About the middle of June some of the plants may be shaken out of the pots, and planted in beds of rich earth; but it will be proper to keep one or two plants in pots, to be placed in the stove, in case the season should prove bad, that they may ripen their seeds.

[In America, when a regular plantation of Tobacco is intended; the beds being prepared and well turned up with the hoe, the seed, on account of its smallness, is mixed with ashes, and sown upon them, a little before the rainy season. The beds are raked, or trampled with the feet, to make the seed take the sooner. The plants appear in two or three weeks. So soon as they have acquired four leaves, the strongest are drawn up carefully, and planted in the field by a line, at the distance of about three feet from each plant. If no rain fall, they should be watered two or three times. Every morning and evening the plants must be looked over, in order to destroy a worm which sometimes invades the bud. When they are about four or five inches high they are to be cleaned from weeds and moulded up. As soon as they have eight or nine leaves, and are ready to put forth a stalk, the top is nipped off, in order to make the leaves longer and thicker. After this the buds which sprout at the joints of the leaves are all plucked, and not a day is suffered to pass without examining the leaves, to destroy a large caterpillar, which is sometimes very destructive to them. When they are fit for cutting, which is known by the brittleness of the leaves, they are cut with a knife close to the ground; and after lying some time, are carried to the drying shed or house, where the plants are hung up by pairs, upon lines, leaving a space between, that they may not touch one another. In this state they remain to sweat and dry. When perfectly dry, the leaves are stripped from the stalks, and made into small bundles, tied with one of the leaves. These bundles are laid in heaps, and covered with blankets. Care is taken not to overheat them, for which reason the heaps are laid open to the air from time to time, and spread abroad. This operation is repeated till no more heat is perceived in the heaps, and the Tobacco is then stowed in casks for exportation^d.

In China, where the use of Tobacco both in snuff and for smoking is very general, buildings are not thought necessary; as they are in the West Indies for curing it; there being little apprehension of rain to injure the leaves when plucked. They are hung on cords to dry, without any shelter, upon the spot in which they grew. Each owner, with his family, takes care of his own produce. This indicates both the nature of the climate little subject to moisture, and the general division of property into minute parcels^e.

^a Hort. kew.

^b Linn. spec.

^c Hort. kew.

^d Long, jam. 3. 719.

^e Staunton, Emb. to China, 2. 175.

Tobacco is cultivated in open fields in several parts of the Continent of Europe, and might doubtless be grown to advantage in England, if it were not prohibited by act of Parliament. This prohibition, which was made for the encouragement of our American colonies, still continues, though the colonies are lost. Small attempts at planting Tobacco have been made here from time to time, which promised success. A plantation in the last century being found to thrive, Cromwell, probably at the requisition of the Americans, is said to have sent a troop of horse to trample it down.

NIDUS AVIS. See *Ophrys*.]

NIGELLA. (*q. Nigrella, from the blackness of the seeds.*)
Lin. gen. n. 685. Reich. n. 742. Schreb. n. 935.
Tournef. t. 134. Juss. 233. Gärtn. t. 118.
 Class. 13. 5. Polyandria Pentagynia.
 Nat. order of *Multisiliquæ. Ranunculaceæ, Juss.*

GENERIC CHARACTER.

CAL. none.

COR. *Petals* five, ovate, flat, blunt, spreading, more contracted at the base.

Neetaries eight, placed in a ring, very short: each two-lipped: *outer lip* larger, lower, bifid, flat, convex, marked with two dots: *inner lip* shorter, narrower, from ovate ending in a line.

STAM. *Filaments* numerous, awl-shaped, shorter than the petals. *Anthers* compressed, blunt, erect.

PIST. *Germes* several (five to ten), oblong, convex, compressed, erect, ending in *Styles* which are awl-shaped, angular, very long but revolute, permanent. *Stigmas* longitudinal, adnate.

PER. *Capsules* as many, oblong, compressed, acuminate, connected on the inside by the future, gaping on the inside at top.

SEEDS very many, angular, rugged.

OBS. *N. orientalis* has ten pistils, straight, longer than the corolla. *Seeds* membranaceous-margined. *N. hispanica* has also ten pistils, equalling the corolla.

ESSENTIAL CHARACTER.

Cal. none. Pet. five. Neet. five (or more) two-lipped; within the corolla. Caps. as many, connected (or separate, beaked, opening inwards, G.)

SPECIES.

* *With five styles.*

1. *Nigella damascena. Common Fennel-flower.*
Lin. spec. 753. syst. 506. Reich. 2. 621. mant. 405.
hort. cliff. 215. 1. ups. 153. Mill. fig. t. 187.
f. 2. Curt. magaz. 22. Gärtn. fruct. 2. 174.
Blackw. t. 558. Kniph. cent. 10. n. 66. Crantz.
austr. 133. Villars dauph. 3. 709. Krock. files.
n. 841. Allion. pedem. n. 1509.
- a. *N. angustifolia, flore majore simplici cæruleo.*
Baub. pin. 145. Tournef. inst. 258. Raii hist.
1070.
N. sylvestris f. damascena inodora. Park. theat.
1376. 2. — romana sativa flor. foliosis. Park.
theat. 1375. 1. Mor. hist. f. 12. t. 18. f. 7.
Melanthium sylvestre. Matth. 529. Lob. ic. 741.
M. damascenum. Dod. pempt. 304. Ger. 925. 3.
emac. 1084. 3.
M. capite & flore majore. Baub. hist. 3. 207.
- β. *N. flore majore pleno cæruleo. Baub. pin. 145.*
Raii hist. 1070. Knorr. del. 1. t. S. 21.
N. damascena, flore multiplici. Park. parad. 287.—
multiplex cærulea. t. 285. f. 10.
N. romana sativa, flore multiplici folioso. Mor.
hist. f. 12. t. 18. f. 8.
Melanthium capite & flore majore pleno. Baub.
hist. 3. 208.
Great double Fennel-flower.
Flowers surrounded with a leafy involucre.
2. *Nigella sativa. Small Fennel-flower.*
Lin. spec. 753. Reich. 2. 621. hort. ups. 154. mat.
med. 139. Gärtn. fruct. 2. 173. Ludw. est.
t. 89. Kniph. cent. 7. n. 63. Krock. files. n. 843.
N. flore minore simplici candido. Baub. pin. 145.
Mor. hist. f. 12. t. 18. f. 4. Raii hist. 1071.
N. romana f. sativa. Park. theat. 1375. 1.

Melanthium. Dod. pempt. 303. 1. Ger. 924. 1.
emac. 1084. 1.—sativum. Camer. epit. 551. Best.
eyst. est. 2. t. 10. f. 2.

M. calice & flore minore, semine nigro & luteo.
Baub. hist.

β. *N. flore minore pleno & albo. Baub. pin. 146.*
Raii hist. 1071. Mor. hist. f. 5.

N. flore albo multiplici. Ger. 925. 4. emac. 1085. 5.

N. citrina flore albo multiplici. Park. parad. 287. 3.

Melanthium capite minore, flore multiplicato. Baub.
hist. 3. 208.

Pistils five, capsules muricated roundish, leaves somewhat hairy.

3. *Nigella arvensis. Field Fennel-flower.*

Lin. spec. 753. Reich. 2. 621. hort. cliff. 215. 3.

Hall. belv. n. 1194. Scop. carn. n. 657. Pollich

pal. n. 514. Krock. files. n. 842. Villars dauph.

3. 709. Allion. pedem. n. 1510. Crantz. austr.

132. n. 1. Park. theat. 1376. n. 3.

N. arvensis cornuta. Baub. pin. 145. Mor. hist. f. 12.
t. 18. f. 1. Tournef. inst. 258.

Melanthium silvestre. Dod. pempt. 303. Ger. 924. 2.
emac. 1084. 2.—alterum. Camer. epit. 553. Matth.

797.—sylv. f. arvense. Baub. hist. 3. 209. f. 2.

Pistils five, petals entire, capsules turbinate.

* *With ten styles.*

4. *Nigella hispanica. Spanish Fennel-flower.*

Lin. spec. 753. Reich. 2. 622. hort. ups. 154.

Sauv. monsp. 253.

N. latifolia, flore majore simplici cæruleo. Baub.
pin. 145. prodr. 75.

N. hispanica flore amplo. Ger. emac. 1085. 6. Raii
hist. 1071. Mor. hist. f. 12. t. 18. f. 9.—flore sim-

plici. Park. parad. 287.

Pistils ten equalling the corolla.

5. *Nigella orientalis. Yellow Fennel-flower.*

Lin. spec. 753. Reich. 2. 622. hort. cliff. 215. 2.

ups. 153. Gärtn. fruct. 2. 174. Mill. fig. 187.

f. 1.

N. chalapensis lutea, corniculis longioribus. Mor. hist.
3. 516. f. 12. t. 18. f. 10. Raii suppl. 525.

Pistils ten longer than the corolla.

DESCRIPTIONS, &c.

[These are annual herbaceous plants, with pinnate or bipinnate leaves, and linear leaflets. Flowers terminating, in some species surrounded with a five-leaved calyx-like multifid involucre.]

1. This rises with an upright branching stalk a foot and half high. Leaves much longer and finer than those of *arvensis* (n. 3.) Flowers large, pale blue; with a five-leaved involucre under each, longer than the flower. They are succeeded by larger swelling feed-vessels, with five horns at the top. There is a variety with single white flowers, and another with double flowers, which is frequently sown in gardens, with other annuals for ornament.

[Gärtner describes the capsule as simple, subglo-bular, filiform-five-beaked, five-celled, inflated; that is, the cells being vertically, by means of a very thin, transparent, white membrane, divided into a larger empty chamber, and an inner smaller one with seeds in it. Seeds in each cell about twenty-four, ovate-acuminate, marked with a rib on one side, wrinkled; raised-dotted, black. Albumen fleshy, thick; pale-water-coloured. Embryo yellowish. Cotyledons sub-foliaceous. Radicle roundish, centripetal.

Native of the South of Europe, among corn. It was cultivated here in 1570, as appears from Lobel. It flowers from June to September.

From the fine-cut leaves about the flower it has the names of Fennel-flower, Devil-in-a-bush, and Love-in-a-mist. Fennel-flower is become obsolete: Gerard calls it Damaske Nigella, from *Melanthium damascenum* of Dodonæus.]

2. This rises to the same height as the preceding. The leaves are not so finely cut, and are a little hairy. At the top of each stalk is one flower, composed of five white petals, which are slightly cut at their end into three points; these are succeeded by oblong swelling

seed-vessels with five horns at the top, filled with small pale-coloured seeds. [Gærtner describes the capsule as simple, ovate, roundly five-cornered, five-beaked with the permanent filiform styles, rugged with scattered callous dots, five-celled, opening at the top inwards. Seeds ovate, acuminate towards the navel, variously angular with smooth sharp ribs and wrinkled between them, bay or brown, in a double longitudinal row fastened to the angle or central margin of the partitions.

Krocker compares it with *arvensis*, which it resembles in some degree. The leaves are wider, somewhat hairy, green: the stem more branched, from a foot to two feet in length, and round: the petals white and smaller: the capsules longer, more slender at top: more bellying below: the seeds aromatic, more acrid, dark-coloured, having a pleasant smell, three-sided oblong, blunter at one end.

Formerly these seeds were much in use as carminative, stimulant and errhine; but this medicine is become deservedly obsolete. They are still used in some parts of Germany and Asia in cookery, instead of spice, being a pleasant aromatic¹.

Native of Candia and Egypt. Cultivated in 1658, in the botanic garden at Oxford. It flowers from June to September².

It varies with double flowers. Mr. Miller has two other species.] *N. cretica* (n. 4.), rising with a branching stalk a foot high, with shorter and broader leaves. At the top of each branch is one flower, without any involucre. Petals oval. Pistils longer than the petals. Capsule not much swollen, and having five slender horns at the top. Seeds light yellowish brown.—Native of Candia.

N. latifolia rises with a branching stalk a foot high, with leaves like those of Larkspur. Petals large, oval, entire. It has ten pistils shorter than the petals, and a great number of green stamens with blue anthers. The seed-vessels are like those of the preceding. This also is a native of Candia.

[This having ten pistils may possibly be a variety of *N. hispanica*.

Gerarde says that *N. fativa* is called in English *Gith* and *Nigella romana*; in Cambridgeshire, *Bishop's-wort*, and also *Saint Katherine's flower*.]

3. This rises with slender stalks near a foot high, either single or branching out at the bottom, and having a few very fine-cut leaves, somewhat like those of Dill. Each branch is terminated by one star-pointed flower, of a pale blue colour, without any leafy involucre. They are succeeded by capsules, having five short horns, inclining different ways at the top, and are filled with rough black seeds. There is a variety with white flowers; and another with double flowers.

[In this the capsule is narrower below, contrary to what it is in the preceding. The germs and styles vary in number from five to seven. The seeds are sometimes used instead of those of *N. fativa*; but they are not so aromatic, nor have they the same pleasant smell³.

Native of Germany, France, Italy, Carniola, Switzerland. Cultivated here in 1713. It flowers from June to September⁴.]

4. This rises near a foot and half high. The lower leaves are finely cut; but those on the stalks are cut into broader segments. The flowers are larger than those of the other species, and of a fine blue colour, with green veins at the back. Nectaries of a sea-green colour. The pistils are of equal length with the petals: they with the stamens are of a deep purple or puce colour. The capsule has five horns, and is of a firmer texture than any of the other. It grows naturally in Spain and the South of France: and there is a variety of it with double flowers.

[It appears from Parkinson, that it was cultivated here in 1629. It flowers from June to September⁵.]

5. This rises with a branching stalk a foot and half high; with pretty long leaves, finely divided. The

¹ Krocker and Allione.

² Hort. kew.

³ Linn. Krock. Pollich.

⁴ Hort. kew.

⁵ Idem.

flowers are produced at the end of the branches: the petals are yellowish; at the base of these are placed eight nectaries, between which arise a great number of stamens, with an unequal number of germs, from five to eight or nine, oblong and compressed. The capsules are joined together on their inner side, terminate in horns, open longitudinally, and contain many thin compressed seeds, having borders round them.—Mr. Miller has figured only five.

[Gærtner thus describes them: Capsules compound of eight or ten leguminous partial capsules, connected below above the middle, free or distinct above, and moderately diverging, wrinkled and angular on one side, compressed and smooth on the other, ending in a compressed beak, and opening at the inner future. Seeds rounded, compressed, brown, surrounded by a wide membranaceous rim. Albumen much narrower than the margin, fleshy, pale, inodorous. Embryo subcompressed, linear, milky. Cotyledons short. Radicle relatively centripetal.

Native of Syria, as in corn fields about Aleppo. Cultivated in 1731, by Mr. Miller. It flowers from July to September⁶.]

PROPAGATION AND CULTURE.

All these plants may be propagated by sowing their seeds upon a bed of light earth, where they are to remain (for they seldom succeed well if transplanted;) therefore, in order to have them intermixed amongst other annual flowers in the borders of the flower-garden, the seeds should be sown in patches at proper distances; and when the plants come up, you must pull up those which grow too close, leaving but three or four of them in each patch, observing also to keep them clear from weeds, which is all the culture they require. In July they will produce their flowers, and their seeds will ripen in August, when they should be gathered and dried; then rub out each sort separately, and preserve them in a dry place.

The season for sowing these seeds is in March; but if you sow some of them in August, soon after they are ripe, upon a dry soil and in a warm situation, they will abide through the winter, and flower strong the succeeding year; by sowing the seeds at different times, they may be continued in beauty most part of the summer.

They are all annual plants, perishing soon after they have perfected their seeds; which, if permitted to scatter upon the borders, will come up without any farther care.

The varieties with double flowers are chiefly sown in flower gardens: those with single flowers are rarely admitted into any but botanic gardens. The third sort, having less beauty than the others, is also seldom found in flower-gardens. The first and fourth are most commonly cultivated with us.

NIGELLA and NIGELLASTRUM. See *Garidella*.

NIGHTSHADE. See *Solanum*.

———, Deadly. See *Atropa*.

———, Enchanter's. See *Circaea*.

———, Malabar. See *Basella*.

[NIGRINA. See *Chloranthus* and *Gerardia*.

NIL. See *Convolvulus* and *Indigofera*.

NIN-ANGANI. See *Gomphrena*.

NINSI. See *Panax*.

NIOTA-NIODEM-VALLI. See *Ceropegia*.

NIPA. (The Malay name.)

Rumph. Thunb. nov. gen. 90. Lin. gen. Schreb. n. 1698. Juss. 38.

Class. 25. Appendix Palmæ. (Monoecia Monadelphica.)

Nat. order of Palmæ or Palms.

GENERIC CHARACTER.

* Male flowers lateral, below the females on same plant.

CAL. Spatbes oblong, concave, acuminate, coriaceous: outer larger, inner gradually inclosing. Perianth proper none.

COR. Petals six, linear, equal, from spreading reflex.

⁶ Hort. kew.

STAM. *Filament* one, filiform, erect, the length of the petals. *Anther* at the top of the filament perforated, twelve-grooved, oblong.

* *Females* terminating.

CAL. *Spathes* as in the Male.

COR. none.

PIST. *Germ* angular (often five-angled); obliquely truncate, smooth. *Style* and *Stigma* none; but in their stead a groove on each side.

PER. *Drupe*s very many aggregate in a head, the size of the human head, angular; angles unequal, acute or blunt, attenuated below, blunted above and smooth.

ESSENTIAL CHARACTER.

MALE. *Spathe*. Cor. six-petalled.

FEM. *Spathe*. Cor. none. *Drupe*s angular.

SPECIES.

1. *Nipa fruticans*.

Lin. syst. 839. *Thunb. in act. stockh.* 1782. p. 231.

Rumph. amb. 1. 72. t. 16.

DESCRIPTION, &c.

Trunk in the young palm none, but of some feet in height in an adult state. Leaves pinnate: pinnae striated, margined, acuminate, smooth. Flowers male and female on the same palm; but distinct on different peduncles. Males several, lateral, inferior, on dichotomous peduncles, in spikes. Females terminating, aggregate in a globular head, sessile. Peduncles and pedicels panicle, dichotomous.—Native of Java and other islands in the East Indies; where the leaves are used for covering houses and making mats. The fruit is eaten both raw and preserved^b.

NIPPLEWORT. See *Lapsana*.

NIR-CARAMBU. See *Jussieu*.

NIR-NOTSUT. See *Volkameria*.

NIR-PULLI. See *Indigofera* and *Tradescantia*.

NIRURI. See *Phyllanthus*.

NISSOLIA. (So named by Jacquin, in honour of Guill. Nissolle, M. D. of Montpellier, who described plants in *Mem. Par.* 1711, &c. the plant so named by Tournefort, having proved to be a species of *Lathyrus*.)

Lin. gen. n. 853. *Reich.* n. 923. *Schreb.* n. 1157. *Gartn.* t. 145. *Juss.* 364.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceae* or *Leguminosae*.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, bell-shaped, five-toothed: with the upper teeth deeper.

COR. papilionaceous.

Banner roundish, subemarginate, reflex, with the sides reflex.

Wings oblong, blunt, erect, broader at top, spreading in front.

Keel closed, of the same form with the wings.

STAM. *Filaments* ten, united into a cylinder, cloven above. *Antlers* roundish.

PIST. *Germ* oblong, compressed. *Style* awl-shaped, ascending at a right angle. *Stigma* capitate obtuse.

PER. *Capsule* oblong, round, running out into a ligulate wing.

SEED usually one, oblong, round, blunt.

ESSENTIAL CHARACTER.

Cal. five-toothed. Caps. one-seeded, ending in a ligulate wing.

SPECIES.

1. *Nissolia arborea*. Tree *Nissolia*.

Lin. spec. 992. *syst.* 641. *Reich.* 3. 393. *Jacqu.* amer. 199. t. 174. f. 48. *pic.* 198. t. 261. f. 60.

Stem arboreous erect.

2. *Nissolia fruticosa*. Shrubby *Nissolia*.

Lin. spec. 992. *syst.* 641. *Reich.* 3. 393. *Jacqu.* amer. 198. t. 179. f. 44. *pic.* 97. t. 187. *hort.* 2. t. 167.

Stem shrubby twining.

DESCRIPTIONS, &c.

1. This is an inelegant tree, twelve feet high, the branches of which, being often weak and bending, require a support. Leaves deciduous, pinnate or ternate, having two leaflets on a side or one only with an odd one, ovate, bluntly acuminate, quite entire, shining,

^b Thunberg.

thin, the end one largest, the inner ones smaller, opposite or alternate. Spikes compound and dense, four inches long, terminating and axillary, from each bud before the leaves spring forth, and frequently also on the older branches. Flowers small, sessile, without scent, and almost without colour, numerous. Seed only one in the germ.—Native of Carthage in New Spain every where in the woods, flowering in July and August.

2. This is a thornless shrub, with numerous twining stems and branches climbing the trees to the height of fifteen feet. Leaves numerous, alternate, pinnate; subvillose, three or four inches long, having two leaflets on each side, and an odd one; these are subovate, quite entire, bluntish with a small bristle-shaped point, smooth, petioled, an inch and half long. Common peduncles short, many-flowered, numerous, on the younger branchlets axillary, and at the same time at their extremities coming out from naked tubercles, making all together a leafy panicle, often a foot long, and handsome. Flowers peduncled, small, yellow, inodorous.—Native of Carthage in woods and coppices; flowering in September.

Jacquin would not oppose any one who should make two distinct genera of these two species. Cultivated in 1766, by Robert James Lord Petre^d.]

NISSOLIA. See *Lathyrus*.

[NITI-TODDA-VALLI. See *Mimosa*.

NITRARIA. (So named by Schreber, who first found it in Siberia, near the nitre works, with other salt plants.)

Lin. gen. n. 602. *Reich.* n. 658. *Schreb.* n. 823.

Act. petrop. 7. 315. t. 10. *Gartn.* t. 58. *Juss.* 316.

Class. 11. 1. Dodecandria Monogynia.

Nat. order of *Ficoideae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-cleft, erect, very short, permanent.

COR. *Petals* five, oblong, spreading, channelled, arched at top with an inflex dagger-point.

STAM. *Filaments* fifteen, awl-shaped, almost erect, the length of the corolla. *Antlers* roundish.

PIST. *Germ* ovate, ending in a thickish *Style*, longer than the stamens. *Stigma* simple.

PER. *Drupe* one-celled, ovate-oblong, acuminate.

SEED one, three-celled, ovate, acuminate.

OBS. The germ, when immature, is three-celled. Nut scrobiculate, one-celled, six-valved at top. *Style* very short, trifid. G.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. five-petalled, with the petals arched at top. Stam. fifteen or more. Drupe one-seeded.

SPECIES.

1. *Nitraria Schoberi*. Thick-leaved *Nitraria*.

Lin. spec. 638. *syst.* 445. *Reich.* 2. 442. *Gartn.* fruct. 279. *Act. nev. petrop.* 7. 315. t. 10. *Murr.* prodr. 191. t. 2. *Pallas it.* 1. app. 494. n. 110. 2. p. 478. *ross.* 1. 79. t. 50. *Lerche in nov. act. nat. cur. tom.* 5. app. p. 162.

Oxyris foliis obtusis. *Lin. hort. ups.* 295. *Gmel. sib.* 237. t. 98.

Casia fructu nigro. *Amm. ruth.* n. 256.

DESCRIPTION, &c.

There are two varieties of this shrub: one in the squalid nitro-saline parts of the desert extending from the north of the Caspian; scarcely beyond the fiftieth degree of latitude; with the stems almost upright, almost unarmed, and larger in all its parts. The other in the salt plains of Siberia, between the Irtis and Ob rivers, by the salt lakes near the Jenisea, and in the regions beyond the lake Baikal; prostrate, thorny, smaller and more tender in all its parts.

The first, or Caspian variety, which is what Schober described, rises with several stems that are an ell in height, suberect or supine, from a thick woody root, covered with a whitish gray bark, spinescent at the end, as are also the branches, and brittle. Branchlets alternate, chiefly directed one way, whiter, leafed alternately, dichotomous and floriferous at top. Leaves

^c Jacquin.

^d Hcrt. kew.

in alternate buds, up to the flowers, sessile in bundles, four or five together, fleshy, succulent, oblong, attenuated at the base, quite entire, glaucous green. In the autumn, and in drying the plant, they very easily fall off, leaving a dusky spot at the place. They appear to be very smooth; but when examined by a glass they are found to have very fine prostrate hairs scattered over them. The terminating cymes of the branchlets are dichotomous, naked, hairy, fastigate; the extremities bear three or four sessile flowers, pointing the same way, and forming a sort of spike. Perianth in the flower scarcely visible, consisting of five thick toothlets surrounding the receptacle; in the fruit more evident, and somewhat bell-shaped. Petals white, spreading very much, concave, blunt and cowed at the end, with a slender toothlet turned towards the centre of the flower. Stamens twelve to fifteen, the length of the corolla: anthers oblong, yellow, bifid at the base. Germ conical, terminated by a sessile, awnless, tripapillar stigma. The young fruit is conical, subacuminate with the stigma produced, with more frequent prostrate hairs scattered over it than the other parts of the plant. Drupe when ripe conical-convex, succulent, dark red, when drier black and dying a dark blue, saltish, and never to be entirely dried. Nut conical, very sharp, convex at the base, and having about a dozen little holes in it; at the top as it were six-valved, but with the valves united into one point, alternately very narrow and linear. Nucleus not three-celled, but simple, cylindric, continued to the very tip of the nut, yellow, sweetish, covered with a yellow striated aril. The cymes, when the fruit falls, continue and shrivel up, whence the shrub becomes in a manner thorny; and sometimes when the branches of the cyme fall off, a genuine spine comes out.

The second or Siberian variety, which Steller and Gmelin chiefly observed, from a woody root, frequently exhibits a large knob or tuber, sometimes as big as the human head, warted and veined; from this twenty and more stems spread in a ring, they are prostrate and even pressed close to the ground, a foot and half in length, with the branches most elegantly disposed like a winged leaf. The stems are more slender than in the preceding, more elongated, straighter, whitish gray, with the branches alternate, spreading very much, lying on the ground: from these branchlets grow upwards, on the older ones commonly spinose, and only leafy; but the younger branches have generally dichotomous flowering cymes. The leaves are much smaller than the Caspian plant, very like them in form, or more succulent and salt. Cymes smaller, closer, and more hairy. Flower in all its parts smaller, but the calyx more evident. The incipient fruit as in the other; but the ripe drupe much smaller, staining paper of a very dark blue. Nut by no means conical-acuminate, but ovate, and subtrigonal, which the Caspian nut is not; it has however the six grooves approximating by pairs, and the little holes, which are sometimes indeed scarcely visible.

In the fat very salt lands by the lake Korækofskoi in Siberia, Professor Pallas observed shrubs of *Nitraria* that were much stouter, with the stems almost equal to the Caspian variety; the leaves wider, five from each bud, sometimes entire, sometimes variously cut. Not having an opportunity of observing it in flower, he could not determine what other differences there might be between this and the others.

Murray has given a full length description of this rare shrub, but I have preferred the above from Pallas, because it is posterior to Murray's, and made from wild plants, not distorted and changed by culture.

Pallas informs us, that the berries, though saltish and insipid, are eaten in the Caspian desert, but in that arid soil they are almost the only luxury. Camels feed on the twigs. The Russians near the Caspian call this shrub *Samanicha*, and the Turcomans *Sugak*.

Both the varieties described above seem, from Chevalier Murray's account, to have been in the botanic garden at Gottingen; one of them flowered there, and Murray's description was made from that plant. Linneus had the shrub twenty years before it flowered in

Sweden; and during ten years having in vain tried to make it flower in the garden at Upsala, he at length succeeded by watering the plant with salt water; it flowered however at Gottingen without this assistance. Murray expresses a surprise that it has not been used in its native soil for making Soda: but perhaps it does not grow in sufficient quantity, or there may be an ample harvest in that salt region, of plants that answer the same purpose.

NITU-TODDA. See *Mimosa*.

NOELI-TALI. See *Antidesma*.

NOEL-VALLI. See *Dalbergia*.

NOEM. See *Cynosurus coracanus*.

NOLANA. (So named by Linneus from Nola a little bell, on account of the bell-shaped form of the corolla.)

Lin. gen. n. 193. Reich. n. 206. Schreb. n. 254.

Gært. t. 132. Juss. 132.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*, or *Luridæ*. *Borragineæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, turbinate at the base, five-parted, five-cornered: segments cordate, acute, permanent.

COR. one-petalled, bell-shaped, plaited, spreading, somewhat five-lobed; twice as large as the calyx.

STAM. Filaments five, awl-shaped, erect, equal, shorter than the corolla. Anthers sagittate.

PIST. Germs five, roundish. Style among the germs, cylindric, straight, the length of the stamens. Stigma capitate.

PER. properly none. (Drupes five, decumbent, three or five-celled. G.)

SEEDS five, with a succulent rind, roundish, with the inner base naked, immersed in the receptacle, two-celled and four-celled. (Solitary. G.)

ESSENTIAL CHARACTER.

Cor. bell-shaped. Style among the germs. Seeds five; berried, two-celled. (Drupes five, three or five-celled, with one seed in each cell. G.)

SPECIES.

1. *Nolana prostrata*. *Trailing Nolana*.

Lin. spec. 202. syst. 191. Reich. 1. 407. mant. 334.

Lin. fil. dec. 1. 3. t. 2. Gært. fruct. 2. 242.

Sabb. hort. 1. t. 4.

Atropa fol. geminatis, calycibus polycarpis, caule humifuso. Gouan hort. 82. ic. Kniph. orig. X. n. 13.

[*Belladonna humifusa*, flore violaceo, hispanica. Royeni ap. Linn. dec.

Walkeria. Ebr. in aet. angl. 1764. p. 130. t. 10.

Zwingeria. Aet. helv. 5. 267. t. 1.

Neudorffia peruviana repens, flore cæruleo. Adans. fam. 219.

Teganium procumbens. Schmid. anal. 67. t. 18. opt.

DESCRIPTION, &c.

Root annual, simple, filiform, often three feet long, blackish. Stem a foot long, herbaceous, prostrate, roundish, very smooth, with white dots scattered over it. Branches alternate, the lower ones the length of the stalk. Leaves alternate, two together, reflex, rhomb-ovate, quite entire, blunt, somewhat fleshy, an inch long, somewhat papulose, even, flat, veined, unequal, alternately larger and smaller.] Miller remarks, that they come out single at some joints, by pairs at others, and frequently three or four at the upper joints. [Petioles ancipital, scarcely shorter than the leaves, smooth, those belonging to the upper leaves vaguely ciliate. Peduncles lateral, solitary, spreading a little, an inch long, one-flowered, round, thicker at top, hairy. Flowers inferior. Corolla of a fine blue colour, with dark purple veins at the throat: calyx pale purple: filaments purple; anthers blackish-blue: pistil white, with a black germ: receptacle red. The stem and petioles are green with purple spots. The leaves are dark green.

Linneus and others consider this plant as having no pericarp, but five seeds covered with a juicy rind. Gærtner describes them as drupes, decumbent in the basin of the calyx, small, fleshy, ovate-acuminate, black, convex above, somewhat angular below, and

* Linn. dec.

punched with umbilical pores. Rind thin, fleshy, dark-purple. Shell bony, excavated with three or five very polished cells, not opening. According to Linneus they have from two to four cells: but Gartner remarks, that the number of cells varies, three or four however being the most frequent number, and that he never saw six, except in Schmidel's figure.—Common receptacle in the fleshy bottom of the calyx, to which the drupes radiating from the centre and lying horizontally are fastened: proper none, except the little umbilical scars at the base of the drupe. Seeds solitary, rounded, beaked, lenticular-compressed, very minutely dotted, white^f.

Linneus placed it among the *Asperifoliae*, observing however that it has no less affinity to the *Luridae*. Jussieu remarks, that it has the appearance of *Convolvulus*; the leaves alternate, and as in the *Solanaceae* geminate; with the flowers extraaxillary; and that it is allied to the *Borragineae* by its five-capsuled fruit, but that in habit and flower it more resembles the *Solanaceae* and *Convolvuli*. Gartner is decidedly of opinion that *Nolana* should range in the order of *Solanaceae*.

The seeds of *Nolana* were sent to Linneus by David van Royen, professor of Botany at Leyden, in the spring of the year 1761, under the name of *Belladonna*. Its native country was not known; but was conjectured to be Spain. It proves however to be Peru. Mr. Miller cultivated it in 1761^g.] He says that he received the seeds from Mr. Forskahl, one of the persons who were sent by the late King of Denmark, to make discoveries in the east; and thence concludes erroneously that it grows naturally in Egypt. It flowers in july, and the seeds ripen in september.

PROPAGATION AND CULTURE.

Sow the seeds on a hot-bed in march. When the plants are fit to remove, transplant them singly into small pots filled with light earth, and plunge them into a fresh hot-bed to bring the plants forward, otherwise they will not ripen their seeds in this country. When their flowers open in july, they should have a large share of air admitted to them, when the weather is warm, to prevent their flowers from falling away without producing seeds. With this management the plants will continue flowering till the early frosts destroy them, and ripe seeds will be produced in the beginning of september.

[NOLENGU. See *Impatiens*.]

NOLI TANGERE. See *Impatiens*.

[NONATELIA. See *Oribasja* and *Psychotria*.]

NONE-SO-PRETTY. See *Saxifraga*.]

NONESUCH. See *Lychnis* [and *Trifolium*.]

NORANTEA. See *Ascium*.

NOSE-BLEED. See *Achillea*.

NOSTOC. See *Tremella*.

NOTHRIA. See *Frankenia*.

NOVELLA. See *Cordia* and *Hibiscus*.

NUCI Metellæ congener. See *Datura*.

NUSIPERSICA. See *Amygdalus*.

NUCIPRUNIFERA. See *Sapindus*.

NUCULA. See *Bunium*.

NUGA and NUGÆ. See *Guilandina*.]

NUMMULARIA. See [*Anagallis*] *Linnaea* and *Lyfimachia*.

[NURENI-KELENGU. See *Dioscorea*.]

NUR-PONGELION. See *Bignonia*.]

NURSERY, or Nursery-garden, is a piece of land set apart for the raising and propagating all sorts of trees and plants to supply the garden, and plantations. Of this sort there are a great number in the different parts of this kingdom, but particularly in the neighbourhood of London, which are occupied by the gardeners, whose business it is to raise trees, plants, and flowers for sale; and in many of these there is at present a much greater variety of trees and plants cultivated, than can be found in any other part of Europe. In France, their Nurseries, (which are but few, when compared with those in England) are chiefly confined to the propagation of fruit-trees, whence they have the appellation of *Pepinier*. For there is scarce any of those gardens, where a person can be supplied with

evergreens, flowering-shrubs, or forest-trees: and in Holland their Nurseries are principally for flowers; some few of them, indeed, propagate tender exotic plants. But Nurseries in the neighbourhood of London include all these, and hence most of the curious persons abroad are supplied with furniture for their gardens. But I do not propose in this place, to treat of these extensive Nurseries, or to give a description of them, therefore shall confine myself to treat of such Nurseries only as are absolutely necessary for all lovers of planting, to have upon the spot where they design to make their plantation. For if these are large, the expense of carrying a great number of trees, if the distance is great, will be no small article, beside the hazard of their growing; which, when the plants have been trained up in good land, and removed to an indifferent one, is very great. Therefore it is of the utmost consequence to every planter, to begin by making a Nursery. But in this article I must beg leave to observe, that a Nursery should not be fixed to any particular spot: I mean by this, that it would be wrong to continue the raising of trees any number of years upon the same spot of ground, because hereby the ground will be so much exhausted by the trees, as to render it unfit for the same purpose. Therefore all good Nursery gardeners shift and change their land from time to time, for when they have drawn off the trees from a spot of ground, they plant kitchen herbs, or other things, upon the ground for a year or two; by which time, as also by dunging and trenching the land, it is recovered, and made fit to receive other trees. But this they are obliged to from necessity, being confined to the same land; which is not the case with those gentlemen, who have large extent of ground in the country. Therefore I would advise all such persons to make Nurseries upon the ground which is intended for planting, where a sufficient number of the trees may be left standing, after the others have been drawn out to plant in other places; which, for all large growing trees, but particularly such as are cultivated for timber, will be found by much the most advantageous method; for all those trees which come up from the seed, or which are transplanted very young into the places where they are designed to remain, will make a much greater progress, and become larger trees, than any of those which are transplanted at a greater age. Therefore the Nurseries should be thinned early, by removing all those trees which are intended for other plantations while they are young, because hereby the expense and trouble of staking, watering, &c. will be saved, and the trees will succeed much better. But in exposed situations, where there are Nurseries made, it will be necessary to permit the trees to stand much longer; that, by growing close together, they may shelter each other, and draw themselves up; and these should be thinned gradually, as the trees advance; for, by taking away too many at first, the cold will check the growth of the remaining trees. But then those trees which are taken out from these Nurseries, after a certain age, should not be depended on for planting; and it will be prudence rather to consign them for fuel, than to attempt to remove them large, whereby, in endeavouring to get them up with good roots, the roots of the standing trees will be often much injured.

What has been here proposed, must be understood for all large plantations in parks, woods, &c. but those Nurseries which are only intended for raising evergreens, flowering shrubs, or plants which are designed to embellish gardens, may be confined to one spot, because a small compass of ground will be sufficient for this purpose. Two or three acres of land employed this way, will be sufficient for the most extensive designs, and one acre will be full enough for those of moderate extent. And such a spot of ground may be always employed for sowing the seeds of foreign trees and plants, as also for raising many sorts of biennial and perennial flowers, to transplant into the borders of the pleasure-garden, and for raising many kinds of bulbous-rooted flowers from seeds, whereby a variety of new sorts may be obtained annually, which will recompense for the trouble and expense,

^f Gartner.

^g Hort. kew.

penſe, and will moreover be an agreeable diverſion to all thoſe perſons who delight in the amuſements of gardening.

Such a Nurſery as this ſhould be conveniently ſituated for water; for where that is wanting, there muſt be an expenſe attending the carriage of water in dry weather. It ſhould alſo be as near the houſe as it can with conveniency be admitted, in order to render it eaſy to viſit at all times of the year, becauſe it is abſolutely neceſſary that it ſhould be under the inſpection of the maſter, for unleſs he delights in it, there will be little hopes of ſucceſs. The ſoil of this Nurſery ſhould alſo be good, and not too heavy and ſtiff, for ſuch land will be very improper for ſowing moſt ſorts of ſeeds; becauſe as this will detain the moiſture in the ſpring and winter, the ſeeds of moſt tender things, eſpecially of flowers, will rot in the ground, if ſown early; therefore where perſons are confined to ſuch land, there ſhould be a good quantity of ſand, aſhes, and other light manures buried, in order to ſeparate the parts, and pulverize the ground; and if it is thrown up in ridges, to receive the froſt in winter, it will be of great uſe to it, as will alſo the frequent forking, or ſtirring of the ground, both before and after it is planted.

The many advantages which attend the having ſuch a Nurſery, are ſo obvious to every perſon who has turned his thoughts in the leaſt to this ſubject, that it is needleſs for me to mention them here; and therefore I ſhall only beg leave to repeat here what I have ſo frequently recommended, which is, the carefully keeping the ground always clean from weeds; for if theſe are permitted to grow, they will rob the young trees of their nourishment. Another principal buſineſs is, to dig the ground between the young plants at leaſt once every year, to looſen it for the roots to ſtrike out; but if the ground is ſtiff, it will be better if it is repeated twice a year, viz. in october and march, which will greatly promote the growth of the plants, and prepare their roots for tranſplanting.

But there may be ſome perſons who have the curioſity to raiſe their own fruit-trees, which is what I would recommend to every one who is a lover of good fruit, becauſe the uncertainty in procuring the intended kinds of each fruit is very great, when taken from common Nurſery-gardens, ſo that moſt gentlemen who have planted many, have conſtantly complained of this diſappointment; but beſides this, there is another inconvenience, which, for want of ſkill, is ſcarce taken notice of, which is, the taking the buds or grafts from young trees in the Nurseries which have not borne fruit; this having been frequently repeated, renders the trees ſo raiſed as luxuriant as Willows, making ſhoots to the top of the walls in two or three years, and are rarely after fruitful with the moſt ſkilful management: I ſhall therefore treat of the proper method to make a Nurſery of theſe trees.

In the doing which the following rules muſt be obſerved:

1. That the ſoil in which you make the Nurſery be not better than that where the trees are to be planted out for good; the not obſerving this is the reaſon that trees are often at a ſtand, or make but little progreſs for three or four years after they come from the Nurſery, as it commonly happens to ſuch trees as are raiſed near London, and carried into the northern parts of England, where, being planted in a poor ſoil and a much colder ſituation, the trees ſeldom ſucceed well; therefore it is by far the better method (when you have obtained the ſorts you would propagate) to raiſe a Nurſery of the ſeveral ſorts of ſtocks proper for the various kinds of fruit, upon which you may bud or graft them; and thoſe trees which are thus raiſed upon the ſoil, and in the ſame degree of warmth, where they are to be planted, will ſucceed much better than thoſe brought from a greater diſtance and from a richer ſoil.

2. This ground ought to be freſh, and not ſuch as has been already worn out by trees, or other large growing plants, for in ſuch ſoil your ſtocks will not make any progreſs.

3. It ought not to be too wet, nor over dry, but rather of a middling nature; though of the two extremes, dry is to be preferred, becauſe in ſuch ſoils (though the trees do not make ſo great a progreſs as in moiſt, yet) they are generally ſounder, and more diſpoſed to fruitfulneſs.

4. You muſt alſo obſerve to incloſe it, that cattle and vermin may not come in, for theſe will make ſad havock with young trees, eſpecially in winter, when the ground is covered with ſnow, that they have little other food which they can come at. Some of the moſt miſchievous of theſe animals are hares and rabbits, which are great deſtroyers of young trees at that ſeaſon, by eating of all their bark; therefore you muſt carefully guard your Nurſery againſt theſe enemies.

The ground being incloſed, ſhould be carefully trenched about eighteen inches, or two feet deep, provided it will allow it; this ſhould be done in auguſt or ſeptember, that it may be ready to receive young ſtocks at the ſeaſon for planting, which is commonly in the middle or end of october. In trenching the ground, you muſt be very careful to cleanſe it from the roots of all noxious weeds, ſuch as Couch-graſs, Docks, &c. which, if left in the ground, will get in among the roots of the trees, ſo as not to be gotten out afterwards, and will ſpread and over-run the ground, to the great prejudice of your young ſtocks.

After having dug the ground, and the ſeaſon being come for planting, you muſt level down the trenches as equal as poſſible, and then lay out the ground into quarters, proportionable to the ſize thereof, and thoſe quarters may be laid out in beds, for the ſowing of ſeeds or the ſtones of fruit.

The beſt ſort of ſtocks for Peaches, Nectarines, &c. are ſuch as are raiſed from the ſtones of the Muſcle and white Pear Plumb, but you ſhould never plant ſuckers of theſe (which is what ſome people praſtiſe) for theſe ſeldom make ſo good ſtocks, nor are ever well-rooted plants; beſides, they are very ſubject to produce great quantities of ſuckers from their roots, which are very troubleſome in the borders, or walks of a garden, and greatly injure the tree; ſo that you ſhould annually, or at leaſt every other year, ſow a few ſtones of each, that you may never be at a loſs for ſtocks.

For Pears, you ſhould have ſuch ſtocks as have been raiſed from the kernels of the fruit where perry has been made, or elſe preſerve the ſeeds of ſome ſorts of ſummer Pears, which generally ſhoot ſtrong and vigorous, as the Cuiſſe Madame, Windſor, &c. but when this is intended, the fruit ſhould be ſuffered to hang upon the trees till they drop, and afterward permitted to rot; then take out the kernels and put them in ſand, being careful to keep them from vermin, as alſo to place them where they may not be too damp, which will cauſe them to grow mouldy. Theſe you ſhould ſow for ſtocks early in the ſpring, upon a bed of good light freſh earth, where they will come up in about ſix weeks, and, if kept clear from weeds, will be ſtrong enough to tranſplant the october following. But for many ſorts of ſummer and autumn Pears, Quince ſtocks are preferable to free (i. e. Pear) ſtocks; theſe are generally uſed for all the ſorts of ſoft-melting Pears, but they are not ſo good for the breaking Pears, being apt to render thoſe fruits which are grafted upon them ſtony; theſe are very often propagated from ſuckers, which are generally produced in plenty from the roots of old trees; but thoſe are not near ſo good as ſuch as are propagated from cuttings or layers, which have always much better roots, and are not ſo ſubject to produce ſuckers as the other, which is a very deſirable quality, ſince theſe ſuckers do not only rob the trees of part of their nourishment, but are very troubleſome in a garden.

Apples are grafted or budded upon ſtocks raiſed from ſeeds which come from the cyder-preſs, or upon Crab ſtocks, the latter of which are eſteemed for their durability, eſpecially for large ſtandard trees; theſe ſhould be raiſed from ſeeds, as the Pear ſtock, and muſt be treated in the ſame manner, for thoſe pro-
cured

ured from suckers, &c. are not near so good; but for small gardens, the Paradise stock has been for some years past greatly esteemed, it being of very humble growth, causes the fruit-trees grafted or budded thereon to bear very soon, and they may be kept in small compass; but these are only proper for very small gardens, or by way of curiosity, since the trees thus raised are but of short duration, and seldom arise to any size to produce fruit in quantities, unless the graft or bud be buried in planting, so that they put forth roots, and then they will be equal to trees grafted upon free stocks, since they receive but small advantage from the stock.

For Cherries, you should make use of stocks raised from the stones of the common Black, or the wild Honey Cherry, both of which are strong free growers, and produce the cleanest stocks.

For Plums, you may use the stones of most free-growing sorts, which will also do very well for Apricots, these being not so difficult to take as Peaches or Nectarines; but (as I said before) these should not be raised from suckers for the reason there assigned, but rather from stones.

There are some persons who recommend the Almond stock for several sorts of tender Peaches, upon which they will take much better than upon Plum stocks; but these being tender in their roots, and apt to shoot early in the spring, and being of short duration, are by many people rejected; but such tender sorts of Peaches which will not take upon Plum stocks, should be budded upon Apricots, upon which they will take very well; and all sorts of Peaches which are planted upon dry soils, will continue much longer, and not be so subject to blight, if they are upon Apricots; for it is observed, that upon such soils where Peaches seldom do well, Apricots will thrive exceedingly, which may be owing to the strength and compactness of the vessels in the Apricots, which render it more capable of assimilating, or drawing its nourishment from the Plum stock, which in dry soils seldom afford it in great plenty to the bud; and the Peach-tree being of a loose spongy nature, is not so capable to draw its nourishment therefrom, which occasions that weakness which is commonly observed in those trees, when planted on a dry soil; therefore it is the common practice of the Nursery-gardeners, to bud the Plum stocks either with Apricots, or some free growing Peach; and after these have grown a year, they bud the tender sorts of Peaches upon these shoots, by which method many sorts succeed well, which in the common way will not thrive, or scarce keep alive; and these the gardeners term double worked Peaches.

There are some people who of late have budded and grafted Cherries upon stocks of the Cornish, and others on the Morello Cherry, which, they say, will render the trees more fruitful, and less luxuriant in growth, so that they may be kept in less compass; these stocks having the same effect upon Cherries, as the Paradise stock has on Apples.

Having provided yourself with young stocks of all these different sorts, which should be raised in the seminary the preceding year, you should proceed to transplanting them in October (as was before directed) into the Nursery. The distance which they should be planted, if designed for standards, should be three feet and a half or four feet, row from row, and a foot and a half distant in the rows; but if for dwarfs, three feet row from row, and one foot in the rows, will be a sufficient distance.

In taking these stocks out of the seed-beds, you must raise the ground with a spade, in order to preserve the roots as entire as possible; then with your knife prune off all the very small fibres; and if there are any which have a tendency to root downright, such roots should be shortened; having thus prepared the plants, draw a line across the ground intended to be planted, and with your spade open a trench thereby exactly straight, into which place them at the distance before-mentioned, setting them exactly upright; and then put the earth in close to them, filling up the trench, and with your foot press the earth gently to the roots of them, observing not to displace them so

as to make the rows crooked, which will render them unsightly; these plants should by no means be headed, or pruned at top, which will weaken them, and cause them to produce lateral branches, and thereby spoil them.

If the winter should prove very cold, it will be of great service to your young stocks, to lay some mulch upon the surface of the ground near their roots, which will prevent the frost from penetrating the ground, so as to hurt the tender fibres which were produced after planting; but you should be careful not to let it lie too thick near the stems of the plants, nor remain too long, lest the moisture should be prevented from penetrating to the roots of the plants, which it often does, where there is not due care taken to remove it as soon as the frost is over.

In the summer season hoe and destroy the weeds, which, if permitted to remain in the Nursery, will greatly weaken and retard the growth of your stocks; and, the succeeding years, observe to dig up the ground every spring between the rows, which will loosen it so, as that the fibres may easily strike out on each side, and the weeds will thereby be destroyed; also where any of the stocks have shot out lateral branches, prune them off, that they may be encouraged to grow upright and smooth.

The second year after planting, such of the stocks as are designed for dwarf trees will be fit to bud, but those which are designed for standards, should be suffered to grow six or seven feet high before they are budded or grafted. The manner of budding and grafting being fully described under their respective heads, I shall not repeat them in this place, nor need I say any thing more of treating these trees after budding, that being also treated of under the several articles of fruits; I shall only add, that those stocks which were budded in the summer, and have failed, may be grafted the following spring, but Peaches and Nectarines never take well from grafts, these should therefore be always budded.

The ground you intend for the Flower-nursery should be well situated to the sun, but defended from strong winds, by plantations of trees or buildings, and the soil should be light and dry; which must always be observed, especially for bulbous-rooted flowers, which are designed to be planted therein, the particulars of which are exhibited under the several articles of flowers.

In this Nursery should be planted the offsets of all your bulbous-rooted flowers, where they are to remain until they become blowing roots, when they should be removed into the pleasure-garden, and planted either in beds or borders, according to the goodness of the flowers, or the management which they require.

You may also in this ground raise the several sorts of bulbous-rooted flowers from seed, by which means new varieties may be obtained; but most people are discouraged from setting about this work, from the length of time before the seedlings will come to flower: however, after a person has once begun, and constantly continued sowing every year, after the parcel first sown has flowered, the regular succession of them coming annually to flower, will not render this method so tedious as it at first appeared.

The seedling Auriculas, Polyanthus, Ranunculus, Anemonies, Carnations, &c. should be raised in this Nursery, where they should be preserved until they have flowered, when you should mark all such as are worthy of being transplanted into the flower-garden, which should be done in their proper seasons; for it is not so well to have all these seedling flowers exposed to public view in the flower-garden, because it always happens, that there are great numbers of ordinary flowers produced amongst them, which will make but an indifferent appearance in the pleasure-garden.

[For a Nursery, Dr. Hunter recommends a rich deep and stiffish mould, though the trees should afterwards be removed into a poorer soil. Reason, says he, teaches that young trees growing luxuriantly and freely in a good soil will form vigorous and healthy roots,

and when they come to be afterwards planted in worse land, they will be able, from the strength of their constitution, to feed themselves freely with coarser food. On the contrary young trees, raised upon poor land, by having their vessels contracted, and their outward bark mossy and diseased, will be a long time, even after being removed to a rich soil, before they attain to a vigorous state. Having fixed upon a proper place of sufficient size for the purpose, fence it with hedges, pales or walls, to keep out cattle, hares and rabbits: then in october or november trench the land two spits deep, and in spring turn it over again: after which let the surface be laid smooth, and set out into quarters^h.

A very judicious planter, adds Dr. Hunter, recommended to him the following method of making a Seminary or Nursery for forest trees.

Trench the ground in november eighteen inches deep, if the soil will admit of it; but where the staple is too thin one foot will be sufficient, in which case the sward must be pared off very thin, and laid in the bottom of the trench. The following year let this land be cultivated with a crop of cabbages, turneps or rape, which must be eat off with sheep. After this a common digging will be sufficient, previous to its being formed into beds for the reception of the seeds. The urine of sheep is one of the most cherishing manures for all plants raised in a Seminary or Nurseryⁱ.

The soil of the Nursery, according to Mr. Marshall, should be rich and deep, and should be prepared by double diggings and suitable meliorations: if not deep and rich by nature, it must be made so by art: for if the roots of the tender plants have not a soil they affect, or sufficient room to strike in, there will be little hope of their furnishing themselves with that ample stock of fibres which is necessary to a good plant, and with which it is the principal use of the Nursery to supply them.

The situation of the Nursery is determined by the soil or by local conveniences: the nearer it is, the more attendance will probably be given it; but the nearer it lies to the scene of planting, the less carriage will be requisite.

In pruning seedlings, layers and suckers for the Nursery, the roots should not be left too long, but trimmed off pretty close, to form a snug globular root. By this means the new fibres will be formed immediately round the main root, and may of course easily be removed with it, without disturbing the earth interwoven among them. The tops should, in most cases, be trimmed close up to the leader; or, if awkward or defective, be cut off a little above the root.

Various methods are practised for putting in seedlings: by the dibble, by the scoop, by a single chop with the spade, by two chops one across the other, by square holes made by four chops of the spade, bringing up the mould with the last, or by bedding, a method chiefly made use of for quicksets. The chief art in putting them in lies in not cramping the fibres of the roots, but letting them lie free and easy in the mould: the particular mode or instrument to be made use of, depends much upon the size of the plants to be put in. This also determines, in a great measure, the proper distance between the rows and between plant and plant. The proposed method of cleaning too is a guide to the distance. The natural tendency of the plant itself must also be considered. From six to twenty-four inches in the rows; with intervals from one to four feet wide, will comprehend the whole variation of distances.

Pruning is necessary, to prevent the plants from crowding each other, and to give them stem. Shrubs, which do not require a stem, should be planted in a quincunx, that they may spread every way; but forest trees, and trees in general, require some length of stem; and in giving them this, the leading shoot is more particularly to be attended to. If the head be double, one of the shoots must be taken close off: if it be maimed or defective, it may be well to cut the

^h Sylva, p. 56.

ⁱ Idem, p. 41.

plant down to the ground, and train a fresh shoot, or if the head be taken off smooth, immediately above a strong side shoot, this will sometimes outgrow the crookedness, and in a few years become a straight plant.

The time of the plants remaining in the Nursery is determined by a variety of circumstances; and a seasonable thinning frequently becomes necessary. The general rule for this is, to thin as soon as the tops or roots interfere.

In taking up trees and shrubs for the purpose of planting them out where they are to stand, every root and fibre ought, as much as possible, to be preserved; and therefore no violence should be used in this operation. The best way is to dig a trench close by the side of the plant, and having undermined the roots, to let it fall of itself, or with a very little assistance into the trench: if any roots still have hold, cut them off with a sharp instrument, so as to jar the main root as little as may be. If the root was properly pruned before planting, it will now turn out a globular bundle of earth and fibres.

When the Nursery lies at a distance from the plantations, much depends upon packing the plants judiciously. Valuable plants are sent in pots or baskets. Straw however is used in general, and will sufficiently protect them both from frost and drought; especially if for the latter purpose, the straw be occasionally moistened with water^k. Moss is the most effectual for keeping the roots moist and supple in distant carriage.

See PLANTING, SEMINARY, &c.

NURVALA. See *Crataeva*.

NUT, BLADDER. See *Staphylea*.

—, CASHEW. See *Anacardium*.

—, COCOA. See *Cocos*.

—, EARTH. See *Arachis*.

—, MALABAR. See *Justicia*.

NUTMEG-TREE. See *Myristica*.

NUT, PHYSIC. See *Jatropha*.

NUT-TREE. See *Corylus*.

NUX. See *Juglans*.

— AMERICANA. See *Melicocca*, *Quassia*, *Sapindus*.]

— AVELLANA. See *Corylus*.

— JUGLANS. See *Juglans*.

[— MALABARICA. See *Sterculia*.

— MOLUCCANA. See *Jatropha*.

— MOSCHATA and MYRISTICA. See *Myristica*.]

— VESICARIA. See *Hernandia* and *Staphylea*.

[— VOMICA. See *Strychnos*.

— ZEYLANICA. See *Sterculia*.

NYCTAGE. See *Mirabilis*.]

NYCTANTHES. (From *νύξ* night, and *ανθος*, a flower.)

Lin. gen. Schreb. n. 21. & p. 816. Juss. 104.

Parilium. Gært. t. 51. Scabrita. Lin. gen.

Schreb. n. 154. & p. 819. mant. 3.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Sepiariae*. *Jasmineae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular, truncate, quite entire, permanent.

COR. one-petalled, falver-shaped. Tube cylindric, the length of the calyx. Border five-parted, spreading, with the lobes two-lobed.

STAM. *Filaments* two, in the middle of the tube, very short. *Antbers* oblong, the length of the tube.

PIST. *Germ* superior, subovate. *Style* filiform, the length of the tube. *Stigmas* two, acute.

PER. *Capsule* obovate, compressed, with an emarginate dagger-point, coriaceous, two-celled, bipartile: *cells* parallel, appressed, valveless.

SEEDS solitary, obovate, convex on one side, flat on the other, fastened to the bottom of the cell.

OBS. The corolla appears for the most part to be five-parted, but it is sometimes six or seven-parted, and Linneus observed it to be four-parted.

ESSENTIAL CHARACTER.

Cor. falver-shaped, with truncated segments. Caps. two-celled, margined. Seeds solitary.

^k Planting, 1. 24, &c. ed. 2.

SPECIES.

- [1. *Nyctanthes Arbor tristis*. *Square-stalked Nyctanthes*.
Lin. spec. 8. *fst.* 56. *Reich.* 1. 15. *Willd.* 35.
fl. zeyl. n. 11.
Scabrita triflora. *Lin. mant.* 37.
S. scabra. *Lin. fst. ed.* 12. 115. *Reich.* 1. 290.
Vabl symb. 2. 28.
Parilium arbor tristis. *Gartn. fruct.* 1. 234.
Arbor tristis. *Clus. exot.* 225. 279.—myrto similis.
Baub. pin. 469.
Manja-pumeran. *Rheed. mal.* 1. 35. t. 21. *Raii hist.*
1698.
Stem four-cornered, leaves ovate-acuminate, pericarp
membranaceous compressed.
2. *Nyctanthes undulata*. *Wave-leaved Nyctanthes*.
Lin. spec. 8. *Reich.* 1. 15. *Raii hist.* 1601. (*Jas-*
minum).
Tsieregam mulla. *Rheed. mal.* 6. 97. t. 55.
Leaves ovate acuminate waved, branches round.]
3. *Nyctanthes hirsuta*. *Hairy Nyctanthes*.
Lin. spec. 8. *Reich.* 1. 15. *Ofb. it.* 205. *ed. angl.*
1. 328.
Rava-pou. *Rheed. mal.* 4. 99. t. 48. *Raii hist.* 1602.
Burm. ind. 4.
Petioles and peduncles villose.
- [4. *Nyctanthes angustifolia*. *Narrow-leaved Nyctanthes*.
Lin. spec. 8. *Reich.* 1. 16.
Jasminum indicum angustifolium, fructo gemino.
Tournef. inst. 598.
Katu-pitsjegam-mulla. *Rheed. mal.* 6. 93. t. 53. *Raii*
hist. 1602.
Leaves obtuse lanceolate and ovate.
5. *Nyctanthes elongata*. *Long-leaved Nyctanthes*.
Lin. fst. 56. *suppl.* 82. *Berg. philos. transf.* 1772.
290. t. 11.
Leaves cordate lanceolate-ovate elongated and smaller,
branches round.
6. *Nyctanthes viminea*.
Retz. obs. 5. 9. n. 1.
N. grandiflora. *Lour. cochinch.* 21. *ed. Willd.* 26?
Branches round elongated, leaves ovate-acuminate, pe-
duncles axillary one-flowered; terminating ones three-
flowered.
7. *Nyctanthes pubescens*.
Retz. obs. 5. 9. n. 2.
Branches round hirsute, leaves cordate pubescent on both
sides.

DESCRIPTIONS, &c.

1. This is a shrub, with four-cornered, rugged branches. Leaves opposite, petioled, ovate, oblong, quite entire, longer than the branch-joints, rugged on both sides. Peduncles axillary, opposite, solitary, four-cornered, shorter by half than the leaf, two-leaved at top with three-flowered pedicels. Partial involucre four-leaved? Leaflets obovate, the length of the calyxes, blunt, containing three sessile florets¹. Corolla funnel-shaped, with a six or eight-cleft border. Capsule coriaceous, superior, obcordate or obovate, turgidly lenticular, in the twin middle ventricose and marked with a longitudinal elevated streak, compressed at the sides into a narrow sharp margin, the rest brittle, two-celled, bipartile; with the segments plano-convex, of a brown chestnut colour on the outside, pale within, quite entire, valveless. Receptacle none; seed fastened to the bottom of the cell, obovate, moderately acuminate downwards, convex on one side, flat on the other, brown. *Nyctanthes* (*Jasminum Sambac*) has a fleshy berry, and the seeds inclosed within an elastic aril, like Coffee; hence differing greatly from this^m, and joined in our work with *Jasminum*.

Native of the East Indies. Introduced in 1781, by Sir Joseph Banksⁿ.

The other species should have been united to *Jasminum*, but having been omitted under that genus, are given here rather than omit them entirely.

2. This is a shrub, attaining the height of a man. The young shoots are hairy. Leaves shining green, smooth, even, in pairs from the joints, bitter, without any smell. Flowers white, three or five together.

¹ Linn. mant.

^m Gærtner.

ⁿ Hort. kew.

Calycine segments about six; of the corolla six, seven or eight, narrow, very much waved on the edge outwardly. Fruit superior, smooth and black like a small cherry, with a thin skin, and a soft, dark-red, sweetish pulp, containing a round hairy seed.

Native of the East Indies, where it is much cultivated on account of the sweetness of the flowers, which the women there wear in their hair^o.

3. This is a tall tree, with a thick trunk of a close white wood, covered with a dark purple, smooth, inodorous, insipid bark. Leaves opposite, decussated, acuminate, soft, smooth, shining, dark green above, on round, rufous, lanuginous petioles. Flowers on the more tender branches, on long, rufous, lanuginous peduncles, from the axils of the leaves, three, four or more together, white, smelling very sweet, opening during the night, and fading at sun-rise^p.

Leaves elliptic-lanceolate or ovate, waved. Calyx cylindrical, six-cleft; segments equal. Segments of the corolla eight, oblong, pointed, shorter than the tube. Filaments short. Anthers oblong, and longer than the filaments^q.

Native of the East Indies and China.

4. Rheedee compares this with *Jasminum Sambac*, and says that the twigs are of a more dusky green approaching to brown; the leaves sometimes more oblong, yet without any point, sometimes wider, opposite, petioled, of a more dusky green than any of the rest, and of a bitter taste. Calycine segments six; corolline from six to ten or eleven, lengthened out into a sort of prickle at the end, very narrow and white, except at the edge where they are tinged with red. The smell is very fine.

Native of Malabar, in a sandy soil; as about Cranganor, Catoer, &c. flowering in June and July^r.

5. Branches round, the upper ones villose. Leaves smooth; the lower ones cordate, ovate. Flowers terminating, five or six, in a sort of umbel. Calyx very small, with the segments awl-shaped, and hairy. Tube of the corolla thickened above.—Native of the East Indies^s.

6. This is a shrub with weak, smooth branches, like osiers. Leaves on short petioles, naked, an inch long. Peduncles short, solitary. Calyx truncated, with awl-shaped teeth shorter than the tube of the corolla, which thickens gradually; segments the length of the tube, linear-lanceolate. Koenig sent it from Tranquebar^t.

Retzius thinks that this may possibly be the same with *N. grandiflora* of Loureiro, which he thus describes.—Stem shrubby, erect, five feet high, thick, rugged. Leaves stellate by threes and opposite, ovate, subcordate, subacute, wrinkled, smooth. Flowers white, double, terminating, one or two together, three times as large as those of the *Sambac*, handsomer, but inferior in fragrance. Calyx ten-cleft, with linear, erect segments. The lowest order of segments in the corolla inconstant in number. Cultivated both in China and CochinChina.

7. This also is a shrub with opposite white-haired branches. Leaves opposite, petioled, quite entire; the uppermost roundish. Flowers in bundles, at the ends of the branches. Bracts lanceolate, hirsute. Calyx hirsute, with long, linear teeth. Corolla one of the largest of the genus, smooth, with a tube longer than the teeth of the calyx. Sent from Calcutta by Koenig^u.

PROPAGATION AND CULTURE.

See *Jasminum Sambac*.] They require the same treatment with that, but are more difficult to propagate.

[*NYCTANTHES*. See *Jasminum*.

NYCTELEA. See *Ellisia*.]

NYMPHÆA (of Pliny. *Νυμφαία* of Theophrastus and Dioscorides. From its growing in water, which the poets feigned to be the residence of the Nymphs.)

Lin. gen. n. 653. *Reich.* n. 709. *Schreb.* n. 886.

Tournef. t. 137, 138. *Juss.* 68. *Gartn.* t. 19.

^o Hort. malab.

^p Idem.

^q Osbeck.

^r Hort. malab.

^s Linn. suppl.

^t Retz.

^u Idem.

Nelumbo. Tournef. Adans. 76. Gært. t. 19.
Nelumbium. Juss. 68.

Class. 13. 1. Polyandria Monogynia.
Nat. order of Succulentæ. Hydrocharides, Juss.

GENERIC CHARACTER.

CAL. Perianth inferior, four, five, or six-leaved, large, coloured above, permanent.

COR. Petals numerous (often fifteen) placed on the side of the germ, in more than one row.

STAM. Filaments numerous, (often seventy) flat, curved, blunt, short. Anthers oblong, fastened to the margin of the filaments.

PIST. Germ ovate, large. Style none. Stigma orbiculate, flat, peltate-fessile, rayed, crenate at the edge, permanent.

PER. Berry hard, ovate, fleshy, rude, narrowed at the neck, crowned at the top, many-celled, (cells from ten to fifteen) full of pulp.

SEEDS very many, roundish.

Obs. N. lutea differs from the rest in having a five-leaved calyx, with roundish leaflets, and the petals very small.

Nelumbo has the pericarp turbinate, truncate, with one seed in each cell, the cells opening by their proper holes along the disk.

ESSENTIAL CHARACTER.

Cal. four, five or six-leaved. Cor. many-petalled.
Berry many-celled, truncated.

SPECIES.

[1. Nymphæa advena. Three-coloured Water Lily.

Ait. hort. kew. 2. 226.

N. floribus flavis. Clayton in Gron. virg. ed. 1. 164.

Leaves cordate quite entire, lobes divaricate; calyx six-leaved longer than the petals.]

2. Nymphæa lutea. Yellow Water Lily.

Lin. spec. 729. syst. 491. Reich. 2. 578. fl. lapp. n. 218. succ. n. 469. hort. cliff. 203. 1. Gært. fruct. 1. 73. Hudf. angl. 234. Wither. arr. ed. 3. 488. Engl. bot. 159. Lightf. scot. 282. Relb. cant. n. 390. Sibth. oxon. n. 479. Hall. belv. n. 1066. Neck. gallob. 228. Scop. carn. n. 639. Crantz. austr. 142. Gunn. norv. n. 441. Fl. dan. t. 603. Pollich pal. n. 508. Krock. files. n. 822. Villars dauph. n. 700. Allion. pedem. n. 1933. Gmel. fib. 4. 184. Blackw. 497. a, b. & 499. 1. Kniph. cent. 3. n. 66. Knorr. del. 2. t. N. 1. Camer. epit. 635. Lonic. 1. 177. 2. Fuchf. 536. Trag. 697. Baub. hist. 3. 771. Matth. 894. Dod. pempt. 585. 2. Lob. obs. 324. 2. ic. 1. 594. 2. Ger. 672. 2. emac. 819. 2. Raii hist. 1319. syn. 368. Petiv. brit. 71. 3. Bess. exst. vern. 7. t. 3. f. 3. Jungh. offic. cent. 1. f. 2.

N. major lutea. Baub. pin. 193. Clus. hist. 2. 77. 2. Park. theat. 1252. 5. Mor. hist. 3. 512.

Nenuphar luteum. Brunf. 38.

Leaves cordate entire, lobes approximating; calyx five-leaved longer than the petals.

3. Nymphæa alba. White Water Lily.

Lin. spec. 729. syst. 491. Reich. 2. 578. fl. lapp. n. 219. succ. n. 470. hort. cliff. 203. 2. mat. med. 135. Gært. fruct. 1. 72. Hudf. angl. 234. Wither. arr. ed. 3. 489. Engl. bot. 160. Lightf. scot. 283. Relb. cant. n. 391. Sibth. oxon. n. 480. Hall. belv. n. 1067. Neck. gallob. 227. Scop. carn. n. 640. Crantz. austr. 142. Pollich pal. n. 509. Fl. dan. t. 602. Gunn. norv. n. 440. Krock. files. n. 823. Villars dauph. 3. 700. Allion. pedem. n. 1934. Gmel. fib. 4. 183. t. 72. Blackw. 498. a, b. & 499. Knorr. del. 2. t. N. Regn. bot. Camer. epit. 634. Baub. hist. 3. 770. Matth. 893. Clus. hist. 2. 77. 1. Dod. pempt. 585. 1. Lob. obs. 324. 1. ic. 1. 595. 1. Ger. 672. 1. emac. 819. 1. Raii hist. 1320. syn. 368. Petiv. brit. 71. 1. Bess. exst. vern. 7. t. 3. f. 2.

N. candida. Trag. 696. Fuchf. 535.

N. alba major. Baub. hist. 193. Mor. hist. 3. 513. 4. —vulgaris. Park. theat. 1251. 1.

β. N. alba minor. Baub. hist. 193. Ger. 673. emac. 820. 3. Park. theat. 1252. 3. Mor. hist. 3. 513. 5. Bess. exst. vern. 7. t. 3. f. 1.

Leaves cordate quite entire, lobes imbricate rounded; calyx four-leaved.

[4 Nymphæa odorata. Sweet-smelling Water Lily.

Ait. hort. kew. 2. 227.

N. alba, flore pleno odorato. Clayton in Gron. virg. ed. 1. 57. ed. 2. 81.

N. alba minor. Gmel. fib. 4. 184. t. 71.

Leaves cordate entire emarginate, lobes divaricating with an obtuse point; calyx four-leaved.

5. Nymphæa Lotus. Egyptian Water Lily.

Lin. spec. 729. Reich. 2. 579. fl. zeyl. n. 194.

Hasselqu. it. 471. ed. angl. 249. Brown. jam. 243. 1.

N. indica, flore candido, folio in ambitu ferrato. Sloan. jam. 1. 252. Raii suppl. 630.

N. ægypt. alba, fol. crenato, rad. tuberosa. Mor. hist. 3. 513.

Lotus ægyptia. Alp. ægypt. 103. exot. 214. t. 213. 216. 218. 220. 222. 226. Park. theat. 1251. f. 2. Raii hist. 1321.

Ambel. Rheed. mal. 11. 51. t. 26.

Leaves cordate toothed.

6. Nymphæa Nelumbo. Peltated Water Lily.

Lin. spec. 730. syst. 491. Reich. 2. 579. hort. cliff.

203. 3. fl. zeyl. n. 193. Lerche in nov. act. nat.

cur. tom. 5. app. p. 191. Brown. jam. 243. 2.

Herm. par. t. 205. Thunb. jap. 223. Lour.

cochin. 340. Rumph. amb. 6. 168. t. 73. Pluk.

phyt. t. 322. f. 1. opt.

Nelumbo nucifera. Gært. fruct. 1. 73.

Tamara & Bem Tamara. Rheed. mal. 11. 59—61. t. 30. 31. Raii suppl. 632.

Nymphææ affinis, &c. Mor. hist. 514. n. 3, 4.

β. Nymphææ affinis glandifera virginiana, umbilicato folio, flore luteo pleno. Mor. hist. 3. 514. Raii suppl. 632. Pluk. alm. 267.

Leaves peltate, entire all round.

DESCRIPTIONS, &c.

These are herbaceous perennial plants, with long tuberous roots. Leaves alternate, on a very long petiole, half sheathing below, floating. Peduncles long, naked like scapes, one-flowered. Flowers large, emerging. Germ and stigma approaching to the Poppy*.

1. Petioles half round, commonly erected above the water. Leaves cordate-oblong, more narrowed towards the top than in N. lutea. Peduncle round. Leaflets of the calyx roundish, blunt, concave: the three outer spreading, green on the outside, dirty purple within, an inch in diameter: the three inner twice as large, suberect, yellow on the outside, within dirty purple. Petals about thirteen, inserted into the sides of the receptacle in a single row, somewhat wedge-shaped, bluntly rounded, from spreading reflex, yellow, three lines wide. Filaments very numerous, inserted in several rows into the receptacle, linear, a line in width, scarcely half an inch in length, first erect then reflex, yellow, red in the middle. Anthers linear, two on each filament, fastened to the edges of it. Germ columnar, deeply grooved, with thirteen angles, yellow. Stigma peltate, slightly umbilicate, yellow, with thirteen rays, deeply toothed at the edge with thirteen blunt teeth, green above.

Native of North America. Introduced in 1772, by Mr. William Young. It flowers in July†.

2. The leaves of the Yellow Water Lily are smooth, plane, except that they turn up a little at the edge to keep off the water, tough and pliant, ten or twelve inches in diameter, floating, ovate or nearly orbicular, bright green above, paler underneath, with branched raised nerves or veins. Petioles smooth, three-sided, their length depending on the depth of water: I have one before me on the 8th of June 1798, five feet and a half in length. The case is the same with the peduncle, which always elevates the flower above the water; but after it is impregnated, the seeds are ripened under water, and fall into the mud at bottom to produce new plants. The peduncles are round, succulent and one-flowered. Flowers an inch and half

* Jussieu.

† Hort. kew.

in diameter, having a vinous smell. Calyx larger than the corolla: leaflets roundish, blunt, erect, quite entire, subsinuate, smooth, tough, yellow, except at the base on the outside, where they are green, inserted into the base of the germ, regular, almost an inch in length and breadth. Petals fleshy, yellow, about half an inch in length and five lines in breadth, notched and grooved, from ten to twenty in number. Stamens very numerous, one hundred or even one hundred and sixty-five in number, when the flower first opens pressing closely on the germ, but after they have shed their pollen bending back: filaments yellowish, thicker than the anthers, separate from the germ: anthers yellow, two lines in length. Germ ovate, blunt, smooth, terminated by a hollow in form of a navel. Style thick and very short, or scarcely any. Stigma yellow, unequally and sometimes obscurely notched, a little convex, having eleven or twelve rays, and being depressed at the centre². The fruit is shaped like a bottle, or ovate-conical, very smooth, crowned with the stigma, which is grooved, quite entire and peltate: within it is divided into from twelve to fifteen cells; which are irregular, subdivided by partial partitions, so that each seed has as it were its own cell. Seeds fewer than in *N. alba*, but twice as large, ovate-acuminate, yellowish, very smooth and shining, keeled with an angle. Embryo lenticular-conical, glued to the hole of the albumen, and covered only by the integuments of the seed³.

Linneus tells us that swine are fond both of the leaves and root; that goats are not fond of it; and that kine, sheep and horses refuse it: also that crickets are driven out of houses by the smoke in burning it, and that both they and cock-roaches are destroyed by the roots rubbed or bruised with milk. Ray observes, that the flowers smell like brandy. Dr. Withering informs us, that an infusion of a pound of the fresh root, in a gallon of water, taken in the dose of a pint night and morning, cured a leprous eruption of the arm.

Yellow Water Lily is native of most parts of Europe, in flow rivers, pools and ditches; flowering in July and August.

Kalm observed the same species in Canada, with a flower scarcely so big as that of *Caltha palustris*.

In German it has the various names of *die gelbe Seebume*, *gelbe Seerose*, *gelbe Plumpen*, *gelbe Mummeln*, *gelbe Wasserblume*, *gelbe Seekandel*, *gelbe Weiberrosen*, *gelbe Wasserlilie*, *Kannenplumpen*, *Nixblumen*, *Haarwurz*, *Haarstrang*, *Poppelke*. In Dutch, *Geele plumpen*. In Danish, *Aekandel*, *Soeblomster*, *Haarrod*. In Swedish, *Nackblad*. In Smoland, *Siollon*. In Scania, *Akanna*. In French, *le Nenuphar jaune*. In Italian, *Nenufaro giallo*, *Ninfea gialla*. In Spanish, *Nenufar amarilla*, *Escudete*. In Portuguese, *Nymphea amarella*, *Golfiao*.

3. Root tuberous, frequently the size of the human arm, creeping far and wide and deep in mud. The whole plant is larger in all its parts than the preceding. The leaves are much the same, only larger. Petioles and peduncles round, within full of pores, four of which are generally larger than the rest; hairs interwoven between. Flowers large, being sometimes six inches in diameter, very handsome and double. Calycine leaflets smaller than the outer petals, being about two inches long, and an inch wide, ovate, blunt, spreading, smooth and yellowish green on the outside with a white edge, striated and shining; within white. Petals white, from sixteen to twenty or twenty-four in number, in two or three rows, wider than the leaves of the calyx, and more ovate; the outer ones have a green streak along the back, and approach more to the nature of the calyx; as the inner ones, which are gradually smaller, do to the stamens: they are inserted at the base of the germ. Stamens sixty-eight or seventy, sometimes as many as eighty-six; filaments short, thick, wide, ovate-lanceolate, fastened to the side of the germ, white; the inner ones yellow, bent inwards; the outermost resembling the inner petals. Germ roundish. Style none. Stigma rayed,

having little reflex notches about the edge, ten lines in diameter; each ray corresponding to a cell in the germ⁴. Berry superior, spherical, warted with the remains of the filaments, umbilicated with a very large, concave, grooved, crenulate stigma, like the Poppy, and having twenty cells or thereabouts: rind thin, leathery: pulp of the cells gelatinous, drying up to a spongy substance. Seeds very numerous, oblong-spheroidal, smooth, shining, having a very blunt angle on one side, yellowish green or livid, nestling in the pulp, without any certain situation or order. Albumen both in this and the preceding of the same shape with the seed, farinaceous, very white, friable, with an open hole at the base; embryo in this monocotyledonous, lenticular-globular, fleshy, yellowish, slightly immersed in the cavity of the albumen, not covered by the substance of it, but only by the common integuments of the seed⁵.

According to Linneus, the flower raises itself out of the water and expands about seven o'clock in the morning, and closes again, reposing upon the surface, about four in the evening.

The roots have an astringent bitter taste; they are used in Ireland, in the highlands of Scotland, in the island of Jura, &c. to dye a dark brown or chestnut colour. Swine are said to eat it, goats not to be fond of it, kine and horses to refuse it. The flowers, the herb and the root were formerly used in medicine, but are all now obsolete.

White Water Lily or Water Rose, is native of most parts of Europe, in flow streams, pools and ditches; flowering in July and August. Both this and the preceding are called in some counties *Water-can* or *Candock*, and *Watersocks*. In German it is *die weisse Seebume* or *Seerose*, *Wassertulpe*, *Wassermobren*, *Wassermanachen*, *weisse Wasserblumen*, *Wasserrose*, *Wassermoln*, *Wasserlilie*, *weisse Weiberrose*, *weisser Seekandel*, *Seepuppen*, *weisse Seepumpen*, *weisse Plumpen*, *weisse Mummeln*, *Haarwurz*, *Haarstrang*, *Toll-lilie*, *Kellerwurz*, *Kollerwurz*, *Kehlurz*, *Kohlurz*, *Keulurz*, *Herkuleswurz*, *Harzwurz*, *Murmelen*. In Dutch, *Witte Plumpen*, *Paunekock*, *Meirblad*, *Waterroos*. In Danish, *Aekande*, *Soeblomster*, *Soeblommer*, *Soeblad*, *Harrod*, *Kierringekrus*, *Fruar*, *Kiodneblom*. In Swedish, *Sjoblad*. In French, *le Nenuphar blanc*, *Lis d'etang*. In Italian, *Nenufaro bianco*, *Ninfea bianca*. In Spanish, *Nenufar blanco*, *Ninfea blanca*, *Escudete*, *Higo de rio*. In Portuguese, *Nymphea branca*, *Golfiao*, *Golfao*. In Russian, *Wodanoi lelei*, *Kubischka*.

4. This is altogether different from the smaller variety of the preceding species, which differs from the common White Water Lily in nothing but in size. It is a native of North America and the East of Siberia; was introduced in 1786 by William Hamilton Esq., and flowers in July⁶.

5. Egyptian Water Lily resembles our common White species very much in the form of the flower and leaves, but the latter are toothed about the edge. It is native of the hot parts of the East Indies, Africa and America. It is very common in ponds, lakes and rivers in Jamaica: and grows in vast quantities in the plains of Lower Egypt near Cairo, during the time they are under water. It flowers there about the middle of September, and ripens towards the end of October. The Arabians call it *Nuphar*. The ancient Egyptians made a bread of the seed of the Lotus dried and ground.

6. Root horizontal, long, creeping, consisting of joints linked together, ovate-oblong, white, fleshy, esculent, tubular within. Leaves exactly peltate, with a cavity in the centre above, and dichotomous veins springing from the same centre, orbiculate with a point on each side, a little waved, thin, paler underneath, smooth, of different sizes from four to twelve inches. Petioles erect, very straight, round, hispid or muricated, thicker below, attenuated above. Peduncle the thickness of a finger below, attenuated above, spongy, muricated, one-flowered. Flower as large as the palm of the hand, or larger, purple. Calyx four-

² Pollich, Krock. Gunner, Villars, Lightf. Withering.

³ Gartner.

⁴ Pollich, Villars, Lightf. Relhan.

⁵ Hort. kew.

⁶ Gartner.

leaved: leaflets concave, spreading, deciduous. Corolla consists of fifteen petals or more, ovate, subacute, concave, many-nerved on the outside, spreading. Stamens sixty or more, shorter than the corolla: anthers linear, white, very long, placed on the receptacle. Germ turbinate, superior. Styles as many as there are seeds, thick and very short: the stigmas thicker. Pericarp turbinate, truncate, grooved, corticose, opening at top, cells one-seeded, as far as thirty. Seeds ovate, half an inch long, white, hardish, eatable, with a thin, smooth, black rind^c.

What is commonly named the pericarp, Gærtner calls the Common Receptacle, and describes it as inversely conical, suberous or fungous, flat above, having round, separate cells within, equal in number to the seeds. The proper receptacle is a very short umbilical chord reaching from the bottom of the cell to the base of the seed, and inserted into the umbilical cavity. Seeds nucamentaceous, from fifteen to thirty, oblong-spheroidal or nearly globular, with the short permanent style at top, and a very minute umbilical pore at the base, smooth, blackish, or of a reddish brown colour. The receptacle in some is sharply, in others parabolically conical, in others almost hemispherical, in others again very much flattened. It varies also in consistence; being either fungose, so that it may be easily compressed by the fingers, or suberose, or else crustaceous and hard. Finally, it differs in the number of cells from twelve to thirty.

The Nelumbo is the connecting link between the monocotyledonous and dicotyledonous plants; for by the structure of the seed it appears to belong to the latter, but in reality it ranks with the former, for it constantly puts forth one leaf only in germination, and does not produce a second, till the first is entirely unfolded above water: this Gærtner says he has found to be the case in more than fifty nuts that were sent him by Lerche.

β. Differs in having hard seeds; in other circumstances it agrees with the other so much as scarcely to be distinguished.

Nelumbo or peltated Water Lily is a native both of the East and West Indies, China, Cochinchina and Japan, Persia and some parts of the Russian Empire. Browne says it is pretty common in the lagoons beyond the ferry in Jamaica, but not in the deeper waters. Thunberg informs us, that it is considered as a sacred plant in Japan, and pleasing to their deities, and that the images of their idols were often seen sitting on its large leaves. The long stalks are eaten among other pot-herbs. It differs from the Egyptian Lotus in having entire thin leaves, with the petiole and peduncle rugged.

Loureiro relates that it abounds in muddy marshes, and is cultivated in large handsome pots in the gardens and houses of the mandarines; that there is a variety with the flower of a pure white, and another with a very beautiful luxuriant flower, having about one hundred large petals, white or rose-coloured. Both root and seeds are esculent, sapid and wholesome. They are accounted cooling and strengthening, and to be of service in extreme thirst, diarrhæa, tenesmus, vomiting, and too great internal heat.

In China it is called *Lien-wha*, and the seeds and slices of the hairy root, with the kernels of apricots and walnuts, and alternate layers of ice were frequently presented to the British ambassador and his suite at breakfasts, given by some of the principal mandarines.

The Chinese have always held this plant in such high value, that at length they regarded it as sacred. That character however has not limited it to merely ornamental purposes; for the roots are not only served up in summer with ice, but they are also laid up in salt and vinegar for the winter. The seeds are somewhat of the size and form of an acorn, and of a taste more delicate than that of almonds. The ponds are generally covered with it, and exhibit a very beautiful appearance, when it is in flower: and the flowers are no less fragrant than handsome.

Sir George Staunton remarks that the leaf, besides its common uses, has from its structure, growing en-

^c Thunb. Loureirq.

tirely round the stalk, the advantage of defending the flower and fruit, growing from its centre, from any contact with the water, which might injure them. He also remarks that the stem never fails to ascend in the water from whatever depth, unless in case of a sudden inundation, until it attains the surface, where its leaf expands, rests and swims upon it, and sometimes rises above it. But this property it has in common with the other species of *Nymphæa*. This plant bears the rigorous cold of the Pekin winter, though it is reared with difficulty in European stoves. It often grows spontaneously in China, and is propagated in the open air with ease, both by the seed and root. The Chinese distinguish many varieties of it.

From the root of the Nelumbo, Sir George Staunton says, the Egyptians are supposed to have prepared their Colocasia, but the plant is now no longer found in that country: from which circumstance some naturalists infer, that it never was indigenous there; but cultivated by the inhabitants with extreme care. The ancient Romans made repeated efforts to raise it among them, from seeds brought out of Egypt; and the modern attempts to cultivate it in Europe, though with the assistance of artificial heat, seldom have succeeded^f.

Dr. Patrick Browne is of opinion that the ancients confounded two plants under the name of Lotus or Egyptian Bean, and that under these titles they described the upper parts of the *Nymphæa Nelumbo*, and the roots of the lesser Colocasia, now commonly called Cocos in Jamaica. *Arum Colocasia*^g.

The tree Lotus must not be confounded with the *Nymphæa*. Mr. Mungo Park, in his late extensive peregrinations in Africa, discovered it to abound in all the countries he traversed, but flourishing most in a sandy soil. It is rather a thorny shrub than a tree. The fruit is a small farinaceous berry, which being pounded and dried in the sun, is made into excellent cakes, resembling in colour and flavour the sweetest gingerbread. A liquor also is prepared from it, deliciously sweet; the same perhaps which is fabled to have produced such extraordinary effects on the companions of Ulysses^h.

"The trees around them all their food produce,
"Lotos the name, divine, nectareous juice!
"Thence call'd Lotophagi, which whoso tastes,
"Insatiate riots in the sweet repasts,
"Nor other home, nor other care intends,
"But quits his house, his country, and his friends!"

Theophrastus describes the Lotus tree as something less than the pear-tree, with leaves cut about the edges, and resembling those of the Ilex or ever-green oak. He adds, that there are several sorts or varieties, differing in their fruit, which is the size of a bean, and grows thick upon the branches like myrtle berries. The poets represent the Lotus as an aquatic tree. Ovid calls it *aquatica Lotus*. Martial says:

"Nec plus Lotos aquas, littora myrtus amat."

And Virgil joins it with the Willow. Mr. Park says it affects a sandy soil, but he does not inform us whether it is found near water. See LOTUS.

Nymphæa Nelumbo was introduced here in 1787, by Sir Joseph Banks^k.]

PROPAGATION AND CULTURE.

2. 3. The best method to propagate these plants is, to procure some of their seed vessels just as they are ripe and ready to open, and to throw them into canals or large ditches of standing water, where the seeds will sink to the bottom, and the following spring the plants will appear floating upon the surface of the water. When they are once fixed to the place, they will multiply exceedingly, so as to cover the whole surface of the water in a few years.

They may also be cultivated in large troughs or cisterns of water, having earth at the bottom, and will flourish very well in them, annually producing great quantities of flowers.

^f Embassy, vol. 2. pp. 70, 123, 391.

^h Afric. Assoc.

^g Jam. 243, 332.

ⁱ Hom. Odyss. 9. transl. Pope.

^k Hort. kew.

[The tender forts (n. 5, 6.) may be kept in such cisterns, set in a corner of the stove. In hot countries they are increased both by roots and seeds, as our common forts may here.

NYMPHÆA. See *Menyanthes* and *Hydrocharis*.

NYMPHOIDES. See *Menyanthes*.]

NYSSA. (*A water nymph. So called from its growing in the water.*)

Gronov. *Lin. gen. n.* 1163. *Reich. n.* 1275. *Schreb.*

n. 1599. *Juss.* 75.

Class. 23. 2. Polygamia Dioecia.

Nat. order of *Holéraceæ*. *Elæagni*, Juss.

GENERIC CHARACTER.

* *Male*.

CAL. *Perianth* five-parted, spreading, with a plane bottom.

COR. none.

STAM. *Filaments* ten, awl-shaped, shorter than the calyx. *Anthers* twin, the length of the filaments.

* *Hermaphrodite*.

CAL. *Perianth* as in the male, sitting on the germ.

COR. none.

STAM. *Filaments* five, awl-shaped, erect. *Anthers* simple.

PIST. *Germ* ovate, inferior. *Style* awl-shaped, curved inwards, longer than the stamens. *Stigma* acute.

PER. *Drupe*.

SEED. *Nut* oval, acute, scored with longitudinal grooves, angular, irregular.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. none.

MALE. *Stamens* ten.

HERM. *Stam.* five. *Pist.* one. *Drupe* inferior.

SPECIES.

1. *Nyssa integrifolia*. *Mountain Tupelo*.

Ait. hort. kew. 3. 446.

N. aquatica. *Lin. spec.* 1511. *syst.* 919. *Reich.* 4. 358. *hort. cliff.* 462. *Du Roi herb.* 1. 444.

N. sylvatica. *Marsh. arbust.* 96. *Catesb. car.* 1. 2. 41. *Pluk. phyt. t.* 172. f. 6. (*Cynoxylon*).

N. pedunculis multifloris. *Gron. virg.* 121.—item *ped. unifloris*, quæ foemina.

Leaves quite entire, nuts roundish striated.

[2. *Nyssa denticulata*. *Water Tupelo*.

Ait. hort. kew. 3. 446. *Catesb. car.* 1. t. 60.

N. aquatica. *Marsh. arbust.* 96.

Leaves remotely toothed, nuts oblong grooved somewhat wrinkled.

DESCRIPTIONS, &c.

1. The upland Tupelo-Tree or Sour Gum grows naturally in Pennsylvania and perhaps elsewhere, rising with a strong upright trunk to the height of thirty or forty feet, and sometimes near two feet in diameter; sending off many horizontal, and often depending branches. Leaves obovate, a little pointed, entire, of a dark green and shining upper surface, but lighter and a little hairy underneath: those of male trees are often narrower and sometimes lance-shaped. The flowers are produced upon pretty long common footstalks, arising from the base of the young shoots, and dividing irregularly into several parts, generally from six to ten; each supporting a small flower, having a calyx of six or seven unequal leaves, and from six to eight awl-shaped spreading stamens, supporting short four-lobed anthers. The female trees have fewer flowers produced upon much longer simple cylindrical footstalks, thickened at the extremity, and supporting generally three flowers, sitting close and having a small involucre. They are composed of five small oval leaves, and in the centre an awl-shaped incurved style, arising from the oblong germ, which is inferior, and becomes an oval oblong berry, of a dark purplish colour when ripe. The timber of this tree is close grained and curled so as not to be split or parted; and therefore much used for hubs of wheels of carriages, &c.¹

It was cultivated in 1750, by Archibald Duke of Argyle^m.

Mr. Miller has the *Nyssa aquatica*, probably this species, in the two quarto editions of his Dictionary, 1763, and 1771 but not in the two folio editions of 1759 and 1768. His description is very imperfect.]

¹ Marshall.

^m Hort. kew.

He says that it grows naturally in Virginia and several other parts of North America, and that it had been introduced of late years into the English gardens, but had made little progress.

[2. The Virginian Water Tupelo-Tree grows naturally in wet swamps, or near large rivers in Carolina and Florida; and rises with a strong upright trunk to the height of eighty or an hundred feet, dividing into many branches towards the top. The leaves are pretty large, of an oval-spear-shaped form, generally entire, but sometimes somewhat toothed, and covered underneath with a whitish down: they are joined to long slender footstalks, and affixed to the branches in somewhat of a verticillate order, presenting a beautiful varied foliage. The berries are near the size and shape of small olives, and are preserved as that fruit is by the French inhabitants upon the Mississippi, where it greatly abounds, and is called the Olive tree. The timber is white and soft when unseasoned, but light and compact when dry, which renders it very proper for making trays, bowls, &c.ⁿ

It was introduced here in 1735, by Peter Collinson, Esq.^o

Mr. Humphrey Marshall, in his American Grove, quoted above, adds a third sort, from Bartram's catalogue, which he calls *Nyssa Ogeche*, or *Ogeche Lime-tree*. He describes it as a tree of great singularity and beauty, growing naturally in water, in the southern states, and rising to the height of about thirty feet. The leaves are oblong, of a deep shining green on their upper sides, and lightly hoary underneath. The flowers are male and female upon different trees, and are produced upon divided, or many-flowered footstalks. The fruit is nearly oval, of a deep red colour, the size of a Damascene Plum, and of an agreeable acid taste, from which it is called the Lime-tree.

Mr. Bartram informs us that he saw large tall trees of this sort on the banks of the Alatomaha river, growing in the water, near the shore. He calls it *Nyssa coccinea*; and observes that there is no tree which exhibits a more desirable appearance than this, in the autumn, when the fruit is ripe, and the tree divested of its leaves; for then they look as red as scarlet, with their fruit, which is of that colour also. It is the shape of the Olive, but larger, and contains an agreeable acid juice. The leaves are oblong lanceolate and entire, somewhat hoary underneath; their upper surface of a full green and shining; the petioles short. The peduncles are many-flowered. The most northern settlement of this tree yet known, is on Great Ogeeche, where it is called *Ogeeche Lime*, from the acid fruit being about the size of Limes, and being sometimes used in their stead^p.]

PROPAGATION AND CULTURE.

These trees may be propagated by seeds, procured from places where they grow naturally, and put into the ground as soon as they arrive, for they always lie a year before they come up. Sow them in pots filled with light loamy earth, placing them where they may have only the morning sun; during the first summer the pots must be kept clean from weeds, and in dry weather duly watered. In autumn plunge the pots into the ground, and if the winter should prove severe, cover them with old tan, peas-haulm, or other light covering. The following spring plunge them into a moderate hot-bed, hooped over and covered with mats; observing constantly to keep the earth moist. This will bring up the plants by the beginning of May. They must be gradually hardened to bear the open air: during the following summer plunge the pots again into an east border, and duly water them in dry weather. In autumn remove them into a frame, where they may be screened from frost; but in mild weather exposed to the open air. The spring following, before the plants begin to shoot, part them carefully, and plant each in a small pot filled with loamy earth, and if they are plunged into a moderate hot-bed, it will forward their putting out new roots: then

ⁿ Marshall.

^o Hort. kew.

^p Travels, p. 17.

they may be plunged in an east border, and in winter sheltered again under a frame. The spring following, such plants as have made the greatest progress, may be planted in a loamy soil, in a sheltered situation, where they will endure the cold of this climate, but unless the ground is moist they make very little progress.

O.

OAK. See *Quercus*.

[OAK of Cappadocia or Jerusalem. See *Chenopodium*.

OAT and OAT-GRASS. See *Avena*.]

OBELISCOTHECA. See *Rudbeckia*.

[OBIONE. Gärtn. See *Atriplex fibrica*.

OBOLARIA. (From Obolus, a small coin. The bracteal leaves being round like a piece of money.)

Lin. gen. n. 778. Reich. n. 840. Schreb. n. 1044. Juss. 101.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Pediculares*, Juss.

GENERIC CHARACTER.

CAL. none, except two bractes.

COR. one-petalled, unequal: tube bell-shaped, ventricose, pervious: border four-cleft, spreading a little; segments shorter than the tube, bifid, a little unequally lacinated.

STAM. Filaments four, awl-shaped, from the slits of the corolla, the nearest a little longer. Anthers small.

PIST. Germ ovate, compressed. Style subcylindric, the length of the stamens. Stigma bifid, thickish, permanent.

PER. Capsule subovate, compressed, ventricose, one-celled, two-valved, with the partition contrary.

SEEDS numerous, small like meal.

ESSENTIAL CHARACTER.

Cal. two-leaved (or none except two bractes.) Cor. four-cleft, bell-shaped. Stam. from the slits of the corolla. Caps. one-celled, two-valved, many-seeded.

SPECIES.

1. *Obolaria virginica*.

Lin. spec. 881. Syst. 573. Reich. 3. 183. hort. cliff. 323. Gron. virg. 74. Mor. hist. 3. 504. f. 12. t. 16. f. 33. Pluk. phyt. t. 209. f. 6. Raii suppl. 595. (Orobanche).

DESCRIPTION, &c.

Stem simple. Leaves opposite, the upper ones purple on the outside. Flowers in terminating spikes, clustered at the top, pale red. It has the habit of *Orobanche*, and is allied to that genus.—Native of Virginia^a.

OBOLARIA. See *Linnaea*.

OCHNA (of Pliny. *Oxvas* of Athenæus. *Oxxyn* of Homer. From *αρχη*, strangular.)

Lin. gen. n. 657. Reich. n. 714. Schreb. n. 891.

Fl. zeyl. n. 209. Gärtn. t. 70. Juss. 282.

Lacath. Soland.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Coadunatae*. *Magnoliæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, inferior, coriaceous, permanent, five-parted: parts ovate, blunt, spreading: (rather five-leaved.)

COR. Petals five to twelve, caducous.

STAM. Filaments many, short. Anthers roundish.

PIST. Germ ovate, angular, five-cleft. Style angular, erect, permanent. Stigma simple.

PER. none.

SEEDS. Nuts five, ovate, erect, compressed a little on the outside, somewhat convex, slightly excavated within, blunt; with a thin shell. Receptacle very large, fleshy,

depressed, five-cornered: corners protuberant, rounded, keeled at top, to each of which is fastened a nut, with a triangular-rounded scar: ribs five, between the corners of the receptacle, running down from the vertex to the base, and raised.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. five-petalled. Berries one-seeded, fastened to a large roundish receptacle. (Cor. none: gen. seven to twelve-petalled. *O. squarrosa*. Nuts five. gen. Berr. two or three, placed on an enlarged, fleshy receptacle, one-celled. G.)

SPECIES.

1. *Ochna squarrosa*.

Lin. spec. 731. Syst. 492. Reich. 2. 582. fl. zeyl. n. 209. Roxb. corom. 62. t. 89.

Japotapita cinnamomi folio, floribus spicatis. Burm. zeyl. 123. t. 56.

β. Arbor africana, subrotundo folio margine denticulis aspero, flor. pentapetalis atropurpureis. Pluk. phyt. t. 263. f. 1, 2.

Racemes lateral.

2. *Ochna Jabotapita*.

Lin. spec. 732. Syst. 492. Reich. 2. 582. Gärtn. fruct. 1. 341.

Jabotapita. Marcgr. bras. 101. Raii hist. 1632.—pyramidato flore luteo, fructu rubro. Plum. amer. 42. ic. 153.

Racemes terminating.

3. *Ochna parvifolia*.

Vahl symb. 1. 33.

Enonymus inermis, fol. alternis ovatis ferrulatis. Forst. descr. 204.

Peduncles one-flowered.

DESCRIPTIONS, &c.

These are small trees, with alternate stipulaceous leaves, and the flowers in terminating spikes or panicles. Commerçon has mentioned two species, natives of Madagascar, under the name of *Sophisteques*, one many-stamened with long permanent filaments and short anthers, ten-fruited, with the heart of the seeds straight, the other ten-stamened with long erect sub-fertile caducous anthers and five-fruited; both one-styled and resembling this genus^b.

1. This is a small tree. Leaves alternate, oblong, acute, finely serrate, smooth, on short petioles, the youngest remarkably coloured with purple, four or five inches long and two broad. Panicles fascicle-like, from the naked branchlets, below the young leaves. Bractes small, falling. Flowers large, yellow, inodorous. Calyx five-leaved: leaflets oblong, as large as the petals, but not coloured, permanent. Petals from seven to twelve, generally nine or ten, oblong, falling. Filaments short, permanent. Anthers linear, erect, falling. Germs generally as many as there are petals, surrounding a half round receptacle. Style from the apex of the receptacle, rather longer than the stamens, permanent. Stigma perforated. Pericarp none. Receptacle half-round, coloured with a ridge for each seed or petal, that was in the corolla; on each sits an oblong ovate seed, as in *Quassia*, about the size of a large kidney-bean, smooth, when ripe black. All the seeds rarely come to perfection^c.

Linneus remarks, that the East Indian plant is certainly the same with Plukenet's, though the leaves of this are more ovate, and those of the former ovate-lanceolate, very finely and acutely serrate. He also remarks a singularity in this plant, whence it derives the trivial name; that the racemes persist below the leaves, whence the branchlets become very squarrose, after the flowers and peduncles are fallen. In his specimen the petals had fallen off, and in Schreber's edition of the genera it is described as having no corolla.

Native of the East Indies and Africa. In the Circar mountains, it flowers about the beginning of the hot season, at which time the leaves begin to come out, having cast them during the cold season^d.

In Ceylon it is called *Bokaerae*: and it is the *Terran* juvie of the Telingas.

^a Linn. Syst. & Juss.

^b Juss. gen.

^c Roxburgh.

^d Idem.

2. This is a middle-sized tree, with a gray irregular bark, and a soft pliant wood. Leaves alternately opposite, pale green. Flowers abundant on certain branchlets, yellow and very sweet.

Swartz, who joins it with his *nitida* (our *Gomphia nitida*), and places it in the class Decandria, observes that the petals are three times as large as the calyx, and that the fruit is a drupe immersed in the receptacle. In the generic character it is not considered as a pericarp but a receptacle. Gartner thus describes the fruit:—Berries one, two, or three, seldom more, rounded or ovate-globular, subcoriaceous, thin, smooth, black or red, one-celled. Common receptacle fleshy from the receptacle of the flower enlarged; sometimes simply globular, sometimes having two or three risings, according to the number of the berries: proper receptacle none. Seeds solitary, subglobular, the size of the cavity in the berry, pale, fastened to the base of the common receptacle.

Piso says, that on each pedicel of the raceme there is a berry, the size of a cherry-stone, triangular-conical, and that three or four oval, sessile berries are joined to these, of the same size, all black, like those of our *Vaccinium Myrtillus* or Whorts, of an astringent taste; and that they are not only eaten crude, but that an oil is expressed from them, which is used in salads.

Native of South America.

3. This is a shrub resembling *O. squarrosa* except in the size of the leaves and inflorescence. Branches round, smooth, with an ash-coloured dotted bark. Leaves only on the branchlets, petioled, oblong, ferrulate, quite entire at the base, veined, shining, half an inch in length. Peduncles at the sides of the branchlets, solitary, gradually thickening upwards, purple, longer than the leaf.

OCHNA. See *Gomphia*.

OCHROMA. (From *ωχρομα*, paleness.)

Swartz prodr. 97. Lin. gen. Schreb. n. 1111.

Bombax pyramidale. Cavan. diff. 5. 294. t. 153.

Class. 16. 2. Monadelphia Pentandria.

Nat. order of *Columniferae*. *Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* double. Outer three-leaved: leaflets lanceolate, caducous. Inner one-leaved, funnel-form, five-cleft.

COR. *Petals* five, wedge-form, coriaceous.

STAM. *Filament* one, cylindric. *Anthems* five, large, linear, connate, creeping up and down.

PIST. *Germ* superior, oblong. *Style* filiform, covered with the cylinder of stamens. *Stigmas* five, awl-shaped, wide, contorted.

PER. *Capsule* coriaceous, subcylindric, five-grooved, commonly ten-cornered, five-celled, five-valved: valves woolly within, rolled back at the edge; *partitions* kidney-form.

SEEDS very many, oblong.

ESSENTIAL CHARACTER.

Cal. double: outer three-leaved. *Anthems* connate, anfractuose. *Caps.* five-celled, many-seeded.

SPECIES.

1. *Ochroma Lagopus*.

Swartz prodr. 98.

Bombax pyramidale. Cavan. diff. 5. 294. t. 153.

Hibiscus. Brown. jam. 286. 10.

Gossypium f. *Xylon arboreum*. Pluk. phyt. t. 189.

f. 2.—fructu oblongo & fulcato—*G. amplissima* arbor fr. obl. cylindraco et fulcato. Plum. Mss.

v. 4. t. 8. Cavan.

Huampo Americanorum.

DESCRIPTION, &c.

This is a very large tree, with divaricating branches. Wood white, tender, and so light that it is used instead of corks to nets. Bark thick, fibrous, ash-coloured, varied with white spots, and netted with rufescent wrinkles. Leaves more than a foot, sometimes above a foot and half in diameter, angular, on long petioles, above smooth and dark green, underneath pale with rufescent hairs. Stipules ovate-lanceolate, ferruginous, deciduous. Flowers on the upper branchlets, on thick

° Piso.

° Vahl.

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straight peduncles. Calyx greenish red, with the segments or rather notches rounded, partly white, partly greenish red. Petals white, fleshy, reflex and convoluted. Capsule eight or ten inches long. Seeds very small, smooth, subovate, involved in a very soft fine rufous down.

Native of America, frequent in the Antilles. Browne says it abounds on the Banks of Spanish Town River, in Jamaica. Desportes, in his *Plantes usuelles de S. Domingue*, vol. 3. p. 16, 17. says that the beauty of the English Beavers is chiefly to be ascribed to the down in the fruit of this tree.

OCHROXYLUM (*ωχροον ξυλον*: pale wood.)

Lin. gen. Schreb. n. 508. (Curtisia.) p. 826.

(*Ochroxylum*.)

Class. 5. 3. Pentandria Trigynia.

GENERIC CHARACTER.

CAL. *Perianth* five-cleft, very small, permanent: segments ovate, acute, spreading a little.

COR. *Petals* five, ovate, reflex, bluntish, excavated below the tip, thickish with a thinner margin.

Nectary an annular gland, subtrilobate, fleshy.

STAM. *Filaments* five, awl-shaped, flattish below, erect, a little longer than the corolla. *Anthems* roundish, incumbent.

PIST. *Germ*s three, placed on the nectary, outwardly gibbous. *Styles* short. *Stigmas* simple.

PER. *Capsules*? three, approximating, subglobular, inwardly compressed, placed on the lobes of the nectary, now become larger and three-lobed, one-celled, opening on the inside?

SEEDS two, convex on one side, compressed and angular on the other.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five. Nect. an annular three-lobed gland. Caps. ? three, approximating, one-celled, two-seeded.]

OCHRUS. See *Pisum*.

OCIMUM (of Pliny: *ωκισμον* of Hippocrates, Theophrastus and Dioscorides: *ωκισμος*, cito (germinans). So named from its being supposed to germinate hastily.—Others derive it *απο του οζειν*, from its strong smell. Some distinguish *Ocimum* from *Ocimum*; making the former a plant sown for fodder, the latter an herb remarkable for its sweet smell.)

Lin. gen. n. 732. Reich. n. 790. Schreb. n. 986.

Tournef. t. 96. Juss. 116.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatae*. *Labiatae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, two-lipped, very short, permanent: upper lip flat, orbiculate, wider, ascending: lower lip four-cleft, acute, converging.

COR. one-petalled, ringent, resupine: tube very short, spreading; one lip turned upwards, wider, half-four-cleft, blunt, equal: the other lip turned downwards, narrower, entire, ferrate, longer.

STAM. *Filaments* four, declined; two a little longer, and two putting forth a reflex process at the base. *Anthems* half-mooned.

PIST. *Germ* four-parted. *Style* filiform, situation and length of the stamens. *Stigma* bifid.

PER. none. Calyx closed, cherishing the seeds.

SEEDS four, ovate.

OBS. The flexure of the stamens shows that it is the upper lip of the petal, which is turned downwards, and the lower which is turned upwards. The Essential Character consists in the reflex process of the two filaments.

ESSENTIAL CHARACTER.

Cal. with the upper lip, orbiculate, the lower four-cleft. Cor. resupine, with one lip four-cleft, the other undivided. Filam. the two outer putting forth a reflex process at the base.

SPECIES.

[1. *Ocimum thyrsiflorum*. *Thyrse-flowered Basil*.

Lin. syst. 545. Reich. 3. 92. mant. 84. Marr. in comm. gott. 1777. p. 47. t. 5. Jacqu. hort. 3. t. 72.

Flowers panicle-fascicled, stem very much branched.

° Cavanilles.

2. *Ocimum*

2. *Ocimum monachorum*. *Monk's Basil*.
Lin. syst. 545. *Reich.* 3. 92. *mant.* 85.
O. caryophyllatum monachorum. *Baub. hist.* 3. 260.
Stamens toothless, the alternate ones bearded at the base.
3. *Ocimum gratissimum*. *Shrubby Basil*.
Lin. spec. 832. *syst.* 545. *Reich.* 3. 93. *mant.* 414.
Lour. cochinch. 369.
O. zeylanicum perenne odoratissimum latifolium. *Burm.*
zeyl. 174. *t.* 80. *f.* 1.
Stem suffruticose, leaves lanceolate-ovate, racemes round.
4. *Ocimum album*. *White Basil*.
Lin. syst. 545. *Reich.* 3. 93. *mant.* 85.
Leaves ovate, blunt, whorls of the racemes approximating, the mature ones four-cornered, corollas crenate.
5. *Ocimum verticillatum*. *Whorled Basil*.
Lin. syst. 545. *suppl.* 276.
Leaves ovate, blunt, raceme elongated naked, flowers whorled in fours peduncled.]
6. *Ocimum Basilicum*. *Common Sweet Basil*.
Lin. spec. 833. *Reich.* 3. 93. *hort. cliff.* 315. *upf.*
168. *mat. med.* 154. *Lour. cochinch.* 370. *Kniph.*
cent. 4. *n.* 56. *Regn. bot.*
O. caryophyllatum majus. *Baub. pin.* 226. *Mor.*
hist. 3. 406. *f.* 11. *t.* 20. *f.* 1.
Ocimum. *Camer. epit.* 308. *Sabb. hort.* 3. *t.* 84.
Blackw. t. 104.
O. magnum. *Baub. hist.* *Ger.* 547. *1. emac.* 673. *1.*
Raii hist. 541.
O. car. maximum. *Park. theat.* 19. 3.
β. O. medium. *Mill. dict. n.* 3.
O. vulgatus. *Baub. pin.* 226. *Raii hist.* 541.
Mor. 11. 20. 9.
O. medium vulg. & nigrum. *Baub. hist.* 3. 247.
O. vulgare majus. *Park. theat.* 18. 1.
O. medium citratum. *Ger.* 547. *2. emac.* 673. *2.*
γ. O. latifolium maculatum vel crispum. *Baub. pin.*
225.
δ. O. viride foliis bullatis. *Baub. pin.* 225.
Leaves ovate smooth, calyxes ciliate.
7. *Ocimum minimum*. *Bush Basil*.
Lin. spec. 833. *Reich.* 3. 93. *hort. cliff.* 315. *upf.*
169. *Lour. cochinch.* 370. *Baub. hist.* *Baub.*
pin. 226. *Raii hist.* 541. *Mor.* 11. 20. 17.
Sabb. hort. 3. *t.* 85.
O. vulgare minus. *Park. theat.* 18. 1.
O. minus caryophyllatum. *Ger.* 547. *emac.* 673. 3.
Leaves ovate quite entire.
- [8. *Ocimum capitellatum*.
Lin. syst. 545. *suppl.* 276.
Kofaria. *Foršk. arab.* 164. *n.* 34. *t.* 20.
Leaves ovate, flowers aggregate, petioles lateral.
9. *Ocimum sanctum*. *Purple-stalked Basil or Sacred Herb*.
Lin. syst. 545. *Reich.* 3. 94. *mant.* 85.
Leaves somewhat oblong blunt serrate waved, stem rough-haired, bractes cordate.]
10. *Ocimum americanum*. *American Basil*.
Lin. spec. 833. *syst.* 545. *Reich.* 3. 94. *amoen.* 4.
276. *Jacqu. hort.* 3. 45. *t.* 86.
Leaves sub lanceolate acuminate subserrate, racemes round, stem subberbaceous.
11. *Ocimum campechianum*. *Campeachy Basil*.
Mill. dict. n. 5.
O. camp. odoratissimum. *Houst. M.S.S.*
Leaves lanceolate hoary underneath, petioles very long villose, flowers peduncled.
- [12. *Ocimum tenuiflorum*. *Slender-spiked Basil*.
Lin. spec. 833. *Reich.* 3. 94. *Pluk. phyt. t.* 208.
f. 4. *Burm. zeyl.* 158. *t.* 70. *f.* 2. (*Mentha*).
Basilicum agreste. *Rumph. amb.* 5. *t.* 92. *f.* 2.
Leaves ovate-oblong serrate, bractes cordate reflex concave, spikes filiform.
13. *Ocimum polytachyon*. *Many-spiked Basil*.
Lin. syst. 545. *Reich.* 3. 95. *mant.* 567. *Murr.*
in comm. gott. 1772. *p.* 71. *t.* 3.
Corollas four-cleft, racemes leafless nodding at top.
14. *Ocimum serpyllifolium*. *Wild Thyme-leaved Basil*.
Vahl symb. 1. 43. *Foršk. descr.* 110.
O. africanum. *Lour. cochinch.* 370. *ed. Willd.* 449?
Leaves linear-lanceolate quite entire, genitals very long.
15. *Ocimum grandiflorum*. *Great-flowered Basil*.
L'Herit. stirp. nov. 89. *t.* 43.
O. filamentosum. *Foršk. descr.* 108.

- O. abyssinicum*. *Piët. reg. app. tom.* 3. *p.* 70.
Stem shrubby, leaves ovate serrate, genitals very long.
16. *Ocimum menthoides*. *Mint-leaved Basil*.
Lin. spec. 834. *Reich.* 3. 95. *fl. zeyl. n.* 229.
Mentha zeylanica, angustissimo folio dentato. Raii
suppl. 284.
Leaves linear-lanceolate-serrate.
17. *Ocimum molle*. *Heart-leaved Basil*.
Ait. hort. kew. 2. 322.
Leaves ovate cordate acute serrate wrinkled, sinuses closed, bractes roundish-wedge-form.
18. *Ocimum scutellarioides*.
Lin. spec. 834. *syst.* 546. *Reich.* 3. 95. *mant.* 84.
Forst. flor. austral. n. 233.
Majorana rubra. Rumph. amb. 5. 291. *t.* 101.
Corollas sickle-shaped, pedicels branched.
19. *Ocimum prostratum*. *Prostrate Basil*.
Lin. syst. 546. *Reich.* 3. 96. *mant.* 566.
Stems prostrate, leaves elliptic marked with lines.
20. *Ocimum acutum*. *Sharp-leaved Basil*.
Lin. syst. 546. *Thunb. jap.* 248.
Racemes filiform, leaves ovate acuminate serrate, bractes rough-haired.
21. *Ocimum crispum*. *Curl-leaved Basil*.
Lin. syst. 546. *Thunb. jap.* 248. *Kämpf. amoen.*
5. 784.
Racemes terminating, leaves ovate serrate curled, calyxes hispid.
22. *Ocimum rugosum*. *Wrinkled Basil*.
Lin. syst. 546. *Thunb. jap.* 249.
Racemes terminating, leaves ovate acute serrate wrinkled underneath.
23. *Ocimum scabrum*. *Rugged Basil*.
Thunb. in Linn. transf. 2. 338.
O. punctatum. Thunb. jap. 249.
Racemes simple erect, leaves ovate dotted underneath.
24. *Ocimum inflexum*.
Lin. syst. 546. *Thunb. jap.* 249.
Panicle terminating racemed, stem and branches flexuose.
25. *Ocimum virgatum*.
Lin. syst. 546. *Thunb. jap.* 250.
Racemes whorled rod-like, leaves oblong serrate.

DESCRIPTIONS, &c.

These are either herbs or undershrubs, having a strong sweet smell. Their flowers are in whorls forming a loose spike, terminating and axillary. They have square stalks and opposite leaves, in common with the other verticillate plants: and are distinguished by having the corolla turned upside-down, and a process at the base of the two shorter filaments^a.

1. Stem erect, woody, a foot and half high, the whole subdivided into branches, brachiate or panicked with round branchlets, channelled on both sides. Leaves petioled, elliptic-lanceolate, green on both sides, naked, slightly serrate, quite entire at the base, scarcely rugged at the keel, acuminate. Panicles of the branches terminating, brachiate, close or clustered, scarcely longer than the leaves, from whorled purple branches. Bractes lanceolate, purple, with the upper lip ovate. Corollas purple, pale on the outside, with the lower lip white. Stamens white. Pistils purple. It differs from the rest in being more branched like a shrub, in the leaves being green and more lasting, with the smell of Rue, and the flowers fascicled in a thyrse.

Native of the East Indiesⁱ.

2. Stem erect, a foot high, roundish, somewhat hairy, with the branches commonly superaxillary. Leaves petioled, ovate, bluntish, naked, serrate, scarcely ciliate. Racemes with six-flowered whorls. Upper lip of the calyx heart-shaped, with three streaks: Bractes heart-shaped, caducous. Corollas smaller, white with the lower lip purple. Filaments purple, the length of the corolla, without teeth at their base, but instead of them the alternate ones are villose at the base. This is an annual plant, but its native place is unknown^k.

3. Stem suffruticose, hard and perennial at the base, stiff and straight. Leaves with the rib hoary-tomentose above. Spikes before flowering four-cornered,

^a Juss. gen.ⁱ Linn. mant.^k Idem.

with

with subulate-prominent bractes. Bractes cordate, acute. Flowers small. Corollas white with yellow anthers¹.

According to Loureiro it is cultivated in Cochinchina for the kitchen; the stem is five feet high, four-grooved, smooth, white and branched. Leaves subferrate, dotted underneath, lanuginose above, pale, smelling very strong, petioled. Corolla white with coloured calyxes, in spiked racemes lateral and terminating.

Native of the East Indies. Cultivated in 1752, by Mr. Miller^m.

4. Stem a foot high, greenish white, woody at the base. Racemes few. Leaves broader and thicker than in the other sorts, concave, bluntly ferrate. Bractes lanceolate, cordate or ovate, acute, before the flowers come out longer than the flower, and forming a quadrangular spike. Corollas large, white, crenate, with the upper lip four-cleft, but the lateral segments more divaricating. Filaments white.

It is an annual plant, native of the East Indies, and the island of Javaⁿ.

5. Stem a foot high, the whole even, shorter than the raceme, ascending. Oppositions of the leaves five or six, even, with two serratures on each side, on petioles of the same length with themselves. Raceme erect, longer than the herb, filiform. Flowers in whorls like the *Hottonia*: pedicels capillary, almost the length of the flowers. Bractes to each pedicel two, ovate, minute, even. Calyx bell-shaped, acute, five-toothed, almost equal, without any wider incumbent tooth. Corollas resupine, curved, with the lip wider and reflex. Two of the stamens the length of the corolla, and two shorter^o.

Native of the Cape of Good Hope^p.

6. Stem suffruticose, three feet high, erect, round, tomentose; with straight, ascending branches. Leaves somewhat acute, ferrate, pubescent, brownish-red, waved, petioled, smelling like cloves. Flowers white, small, in long, upright, terminating spiked racemes. Calyxes hairy, bracted, peduncled¹.]

The Great Basil rises with a branching stalk a foot and half high. Leaves large. Stalk hairy and four-cornered, terminated by a whorled spike of flowers, five or six inches long. Branches terminated by short spikes of the same sort. The whole plant has a strong scent of Cloves. Of this there are the following varieties:

1. Purple fringe-leaved.
2. Green fringe-leaved.
3. Green with studded leaves.
4. Large-leaved Basil.

β. The Common Basil, used in medicine, and also in the kitchen, especially in French cookery, rises about ten inches high, sending out opposite, four-cornered branches from the very bottom. Leaves ovate-lanceolate, ending in acute points, indented on their edges. The whole plant is hairy, and has a strong scent of Cloves, too powerful for most persons, but to some very agreeable.

The varieties are:

1. Common Basil, with very dark green leaves and violet-coloured flowers.
2. Curled-leaved Basil, with short spikes of flowers.
3. Narrow-leaved Basil, smelling like Fennel.
4. Middle Basil with a scent of Citron.
5. Basil with studded leaves.
6. Basil with leaves of three colours.

There are many other varieties, differing in the size, shape, odour, and colour of the leaves, [in Europe, but especially in the East; where Basil is not only used in cookery, but the herb is accounted good in the head-ach, and wandering rheumatic pains; and the seeds are reckoned very efficacious against the poison of serpents, both taken inwardly, and laid upon the wound¹.

It was cultivated by Gerarde, in 1596¹.]

7. The Least or Bush Basil is a low bushy plant, seldom more than six inches high, branching from the

bottom, and forming an orbicular head. Leaves small, smooth, on short foot-stalks. Flowers in whorls towards the top of the branches, smaller than those of the preceding, and seldom succeeded by ripe seeds, in England. Varieties are:

1. Smallest Basil with black purple leaves.
2. With variable leaves.

[Native of the East Indies. Cultivated by Gerarde in 1596. They are both annual plants, and flower in July and August¹.

8. Stem oleraceous, bluntly-quadrangular, two-grooved, sparingly branched, a foot high. Leaves bluntly ferrate, ribbed, wrinkled, like those of *Lamium*, smooth but not shining. Petioles gradually finishing in the leaf. Peduncles axillary, solitary, forming a head of aggregate flowers the size of a hazel nut. Common calyx from five to ten-leaved, the length of the flower. Proper perianths tubular, five-cleft, seldom four-cleft, equal. Corollas white, very small, scarcely to be seen by the naked eye: tube slender, the length of the calyx: border four-cleft, the upper segment scarcely concave, bifid, when the whole is five-cleft; reflex.—Native of Chinaⁿ.

9. Stem a foot and half high, erect, brachiate, roundish, slightly channelled on each side, dark purple, muricated with tubercles having a white hair on them. Leaves ovate or somewhat oblong, bluntish, ferrate, naked, hairy about the edge and on the nerves beneath, having purple veins on the under surface; the upper ones darker. Petioles rough-haired, dark purple. Racemes terminating, solitary, erect, dark purple. Bractes petioled, cordate, concave, reflex, deciduous, the length of the calyx; which is rough-haired above the gibbous base. Corolla bright purple, scarcely larger than the calyx. Filaments white. Anthers yellowish. It has scarcely any smell.

Native of the East Indies. This as well as the preceding is annual¹.—Introduced in 1758, by Hugh Duke of Northumberland. It flowers in September¹.

10. From a branched root, springs an upright stalk, bluntly four-cornered, smooth, somewhat woody at bottom perennial and brownish, pale above with a tinge of green. Branches opposite, erect at an acute angle, somewhat villose towards the end. Leaves petioled, smooth, appearing dotted on both sides when examined by a glass. Peduncles terminating, erect, long, somewhat villose, with several six-flowered whorls. Under these lanceolate, opposite, ciliate bractes. The upper lip of the calyx quite entire. Corolla flesh-coloured. The whole plant has a very grateful smell. Native of Martinico².]

11. This rises with an upright stalk near two feet high, sending out two or four branches towards the top. Leaves about three inches long, and one inch broad in the middle, lessening at both ends to a point, on foot-stalks two inches in length. Flowers in whorled terminating spikes; each peduncle sustaining three flowers, which are white, and about the same size with those of common Basil. The whole plant has a strong aromatic odour. It grows naturally at Campeachy.

[12. Stem from one to two feet high, roundish, purple, brachiate, having spreading hairs scattered over it: branches shorter. Leaves bluntly ferrate, soft, on long petioles. Spikes terminating, in threes, long, narrow, peduncled; with opposite, smooth bractes, closely reflex. Flowers three from each bracte, subsessile. Calyxes smooth, five-cleft, with the upper lip flat, larger, kidney-form, acute. Corolla small, purple; upper lip four-cleft, lower simple. Two of the stamens appendicled at the base. Style longer than the flower, bifid. The flowers are so small as scarce to be visible to the naked eye: they begin to open from the top of the spike.

Native of Malabar, and other parts of the East Indies¹.

13. Stem erect, two feet high, brachiate, four-cornered; the corners sharp, rugged. Branches oppo-

¹ Linn. syst. ^m Hort. kew from Mill. dict. ed. 6. n. 17.

ⁿ Linn. mant. ^o Lin. suppl. ^p Retz. 5. 5.

¹ Loureiro. ^r Idem. ^s Hort. kew.

¹ Hort. kew.

² Linn. suppl.

³ Linn. mant.

⁴ Hort. kew.

⁵ Jacquin.

⁶ Linn. spec.

site, very abundant, erect. Leaves ovate, blunt, grossly serrated, acute, marked with lines. Petioles the length of the leaves, four-cornered, somewhat rugged underneath. Racemes axillary, directed one way, long, erect except at the top, where they nod, especially during the night: flowers in whorls, five together. Calyx five-cleft, the upper segment cordate, the rest subobovate. Corollas scarcely twice as long as the calyxes, white, four-cleft, like those of Mint, with a purple border, and the upper segment scarcely emarginate. Stamens declined, not longer than the corolla.—It cannot be a *Nepeta*, on account of the lower lip not being crenate; nor a *Mentha*, because the stamens are declined; for this reason it is an *Ocimum*, though there are no teeth to the filaments^b.

Native of the East Indies, and perennial, as marked by Linneus: according to the Kew catalogue it is annual, and flowers in July and August. It was introduced by John Earl of Bute in 1783.

14. This is a very branching shrub; the branches divaricating, villose and hoary. Leaves lanceolate, a little narrower at the base, scarcely petioled, very finely villose, hoary, small, like those of wild Thyme. There are rudiments of leafy branchlets from all the axils, and hence the leaves appear to be fascicled. Raceme terminating, erect, an inch and half long, composed of six-flowered whorls. Pedicels short, placed on a callus. Bractes minute, ovate, acute, deciduous. Flowers bent down. Calyx half the length of the corolla, very finely villose; with the two lower teeth bristle-shaped, the upper ones ovate. Filaments villose at the base, three times as long as the corolla. It is different from *O. filamentosum* of Forskahl: which see under the next species^c.

15. This is a fragrant undershrub, three feet in height. Stems diffused or almost erect, round, knotty, cloven, ash-coloured. Branches opposite, spreading, somewhat four-cornered, with the outer bark lacerated. Shoots four-cornered, annulated, pubescent, green. Leaves decussately opposite, sharp at both ends, entire at the base, papillose, almost naked, somewhat viscid and rugged, concave or convex, spreading, having almost simple nerves; they are fragrant and permanent, from twenty-four to thirty lines in length, and from twelve to fifteen in breadth. Petioles spreading a little, somewhat compressed, rounded on one side, flat on the other, six times shorter than the leaf. Spikes terminating, erect, whorled, bracted, two inches long. Whorls six-flowered, the lower ones remote, the upper approximating. Bractes under the whorls opposite, ovate-lanceolate, acuminate, crenate, concave, erect, reflex at the tip, falling before the flower expands. Scars from the fallen bractes orbiculate, concave, margined, wide. Flowers opposite in threes, on short peduncles, spreading a little, white tinged with very pale purple, fifteen lines long comprehending the stamens, which are twice as long as the corolla. Calyx somewhat bell-shaped, erect, striated, villose, brownish: upper lip straight, orbiculate, scarcely crenulate, stretching over the under lip at the sides: under lip roundish, scarcely shorter, compressed laterally, concave, two-horned: the calyx is two lines in length. Corolla subvillose: tube twice as long as the calyx, prominent a little at top: upper lip larger, reflex, four-cleft; segments blunt, somewhat toothed, revolute, the two upper ones smaller: lower lip simple, shorter, straight, oblong, concave, reflex at the sides. Filaments scarcely declining under the lower lip, at first ascending at the tip, afterwards revolute, purple; the two longer ones simple, straight, fastened to the tube of the corolla towards the top; the two shorter inserted into the base of the corolla, converging towards the upper side of the tube, jointed where the tube is prominent, bent down at an angle, incrassated and pubescent. Anthers ovate, compressed, two-celled, opening at the sides, peltate, purple. Germ superior, placed on a fleshy body. Stigma bifid, acute, equal, reclining. Calyx hanging down, closed by the converging of the sides of the lower lip, and thus performing the office of a pericarp. It is sufficiently dis-

^b Linn. mant.

^c Vahl.

tinguished by the largeness of the flowers, and the length of the stamens^d.

It was found by Forskahl in Egypt, and was brought from Abyssinia by Bruce, with the *Brucea*, *Plectranthus punctatus*, and other scarce plants, before the year 1775. It flowers at the end of summer, but seldom perfects seeds.

16. Stem a foot high, upright, brachiate, four-cornered. Leaves subsessile, sharply and deeply serrate towards the end, less so or very little towards the base. Spikes loose, whorled, long, terminating the branches. Flowers each on their proper pedicels. Calyxes five-toothed, with the two lower teeth narrower: the two middle lobes of the upper lip of the corolla larger and sharper. Filaments longer than the corolla, bent down^e.

Native of the island of Ceylon—and other parts of the East Indies. Introduced in 1783, by John Earl of Bute. It flowers in July^f.

17. This plant is annual, pubescent and sweet-smelling. Stem thick, bluntly quadrangular. Leaves wrinkled, soft, deeply cordate; the lobes approximating, bent in; the serratures blunt and unequal: the petioles scarcely shorter than the leaves. Corollas whitish-violet: tube the length of the calyx: upper lip orbiculate, arched; lower four-lobed, or rather three-lobed, with the middle lobe bifid. Filaments simple.

Native of the East Indies, where it was found by John Gerard Koenig, M. D. Introduced in 1781, by Sir Joseph Banks. It flowers in September and October^g.

18. Stem pubescent. Leaves ovate, petioled, bluntly serrate; the petioles, when tender, very tomentose. Raceme upright, long. Bractes cordate, sessile, acuminate, even. Pedicels two on each side, many-flowered. Calyx minute: upper lip cordate; lower four-cleft, acute, slender, the two middle clefts longer. Tube of the corolla erect: border reflex, widening at the throat; upper lip erect, very short, lower elongated, sickle-shaped, involving the stamens and pistil. It differs from its congeners in the flower so much, as to be almost of a distinct genus.

Native of the East Indies^h, and of the island of Tanna in the South Seasⁱ.

19. This is an annual plant, with the stem a span high, erect, eight-grooved, with nodding hairs. Branches very much divaricated, next the root longer, prostrate. Leaves petioled, somewhat hairy, acutely serrate, an inch long. Spikes terminating, solitary, oblong, formed of whorls. Upper segment of the calyx wider, blunter; the two lower smaller and more acute. Corolla very small, blueish; with the upper lip four-cleft, equal, villose along the sinuses; the lower lip a little longer and concave. Stamens declined, scarcely marked with any tooth, the length of the corolla. Stigmas almost upright.

Native of the East Indies^k.

20. Stem upright, smooth, even. Leaves entire at bottom, smooth, pale underneath, veined, two inches wide, three inches long. Petiole a little shorter than the leaf, rough-haired underneath at the keel. Racemes the length of a finger or more. Bractes ovate, acute, hispid.

21. Stem upright, villose, branched. Branches decussated, resembling the stem. Leaves acuminate, entire at bottom, smooth, purple, an inch long. Petiole the length of the leaf, loose, villose. Racemes loose, from a finger to a span in length. Bractes oblong, acuminate, smooth and even. It is cultivated about Nagasaki, and flowers there in October and November. An infusion of the herb is prescribed in colds and the rheumatism: and the Japanese colour the roots of black radishes, and turnep, and various fruits, of a deep red, with a decoction of it.

22. Stem grooved, very finely tomentose, two feet high and more. Branches opposite, resembling the stem, spreading a little. Leaves acuminate, pale and

^d L'Heritier.

^e Idem.

^f Linn. zeyl.

^g Linn. mant.

^h Linn. mant.

ⁱ Hort. kew.

^j Forster.

wrinkled underneath, the upper ones gradually smaller. Racemes contracted.

23. Stem upright, paniced, a foot high and more, that and the whole plant hairy and rugged. Leaves oblong, acute, ferrate, dotted with minute pores underneath. Racemes terminating, a finger's length, with the flowers opposite. Bractes between the flowers, bristle-shaped.

Thunberg had named this *punctatum* in his *Flora Japonica*, but altered it to *scabrum*, there being a species so named, already in the *Supplementum plantarum* of the younger Linneus, and in the fourteenth edition of the *Systema Vegetabilium*.

In the former of these works it has this specific character—stem round, leaves ovate wrinkled, flowers in spikes; and is thus described.—It has the appearance of *Perilla minor*, but the resupine flowers of *Ocimum*. Stem herbaceous, quite round, a foot high, divaricately branched below, somewhat hispid, with oblong, rufous dots. Leaves petioled, ferrate, marked with lines, hairy. Stipules none. Spikes terminating, peduncled. Bractes ovate. Flowers drooping. Corollas blue, the size of those of *Thyme*: upper lip four-cleft, white; lower compressed. Stamens as in *Ocimum*. It is an annual plant, and a native of Abyssinia. It was omitted in its proper place between *minimum* and *capitellatum*.

24. Stem herbaceous, both that and the branches upright and flexuose, bent in at top, very finely tomentose, a foot high. Leaves ovate, acute, ferrate, very finely scabrous, half an inch long. Panicle racemed, contracted. The powder is used by the Japanese to burn incense to their idols.

25. Stem deeply grooved, very finely tomentose, flexuose-erect, branched. Branches resembling the stem, the lower ones more remote, the upper ones rod-like. Leaves obovate-oblong, very finely tomentose, an inch long and more. Racemes at the ends of the branches, composed of many six-flowered whorls, a finger's length, upright. Near Nagasaki, in Japanese *Tsugusa*, or Milk-herb.

The six last species are natives of Japan and have square stalks¹.]

PROPAGATION AND CULTURE.

The plants, being most of them annual, are propagated from seeds, sown in march, upon a moderate hot-bed, and transplanted into another hot-bed, where they must be watered and shaded until they have taken root; after which they must have plenty of air in mild weather, and must be watered frequently. In may they should be taken up with a ball of earth to their roots, and planted out either in pots or borders; shading and watering them as before.

They may also be increased by cuttings taken off any time in may, and planted in a moderate hot-bed; observing to shade and water them during ten days. In three weeks time they will be fit to remove.

The seeds are usually brought from the South of France or Italy every spring, because some of the sorts seldom ripen their seeds in this country in the open air. But seeds may be saved here, by placing the plants in an airy glass-case or stove in the autumn; supplying them with water, and letting them have free air in mild weather.

Some of the more tender sorts (1. 3, 4. 7. 9. 11, 12, 13. 16, 17, 18, 19.) may be sown on a hot-bed early in the spring, and when the plants come up, transplanted on another temperate hot-bed to bring them forward, and when they have obtained strength, transplanted into separate pots, and placed in the stove.

[The shrubby sorts (3. 14, 15.) may be increased by cuttings, planted in a hot-bed.

OCOTEA. See *Porostema*.

OCTOBLEPHARIS. *Hedw. musc.* 3. 15. t. 6. *Lin. gen.* Schreb. n. 1640. Bryi species. *Linn.*

CAPS. ovate. *Peristome* simple: teeth eight, triangular.

MALES subdiscoid, axillary, on the same plant.

¹ Thunberg.

OCTOSPORA. *Hedw. musc.* 2. 4. t. 3—10. 23. *Lin. gen.* Schreb. n. 1681. *Peziza. Hall.*

Fungus hemispheric bell-shaped or flattish, with the feminal membranes distinct, frequently joined by a sort of thready tow; and having eight seeds in them; whence the name.

OCULUS CHRISTI. See *Inula* and *Salvia*.

OCYMASTRUM. See *Lychnis*.

OCYMOIDES. See *Cerastium*, *Lychnis*, *Saponaria*, *Silene*.

OCYMOPHYLLUM. See *Isnardia*.

OCYMUM. See *Polygonum* and *Stachys*.

frutescens. See *Perilla ocymoides*.

ODOLLAM. See *Cerbera*.

ODONTITES. See *Bupleurum*, *Euphrasia*, *Lychnis*.

ODONTITIS. See *Euphrasia*.

ODORATA. See *Scandix*.

OEDERA. (So named by Linneus in memory of George Christian Oeder, M. D. Reg. Prof. of Botany at Copenhagen, author of the first part of *Flora Danica*, continued by Muller and Vahl: also of *Elementa Botanica*, 1764 and 1766.)

Lin. gen. Reich. n. 1082. Schreb. n. 1349. Gartn. t. 172. Juss. 189.

Class. 19. 5. Syngenesia Polygamia Segregata.

Nat. order of *Compositæ Oppositifoliae. Corymbiferae, Juss.*

GENERIC CHARACTER.

CAL. common many-flowered, many-leaved, larger than the flowers, squarrose: leaflets lanceolate, the lower ones larger, containing several partial calyces.

Partial many-leaved: leaflets chaffy, lanceolate: equal to the florets.

COR. common radiate with many partial flowers.

Partial radiate, placed also in the disk.

Proper of the Disk hermaphrodite, funnel-form, five-cleft, erect:—of the Ray female, ligulate, lanceolate, the length of the common calyx.

STAM. in the Hermaphrodites, Filaments five, very short. Anther cylindric.

PIST. in the Hermaphrodites, Germ oblong. Style filiform. Stigmas two, filiform, blunt.

In the Females, Germ oblong. Style filiform. Stigmas two, filiform, longer.

PER. none. Calyx unchanged.

SEEDS in the Hermaphrodites oblong; crowned with very many, acute short Chaffs.

In the Females oblong, crowned also with very many chaffs.

REC. Common chaffy: Partial with linear, deciduous chaffs.

ESSENTIAL CHARACTER.

Calyxes many-flowered. Corollas tubular hermaphrodite, with one or two female ligulate florets. Recept. chaffy. Down of several chaffs.

SPECIES.

1. *Oedera prolifera*.

Lin. syst. 796. Reich. 3. 944. suppl. 391. mant. 291. Gartn. fruct. 2. 464.

Buphthalmum capense. Lin. spec. 1274. amoen. 6. 104. Berg. cap. 297.

Leaves lanceolate opposite ciliate smooth on both sides.

2. *Oedera aliena*.

Lin. syst. 796. suppl. 390.

Leaves linear tomentose underneath.

DESCRIPTIONS, &c.

1. Stem shrubby, compound, with ascending branches, covered below with scars from fallen leaves, above with green leaves at the ends of the branches. Leaves opposite, sessile, narrow, acute, channelled. Calyxes terminating, solitary, sessile, with lanceolate leaflets. Ray of the corolla the length of the disk^m.

Common calyx inversely conical, imbricated with lanceolate spreading and recurved scales, ciliate with white lanugo. The partial calyxes contain about fifteen florets, are subcylindric, and have many leaflets in a single row; leaflets scariose, oblong, widening upwards, acuminate, shining. Florets in the disk numerous; in the ray by twos or threes in the outer partial calyxes, the ligulate petal oblong, quite entire. Both florets are fertile. Common receptacle flat, wide,

^m Linn. amoen.

with linear scattered chaffs: partial receptacle narrow, with linear deciduous chaffs, somewhat shorter than their calyx. Seeds uniform, oblong, compressed, obsoletely striated, smooth, bay. Pappus or crown chaffy, many-leaved; leaflets linear-acuminate, shorter than a third part of the seedⁿ.

2. This plant has the appearance of *Stæhelina* or *Gnaphalium*, with the flowers of *Calendula*, and its genus is yet doubtful. It is an undershrub, not much branched, white-tomentose. Leaves alternate, like those of *Rosemary*, acute, with one or two sharp teeth at the edge. Flowers terminating, solitary, sessile, the size of *Calendula*, yellow. Corollets of the ray ligular, three-toothed, marked with lines, hermaphrodite. Anther pale. Style saffron-coloured, standing out. Stigmas two. Seeds woolly, white, crowned with very many yellow bristles.—Both are natives of the Cape of Good Hope°.

OEDERIA. See *Dracæna* and *Lobelia*.]

OENANTHE. (From *Ovin*, the Vine, and *Anthos*, a Flower.—*Oenanthe* of *Pliny*. *Oivavon* of *Theophrastus* and *Dioscorides*.)

Lin. gen. n. 352. Reich. n. 382. Schreb. n. 484. Tournef. t. 166. Juss. 221. Gært. t. 22.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferae*.

GENERIC CHARACTER.

CAL. Umbel universal with fewer rays: partial heaped with very many rays, but very short, inasmuch that there are often none.

Universal involucre many-leaved, simple, shorter than the umbel: partial many-leaved, small.

Proper Perianth five-toothed, awl-shaped, permanent.

COR. universal difform, rayed. Florets of the ray abortive. Proper of the disk hermaphrodite, with five, inflex-cordate, almost equal Petals.

Proper of the ray male, with five, very large, unequal, inflex-bifid Petals.

STAM. Filaments five, simple. Anthers roundish.

PIST. Germ inferior. Styles two, awl-shaped, permanent. Stigmas blunt.

PER. none. Fruit subovate, crowned with the perianth and pistil, bipartite.

SEEDS two, subovate, on one side convex and striated, on the other flat, toothed at the top.

OBS. The Perianth is more manifest in this genus than in the other umbellate plants.

ESSENTIAL CHARACTER.

Florets difform: in the disk sessile, barren. Fruit crowned with the calyx and pistil.

SPECIES.

1. *Oenanthe fistulosa*. Common Water-Dropwort.

Lin. spec. 365. syst. 285. Reich. 1. 699. hort. cliff. 99. fl. suec. n. 250. Gært. fruct. 1. 97. Hudf. angl. 121. Wither. arr. ed. 3. 301. Engl. bot. 363. Lightf. scot. 161. Relb. cant. n. 228. Sibth. oxon. n. 301. Hall. helv. n. 755. Neck. gallob. 150. Pollich pal. n. 290. Villars dauph. 2. 620. Krock. fles. n. 439. Crantz. austr. 201. Kniph. cent. 5. n. 60. Fl. dan. 846.

Oenanthe. Camer. epit. 611. fig. ext. Riv. pent. t. 66.

Oe. aquatica. Baub. pin. 162. Raii syn. 210. hist. 441. Petiv. brit. t. 25. f. 5.

Oe. f. Filipendula aquat. Baub. hist. 3. 2. 192.

Oe. palustris f. aquatica. Park. theat. 895. 7.—item aquat. major. 1233. 1.

Filipendula aquatica. Ger. 902. 5. emac. 1060.

Stoloniferous, stem-leaves pinnate filiform fistular.

[2. *Oenanthe peucedanifolia*. Sulphurwort-leaved Water-Dropwort.

Pollich pal. n. 292. t. 3. Engl. bot. 348. Wither. arr. ed. 3. 302. Sibth. oxon. n. 302. Hall. helv. n. 756.

Oe. aquatica minor. Park. theat. 1233. 2.—item, juncoides minima. 895. 9. Raii hist. 441. 2.

Oe. aquat. triflora, caulibus fistulosis. Mor. hist. 3. 289. f. 9. t. 7. f. 8. Raii syn. 210. Petiv. brit. t. 25. f. 6.

Juncus odoratus aquatilis. Dod. pempt. 590.

ⁿ Gartner.

• Linn. suppl.

All the leaves linear, root-leaves bipinnate, stem-leaves pinnate, universal involucre none, tubers of the root ovate sessile.]

3. *Oenanthe crocata*. Hemlock Water-Dropwort.

Lin. spec. 365. syst. 286. Reich. 1. 699. hort. cliff. 99. fl. suec. n. 251. Gært. fruct. 1. 96. Hudf. angl. 121. Wither. arr. ed. 3. 302. Lightf. scot. 162. Sibth. oxon. n. 303. Jacqu. hort. 3. 32. t. 55. Villars dauph. 3. 621. Blackw. t. 575. Plenck, ic. 226.

Oe. chærophylli foliis. Baub. pin. 162. Mor. hist. 3. f. 9. t. 7. f. 2.—tertia. Matth. 629.

Oe. Cicutæ facie Lobelii. adv. 326. 2. ic. 1. 730. 2. Park. theat. 894. 6. Raii hist. 441. syn. 210. Petiv. brit. t. 25. f. 7.

Oe. succo viroso, Cicutæ facie Lobelii. Baub. hist. 3. 2. 193. 2. Philos. transf. 1747. 235. t. 3. abr. 10. 764. f. 134. Mor. umb. 19.

Filipendula Cicutæ facie. Ger. 901. 4. descr.—emac. 1059. 4.

Apium sylvestre f. Thysselim. Dod. pempt. 687.

All the leaves many-cleft, blunt, nearly equal.

4. *Oenanthe prolifera*. Proliferous Water-Dropwort.

Lin. spec. 365. syst. 286. Reich. 1. 699. hort. ups. 63. vir. cliff. 24. hort. cliff. 99. Jacqu. hort. 3. 35. t. 62.

Oe. prolifera apula. Baub. pin. 163. Mor. hist. 3. 289. f. 9. t. 7. f. 5.

Oe. cretica prolifera. Park. theat. 894. 4. Raii hist. 442.

Marginal peduncles of the umbels longer branched male.

5. *Oenanthe globulosa*. Globular-headed Water-Dropwort.

Lin. spec. 365. Reich. 1. 700. hort. cliff. 99. Gouan illustr. 18. t. 9. Gært. fruct. 1. 97.

Oe. lusitanica, femine crassiore globoso. Tourn. inst. 313.

Fruits globular.

6. *Oenanthe pimpinelloides*. Parsley Water-Dropwort.

Lin. spec. 365. syst. 286. Reich. 1. 700. hort. cliff. 99. Gært. fruct. 1. 97. Hudf. angl. 121. Wither. arr. 302. Engl. bot. 347. Relb. cant. n. 1003. suppl. Sauv. monsp. 259. Jacqu. austr. 4. 49. t. 394. Scop. carn. n. 364. Pollich pal. n. 291. Allion. pedem. n. 1345. Villars dauph. 2. 621. Kniph. cent. 8. n. 74.

Oe. apii folio. Baub. pin. 162. Raii hist. 441.—minor caule firmiore. Mor. hist. f. 9. t. 7. f. 3.

Oe. f. Filipendula monspessulana apii folio. Baub. hist. 3. 2. 191. 1.

Oe. 2. Matth. 867.

Oe. apii folio major. Park. theat. 893. 1.

Filipendula angustifolia. Ger. 901.

Root-leaflets wedge-shaped cloven, those of the stem entire linear very long simple.

[7. *Oenanthe inebrians*.

Thunb. prodr. cap. 49.

Pinnae of the lower leaves ovate, of the upper linear, petioles angular.

8. *Oenanthe tenuifolia*.

Thunb. prodr. cap. 49.

Leaves bipinnate, pinnae linear, the upper ones undivided.

9. *Oenanthe ferulacea*.

Thunb. prodr. cap. 50.

Leaves superdecompound, pinnules awl-shaped grooved.

10. *Oenanthe interrupta*.

Thunb. prodr. 50.

Leaves interruptedly bipinnate, segments gasb-ferrate.

11. *Oenanthe exaltata*.

Thunb. prodr. 50.

Stems striated, seeds turbinate striated.

DESCRIPTIONS, &c.

These are chiefly aquatic herbs, inclined to be noxious, the third sort very much so. Roots perennial. Some have tuberous roots hanging by threads, as in *Spiræa Filipendula*; some have a hollow, fistular stalk. The umbels have few rays: the umbellets are globular, with the florets often sessile, in the ray barren: the radial umbellets in *Oe. prolifera* are male and peduncled, the central ones fruitful and sessile. Involucres and involucels many-leaved: in *Oe. fistulosa*

fistulosa and crocata there is no involucre; in *Oe. globulosa* it has only one or two leaves^p.

1. Roots tuberous. According to Haller, they are diffused widely in the water and mud, where they have sometimes bundles of fibres hanging to them; in gardens they are little bulbs. Pollich says, there are long, slender, round fibres, coming out in whorls from the lower part of the stem, which stay it in the water, and that there are also long, jointed, round runners, creeping transversely along the water. Stem from twelve to eighteen inches, or even two feet in height, rushy, upright, striated, smooth, green or glaucous, except at the bottom, where it is red, hollow within: runners similar, prostrate and creeping far and wide. Leaves sheathing, alternate: root-leaves bipinnate, with three or four pairs of pinnae, having the divisions three, four, or sometimes five-lobed, the lobes blunt: stem-leaves pinnate, with lanceolate pinnules, gradually narrower: the nerves of all the leaves fistular at the beginning, widening into the petiole, and embracing the stalk. Peduncles of the umbels very thick and short. The umbel has from two to seven or eight rays, not very distant from each other. Umbellets roundish, close, convex. Linneus remarks, that the first umbel is trifid, the rest multifid, inasmuch that when the summer is advanced, the plant might be supposed different from the vernal one. General involucre either wholly wanting, or of one leaf, but said sometimes to have five leaves: the partial involucre consists of several leaves, or perhaps rather of one leaf, divided into three, five, or even ten short, lanceolate segments. Petals white, in the ray larger, unequal, in the disk smaller, regular, slightly bifid. Stamens three or four times as long as the corollas, and giving the umbellets a feathery appearance. The umbellets, when in fruit, are globular, and hispid all over with the spreading styles^q. Fruit inversely pyramidal, subpentagonal, grooved, alternate grooves thicker. Ventral part flat. Outer integument fungous, thick^r.

The smell of the plant is unpleasant, and the taste hot and nauseous, as in many of the umbellate plants. The root is said to be poisonous, to have killed a dog within three days, and that out of seventeen Corsican soldiers, who had eaten it, three died, the rest being cured by emetics. Linneus affirms that kine and horses refuse it, though on experiment it did not appear to be noxious to the former. Schreber informs us that it is left untouched by cattle; and that seems to be the case with us. The seed is slightly aromatic^s.

So little were deleterious effects suspected in this plant, that it was recommended formerly, in common with many umbellate plants, as a diuretic, and good in the stone and gravel: but Linneus's is a good general rule, that aquatics of this natural order, if not absolutely poisonous, are at least to be distrusted.

Native of most parts of Europe, in ponds, ditches, by river sides, in wet meadows, and marshes, flowering in June and July.

2. The root of this, which has been considered as a variety of the preceding, is composed of many cylindrical-ovate white sessile tubers, collected into a bunch, each terminating in a white fibre at the base. Stem upright, about eighteen inches high, bright green except at the base, where it is red, smooth, grooved, dichotomous, jointed. Leaves alternate, sheathing, triangular, four or five inches long and three inches wide; the lower bipinnate, the upper simply pinnate, with all the segments linear-lanceolate quite entire, on the uppermost leaves longer and directed to one side; all bright green and smooth. Sheaths striated, smooth. Universal umbel flat, with from seven to ten rays: the partial umbel is a little convex, and has more than thirty rays. Universal involucre none, or sometimes, but very seldom, one-leaved. Partial involucre many-leaved, composed of subulate-setaceous leaflets shorter than the umbellet^t.

Dr. Withering, who considers this only as a variety of the preceding, says that in the plants which he got

^p Jussieu gen.

^q Haller, Pollich, Krockner, Linn. succ.

^r Gartner.

^s Krockner, Aët. helv. vol. 4. Birch's hist. of Roy. Soc.

^t Pollich.

in the Isle of Wight, and which correspond with Pollich's figure, the leaflets are three or four inches long, whereas in the preceding they are rarely more than half or three quarters of an inch in length. The bulbs of the roots seem to vary their situation as the plant grows in more or less water, in a thin or a stiff mud, or in a garden soil; so that their being placed in a bundle at the bottom of the stem, or on the fibres of the roots at a greater or less distance, are circumstances too variable to establish a character.

Pollich observed it in the Palatinate, about Lauteren every where in moist meadows, behind Senebach, in drier meadows, about Cusel: flowering in June. Haller and de Saussure in Switzerland. Dodonæus says it is common in brooks, ditches and marshes, and that it will flourish in gardens, even where it is not very moist, but that it is then smaller and shorter.

Parkinson remarks that it flowers and seeds earlier than the other, and that this is usually past, before the greater sort is in flower.

Dr. Plot observed it in the ditches about Medley and Binsley common, and almost every where about Oxford: Blackstone on Wandsworth common, Harefield river, and Ham-abbey, Essex: and the late Dr. John Sibthorp, on the banks of the Isis beyond Isley, and on peat-bogs under Headington Wick copse.]

3. Hemlock Water Dropwort commonly grows four or five feet high, with strong jointed stalks, which, being broken, emit a yellowish fetid juice. The leaves are somewhat like those of common Hemlock, but of a lighter green colour. The roots divide into four or five larger taper ones, which, when separated, have some resemblance to Parsneps, for which some ignorant persons have boiled them.

[Stem rufous: that and the leaves quite hairless. Leaves some pinnate, but more bipinnate: leaflets wedge-shaped, gashed, even, marked with lines, notched on the edges. Peduncles angular, striated. No universal involucre. It seems however, at least sometimes, to have an involucre of five linear leaflets, about half the length of the shorter rays of the umbel, which very readily falling off has not been observed. Rays of the universal umbel longitudinally furrowed. Umbellets nearly globular. General flower not very unequal. Petals white, bent in, acute. Anthers brown^u.

Fruit inferior, ovate-cylindric, grooved, crowned. Seeds semicylindric, with five rounded grooves on one side, and flat on the other: integument double; the outer fungous-coriaceous, thick; the inner membranaceous: albumen oblong, narrowing upwards, with three grooves on one side, and one on the other, fleshy, hard, without smell: embryo dicotyledonous, inverted, very short; cotyledons narrow; radicle cylindric, superior^v.

Native of several parts of Europe, principally Holland, France and England, on the banks of large ditches, rivers and lakes. As on the banks of the Thames both above and below London; by the side of Lewisham river, beyond the water-works; in marshy meadows between South-end and Sydenham; in Norwood plentifully; between Loompit-hill and Lewisham; near Dulwich College; in the Isle of Dogs the ditches are covered with it. In ditches about Kendal in Westmoreland, where it is called *Dead-tongue*. Between Bishop's Auckland and Wolsingham, and near Stockton. Bent Bogs, near Manchester race ground. Near Bays Water in Oxfordshire. Near Dartford in Kent. Near Bath and Bridgewater in Somersetshire. In Wales. And Mr. Ray says that it grows abundantly, not only in our northern counties, but in Surry, Suffex, &c. in the South. It flowers in June and July.

Gerarde, from Lobel, says, that this plant has a naughty savour, a strong and grievous smell, a hot biting taste, being full of a juice, at first milky, but afterwards turning yellow. It much resembleth Hemlock in property and qualities: for being eaten in sallads it did well nigh poison those that ate of it, making them giddy, waxing very pale, staggering and

^u Linn. syst. Lightf. Wither.

^v Gartner.

reeling like drunken men.—Johnson adds: “Pernicious and not excusable is the ignorance of some of our time (1633), that have bought, and (as one may probably conjecture) used the roots of this plant instead of those of Peonie; and I know they are dayly, by the ignorant women in Cheape-side sold to people more ignorant than themselves, by the name of *Water Lovage*.”

Ray, in his history, (1686) speaks doubtfully of the malignity of Hemlock Water Dropwort, and leaves it to farther examination: but in the third edition of the Synopsis (1724) it is said, that no doubt remains of the poisonous quality of these roots, and reference is made to the German Ephemerides, and the Observations of Stalp. vander Wiel.

Dr. Withering says the whole of this plant is poisonous; and Dr Pulteney remarks, that the root is the most virulent of all the vegetable poisons that Great Britain produces. Many instances of its fatal effects are recorded, wherein it has been eaten for water-parsneps, or celeri, which last it resembles in its leaves. Mr. Lightfoot relates, that he had heard the late Mr. Ehret, the botanic painter say, that while he was drawing this plant, the smell rendered him so giddy, that he was several times obliged to quit the room, and walk out in the fresh air to recover himself; but that having opened the door and windows of the room, the free air enabled him to finish his work. I always experience the same effect from Henbane. Mr. Lightfoot adds, that he has seen a large spoonful of the juice of this plant given to a dog, which made him very sick and stupid, but in about an hour he recovered; and that he has seen a goat eat it with impunity: sheep also are said to eat it; kine and horses to refuse it.

An infusion of the leaves, or three tea spoonfuls of the juice of the root, taken every morning, effected a cure in a very obstinate cutaneous disease, but not without occasioning very great disturbances in the constitution. The country people in Westmoreland apply a poultice of the herb to the ulcer which forms in the fore-part of the cleft of the hoof in horned cattle, and is called the foul².

It may be safely used externally, but internally it should be taken with caution, as is evident from the accounts given above, and others recited by Mr. Howell, and the late Sir William Watson in the Philosophical Transactions. The former of these gentlemen says, that two French prisoners at Pembroke died by eating the root, that the inhabitants call it five-fingered root, and that it is much used there in cataplasms for the fellon, or worst kind of whitlow. In n. 238 of the Philosophical Transactions a case is related of eight young lads near Clonmell in Ireland, where this plant is called *Tabow*, mistaking its roots for the Water-Parsnep: five of them died. Dr. Allen, in his Synopsis Medicinæ, mentions an instance of four children, who eat of these roots, but by proper care did well: and another of a pig's dying in convulsions, from eating some of these roots, which it had grubbed up. Mr. Miller informed Sir William Watson that a whole family were poisoned with this plant at Battersea.

The method of cure is to empty the stomach and intestines as soon as possible, and then to cause the patient to swallow large quantities of oleaginous fluids. This is attended with difficulty, because the jaws are, as it were, locked together by the violence of the spasm.

The more caution is necessary respecting this plant, because it is not uncommon in some places, its appearance and smell resemble smallage or celeri, and the roots have not any flavour disagreeable enough to deter persons from eating them.

Lobel is the first who has given a small figure and a tolerable description of this plant. Dodonæus's figure is execrably bad, and is copied by Gerarde and Parkinson. The figures of John Bauhin, Matthioli and Morison give us scarcely any other idea of the plant,

than that it is an umbelliferous one, with roots divided like those of Asphodel. Morison's is the best. Jacquin has given a good coloured figure of it; and it cannot be mistaken from the plate engraved by Mynde from a drawing of Ehret's, which accompanies Sir William Watson's dissertation on this plant, in the Philosophical Transactions; where it may also be compared with *Cicuta virosa*, another of our most poisonous plants.

Mr. Ray's description of *Oenanthe crocata* is taken from Lobel. Morison's description, in his *Umbelliferæ*, is exact and copious.

4. Root perennial, consisting of several tubers, which are round, narrowing to each end, long, of a dirty brown on the outside, white within. The whole plant is smooth. Stem herbaceous, a foot and half in height, upright, little branched, green, angular-striated. Leaves subtriplicate-pinnate, from a round midrib, scarcely striated, sheathing at the base: leaflets blunt, gashed, subovate or rather roundish. Universal involucre none, or at most of one or two awl-shaped leaves: partial of several lanceolate-linear acuminate, unequal, short, very spreading leaflets. Universal umbel has from five to eight rays, long, striated, thickish, spreading: partial at first very close, convex, small, the florets sessile; but afterwards the outer florets start out and have rays, some of them an inch long. These are male and have the petals very unequal. The central florets are hermaphrodite, fertile and equal. Petals white, erect, longly cordate, bent inwards, awl-shaped and very long at the tip. Filaments longer than the corolla. The fruits of each umbel make a compact hard hemispherical head, rendered rough by the stiff calycine leaflets: each fruit is inversely conical, with little taste and no smell, pale, angular, bluntly grooved, crowned by the calyx. Seeds smooth, flat on one side, five-grooved on the other².

Native of Sicily and Italy. Cultivated in 1739, by Mr. Miller. It flowers in June and July^b.

5. Roots like those of Navew, perennial, branched. Stem a foot high or more, branched, angular at the base, and often purple. The first root-leaves ternate or quinate, with some of the leaflets lanceolate, others wedge-shaped, entire bifid or three-lobed, veined, very smooth. The next and lower stem-leaves are lanceolate, bipinnate, the pinnules and leaflets opposite, lanceolate, bifid or trifid, acuminate. Sheaths of the petioles wide, membranaceous, nerved, at the top running into the petiole, but not lobed. The rest of the stem-leaves pinnate; with narrower, longer, ternate leaflets. The uppermost, and those on the branches, also pinnate, but with the leaflets quite simple, much narrower and longer. Peduncles opposite to the leaves, round, very slightly striated, the length of the internodes, almost four inches long. Umbels of three or four rays, nearly half an inch in length, unequal. Universal involucre either wanting, or having one or two leaves at most. Umbellules clustered, with from twelve to fifteen florets. Leaflets of the involucels subulate-lanceolate, equal, the length of the florets^c. Fruit small, ovate-globular, within a little crown formed of the permanent calyx produced into a conical style-bearing tubercle. Seeds subhemispherical, with three thicker ridges along the back, besides the margin; flat on the belly. Outer integument thick and somewhat fungous. Embryo minute, roundish^d. The fruit is larger than a Coriander. It has more the appearance of the next species than any other; but it is easily distinguished from that by the whole leaves being lanceolate, not triangular, and the stem being less branched^e.

Native of Portugal. Cultivated in 1739, by Mr. Miller. It is biennial, and flowers in June and July^f.

6. Roots cylindric, clustered, fibrous, with bulbs or tubers hanging upon long peduncles. Stems short, a hand or half a foot in height, angular. Root-leaves like those of Parsley, but thicker, bipinnate, broad; with wedge-form, gashed, divided leaflets. Stem-

¹ Philos. Trans. Gentl. magaz. July 1747, March 1755, Sept. 1758. Withering.

^a Jacquin. ^b Hort. kew. ^c Gouan. ^d Gartner.
^e Gouan. ^f Hort. kew.

leaves less compound, scarcely bipinnate; with linear, channelled, very long leaflets. Umbel unequal. Both involucre subulate-fetaceous. Corollas white, little rayed⁶.

Relhan says that the stem is from two to three feet high. According to Scopoli, it is the ray and not the disk in this species that is abortive. Haller remarks, that the outer rays of the partial umbel are very long, and the florets barren. The calycine teeth, as Scopoli observes, are unequal, two being larger than the other three. The styles are upright.

Villars remarks that the leaves vary much; those under water being wide, thick, bipinnate and rounded; the others straight, much narrower and longer: umbels solitary, on straight stems, two or three feet high.

Gærtner describes the fruit as being turbinate-cylindric, crowned with a widish calyx, with a white calous ring at the base: back convex with three streaks, and the margin thickened at the sides: belly flat. Embryo minute, roundish.

Native of the southern part of Europe and England, in marshes, especially near the coast, as at Quaplod in Lincolnshire near Spalding. Hinton-moor in Cambridgeshire. Bulvan-Fen, Essex. Near Mortlake. Between Sydenham and South-end.

7, 8, 9, 10, 11. Natives of the Cape of Good Hope.]

PROPAGATION AND CULTURE.

All these plants naturally grow in moist places, their seeds therefore should be sown upon a moist soil in autumn soon after they are ripe. [The first, second and sixth sorts will do very well in the common ground; but the third requires mud to grow in to any purpose.

OENANTHE. See *Seseli*, *Sison*, *Sium*, *Thalictrum*.

OENOPLIA. See *Rhamnus*.]

OENOTHERA (of Pliny. *Oivobnra* or *Oivobnras* of Theophrastus. From *ovos* and *Enra*: *vini venator*.)

Lin. gen. n. 469. Reich. n. 505. Schreb. n. 637.

& p. 828. Juss. 319. Onagra. Tournef. t. 156.

Gartn. t. 32.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Calycanthemæ*. Onagra, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, superior, deciduous: tube cylindrical, erect, long, deciduous: border four-cleft; the segments oblong, acute, bent down.

COR. Petals four, obcordate, flat, inserted into the interstices of the calyx, and the same length with the divisions of the calyx.

STAM. Filaments eight, awl-shaped, curved inwards, inserted into the throat of the calyx, shorter than the corolla. Anthers oblong, incumbent.

PIST. Germ cylindrical, inferior. Style filiform, the length of the stamens. Stigma four-cleft, thick, blunt, reflex.

PER. Capsule cylindrical, four-cornered, four-celled, four-valved, with contrary partitions.

SEEDS very many, angular, naked. Receptacle columnar, free, four-cornered: with the angles contiguous to the margin of the partitions.

ESSENTIAL CHARACTER.

Cal. four-cleft. Pet. four. Caps. cylindrical, inferior. Seeds naked.

SPECIES.

1. *Oenothera biennis*. Broad-leaved Tree-Primrose.

Lin. spec. 492. fyst. 358. Reich. 2. 147. vir. cliff.

33. hort. cliff. 144. hort. upf. 94. Gron virg. 254.

Kalm. it. 3. 509. Hall. belv. n. 994. Fl. dan.

t. 446. Pollich pal. n. 368. Krock. files. n. 582.

Villars dauph. 3. 506. Kniph. cent. 1. n. 67.

Mill. fig. t. 189. f. 2. Mill. illustr. Plenck, ic. 295.

Onagra biennis. Scop. carn. n. 451. Allion. pedem. n. 1014. Gartn. fruct. 1. 160.

O. latifolia. Tournef. inst. 302.

Lyfimachia lutea corniculata. Baub. pin. 245. & 516. descr. Mor. hist. 2. 271. f. 3. t. 11. f. 7.

L. lutea virginiana. Ger. emac. 475. 4. Raii hist. 862.

L. lutea filiquosa virginiana. Park. parad. 263. f. 6.

⁶ Linn.

Hyoscyamus virginianus. Alp. exot. 325. t. 324.

Leaves ovate-lanceolate flat, stem muricated subvillose.

[2. *Oenothera grandiflora*. Great-flowered Tree-Primrose.

L'Herit. stirp. nov. 2. t. 4. Ait. hort. kew. 2. 2.

Leaves ovate-lanceolate, stamens declined, stem shrubby.]

3. *Oenothera parviflora*. Small-flowered Tree-Primrose.

Lin. spec. 492. fyst. 358. Reich. 2. 147. Zinn.

goett. 199. Thunb. jap. 155.

Oenothera angustifolia. Mill. dict. n. 2. fig. 189. f. 1.

Onagra angust. caule rubro, flore minore. Tourn. inst. 302.

β. *Oenothera glabra*. Mill. dict. n. 3.

Leaves ovate-lanceolate flat, stem even subvillose.

[4. *Oenothera muricata*. Muricated Tree-Primrose.

Lin. fyst. 358. Reich. 2. 147. Murr. in comm.

gott. 6. 1775. p. 24. t. 1.

Leaves lanceolate flat, stem purple muricated.

5. *Oenothera longiflora*. Long-flowered Tree-Primrose.

Lin. fyst. 358. Reich. 2. 148. mant. 227. Jacqu.

hort. 2. 81. t. 172. Curt. magaz. 365.

Leaves toothletted, stems simple hairy, petals distant two-lobed.]

6. *Oenothera mollissima*. Soft Tree-Primrose.

Lin. spec. 492. Reich. 2. 148. vir. cliff. 33. hort.

upf. 144. Gron. virg. 42. 53. Kniph. cent. 4.

n. 57. Sabb. hort. 4. t. 60.

Onagra bonariensis villosa, flore mutabili. Dill. elth. 297. t. 219. f. 286.

Leaves lanceolate waved pubescent very soft.

[7. *Oenothera rosea*. Rose-flowered Tree-Primrose.

L'Herit. stirp. nov. tom. 2. t. 6. Ait. hort. kew. 2. 3.

Curt. magaz. 347.

Leaves ovate toothed, lower ones lyrate, capsules club-shaped.

8. *Oenothera purpurea*. Purple Tree-Primrose.

Curt. magaz. 352.

Oenothera humilis. Donn hort. cant. 41.

Leaves ovate-lanceolate glaucous quite entire, capsules sessile, stigma dark purple.

9. *Oenothera sinuata*. Scallop-leaved Tree-Primrose.

Lin. fyst. 358. Reich. 2. 149. mant. 228. Murr.

in comm. gott. 5. 1774. p. 44. t. 9.

Oenothera repanda. Medicus in act. palat. 3. phys. p. 198. t. 8.

Lyfimachia corniculata maritima, sinuatis & pubescentibus foliis, virginiana. Pluk. phyt. t. 203. f. 3.

Leaves tooth-sinuate, capsules prismatic.

10. *Oenothera fruticosa*. Shrubby Tree-Primrose.

Lin. spec. 492. fyst. 358. Reich. 2. 149. Guan.

hort. 193. L'Herit. stirp. nov. 2. t. 5. Curt.

magaz. t. 332.

Leaves lanceolate somewhat toothed, capsules pedicelled acute-angled, raceme peduncled.]

11. *Oenothera pumila*. Dwarf Tree-Primrose.

Lin. spec. 493. Reich. 2. 150. Mill. fig. 125.

t. 188. Curt. magaz. 355. Pluk. mant. 123.

Raii suppl. 416. (*Lyfimachia*).

Leaves lanceolate blunt smooth subpetioled stems prostrate (ascending) capsules acute-angled.

DESCRIPTIONS, &c.

[These are herbaceous, hardy, biennial plants, for the most part; the ninth is marked as annual, some are perennial, and the tenth is called shrubby, though hardly so in reality: some of the herbaceous ones are inclined to be woody at bottom. The leaves are alternate. The flowers axillary and solitary⁶.

1. Root fusiform, fibrous, yellowish on the outside, white within, biennial. From this, the first year, arise many obtuse leaves, which spread flat on the ground. From among these, the second year, the stems come out, three or four feet high. The specimen before me (August 8th, 1798) is considerably more than five feet in height, upright, of a pale green colour, the thickness of a finger, not hollow but pithy, angular, slightly pubescent and rugged, tinged with purple, especially towards the bottom, branched alternately almost from the ground. Root-leaves run down into a three-sided petiole an inch in length. Stem-leaves sessile, bright lightish green, pubescent on both sides, waved a little

* Jussieu.

about the edge, and having a few small teeth near the base; they are from five to seven inches in length and two inches in breadth, having a considerable midrib running the whole length, very wide and tinged with purple towards the base, at the back very prominent, with white nerves springing from it, and curved towards the point. The flowers are produced all along the stalks on axillary branches, and in a terminating spike. The leaves on the former are similar to the stem-leaves, but much smaller, being not more than two inches long, and little more than half an inch in breadth. Flowers solitary, each being separated by a leaflet or bracte, wider in proportion at the base than the proper leaves, and drawn more to a point, diminishing gradually towards the top of the spike, till they become linear, scarcely half an inch in length, and a line in breadth. Germ sessile, an inch long or more; on the top of this is the tube of the calyx, from an inch to almost two inches in length, and narrow, spreading out at top into four acute segments, villose on the outside, an inch in length, bent down by pairs when the corolla expands, and then rolled inwards. Scopoli remarks, that there are four, oblong, yellow tubercles growing to the base of the calyx. Corolla bright yellow, from an inch and half to near two inches in diameter, spreading out quite flat in the evening, petals roundish, blunt, sometimes emarginate, crenate, and waved. Stamens much shorter than the corolla. Filaments shorter than the style, yellow. Anthers four lines in length. Stigmas yellow, mealy, one commonly longer than the others. Germ four-grooved.—Capsule not crowned, subcylindric, obscurely four-cornered, pubescent with very soft villose hairs. Seeds numerous (fifty in one cell), lying over each other in a double row, oblique, in a manner half-mooned, flat on both sides, fungous, ferruginous^a.

The flowers usually open between six and seven o'clock in the evening, whence this plant is called Evening or Night-Primrose. The mode of their expanding is curious. The petals are held together at top by the hooks at the end of the calyx, the segments of which first separate at bottom and discover the corolla, a long time before it acquires sufficient expansive force to unhook the calyx at top; when it has accomplished this, it expands very fast, almost instantaneously to a certain point, and then makes a stop, taking a little time to spread out quite flat: it may be half an hour from the first bursting of the calyx at bottom to the final expansion of the corolla; which commonly becomes flaccid in the course of the next day, sooner or later according to the heat or coolness of the weather. The uppermost flowers come out first in June, the stalk keeps continually advancing in height, and there is a constant succession of flowers, till late in autumn.

It is a native of North America: and was first sent from Virginia to Padua in 1619. It was cultivated here in 1629, as appears from Parkinson. He gave it the name of Tree-Primrose. It is now become a denizen of several parts of Europe; but though it is very common in gardens with us, I have never seen it in a wild state. The roots are eaten in some countries in the spring.

2. This is a biennial plant as well as the preceding, and several of the other species, but the stem is more shrubby. It is also a native of North America, but was not known here till it was introduced by John Fothergill, M.D. in 1778. It flowers in July and Augustⁱ.

3. The apex of the fruit is crowned with an eight-cleft margin, not four-cleft, as in the first species, which it very much resembles^k.] Stalks red, set with rough protuberances. It does not rise so high as the first, the leaves are narrower, and the flowers are smaller. [Leaves repand and somewhat toothed, less soft. Calyx four times shorter than its tube, with a toothlet below the tip, hence before the calyx unfolds the points in this are distant. Sides of the petals distant. Petals less by half than those of the common sort^l.

^a Gartner.ⁱ Hort. kew.^k Linn. spec.^l Linn. syst. and Comm. gott.

Native of North America, and biennial as that is: flowering from June to August. Native also of Japan, according to Thunberg. According to the Kew catalogue it was introduced in 1775, by John Earl of Bute.]

β. This differs from the first in having shorter stalks, narrower leaves and smaller flowers; from the second, in having smooth stalks, of a pale green colour.

[4. This resembles the parviflora, but the mouth of the fruit is not eight-cleft. The stem has red dots scattered over it. The corolla is only half the size and paler, with the petals emarginate but not bifid. Stamens equal to the corolla or longer, never shorter.—Native of Canada.

5. Root biennial. Root-leaves numerous, broad-lanceolate, toothletted, pubescent with a white rib, obliquely nerved. Stems usually five, springing out below the root-leaves, quite simple, ascending, rough-haired, green with long spreading white hairs. The central stem grows up later. Stem-leaves ovate-oblong, sessile, like the root-leaves. Flowers axillary from the upper leaves, with the germ and calyx hairy. Tube of the calyx remarkably elongated, three times as long as the border. Petals yellow, obcordate two-lobed, the same size with the common sort or larger, distant at the sides, turning reddish the second day. Fruit like that of *biennis*, but longer, and narrower at bottom, with the mouth converging and less rugged.

It has many of the above circumstances in common with the first species; that differs from this in having the stem upright, the side branches scarce apparently hairy, the petals approximating, scarcely emarginate, never bifid, and the tube of the calyx scarcely twice as long as the segments. It differs from *Oe. mollissima* in the stem not being branched, the leaves wider, and not softly pubescent: from *Oe. parviflora* in the stem not being red, and the flowers much larger^m.

Mr. Curtis remarks, that luxuriant specimens exceed five feet in height, that the flowers are uncommonly large and showy, and continue blowing from July to October.

Native of Buenos Ayres. Introduced in 1776, by Chevalier Murrayⁿ.]

6. This has a shrubby stalk more than two feet high, hairy, with narrow-lanceolate, sessile leaves, a little waved on their edges, and ending in acute points. Flowers axillary like the other sorts, at first pale yellow, but as they decay changing to an orange colour, smaller than those of *Oe. biennis*. Seed-vessels slender, taper, hairy.

[According to Dillenius, the stems are usually eighteen inches high, round, upright, somewhat dusky at bottom, pale green above, branched a little from the bottom. Leaves toothed here and there on the edge, softly pubescent, green on both sides with a white midrib, and oblique veins. Flowers somewhat smaller than those of the common sort, but on a longer peduncle: petals wrinkled, approximating. The petals and leaflets of the calyx do not fall off, but wither on the fruit, and fall with the pedicel, which cannot be considered as the tube of the flower, since it is not hollow. Anthers at first upright, but afterwards transverse. The capsules increase in length after the flowers fall; they are round, striated but less deeply than in the common sort, longer and thicker. The whole plant is soft, peduncles, capsules, and all, especially in a wild state, when the leaves are narrower and all the parts smaller than in a garden.

This is also a biennial plant, native of Buenos Ayres. It was cultivated before 1732 in the Eltham garden, belonging to James Sherard, M.D.^o being raised there from the seed of specimens sent from America. It flowers from June to October.

7. This rarely exceeds a foot in height. Its rose-coloured flowers expand during the whole of the day, and are produced during most of the summer months. Of the eleven species, says Mr. Curtis, this only and the next have red or purple flowers, the rest are yellow. He observes also that this is scarcely entitled to

^m Linn. mant.ⁿ Hort. kew.^o Idem.

the distinction of a perennial.—Native of Péru. Introduced by Monf. Thouin in 1783^p.

8. This is distinguished by the glaucous appearance of its foliage, the purple hue of its corolla, and the dark colour of its stigma. It is about two feet high, and produces abundance of fine purple flowers in July and August, open, like those of *rosea*, during the day. The seeds ripen in September^a.

This plant is not in the *hortus kewensis*, but it appears from Mr. Donn's Cambridge catalogue, that it was introduced from the western coast of North America, in 1791. It is an annual, and a very ornamental species. Mr. Donn names it *humilis*.

9. Root annual. Stem simple, round, a foot high, upright, nodding at top, when young hairy, when old smoothish: branches alternate. Leaves sessile, broad-lanceolate, naked, oblique. Flowers sessile, hairy on the calyx and germ. Calyx acute, mucronate below the tip; the tube ascending. Germ before flowering-time declined. Petals yellow, obcordate, the same length with the leaves of the calyx. Capsule cylindrical, quadrangular with the angles flat, truncate with the top deeply excavated and four-cleft; the lobes emarginate. It sleeps during the night, with the upper leaves hollowed^r.

Native of North America. Introduced in 1770, by Monf. Richard^s.

10. This is a perennial, but altogether herbaceous, at least with us, and therefore improperly named *fruticosa*. The flowers which are large and showy, though they open in the evening, remain expanded during most of the ensuing day. The flower-buds, germ and stalk are enlivened by a richness of colour which contributes to render this species one of the most ornamental and desirable of the genus^t. In cloudy weather the common Tree-Primrose keeps open during the whole of the day subsequent to the evening of its expansion.

Mr. Curtis's *fruticosa* cannot be the same with that of Linneus, who describes the flowers as small and white, the tube filiform and very narrow; the calyx purple, four-leaved, but generally bursting on one side; the capsule with four acute compressed angles; the leaves thinly toothed.

Native of Virginia. Cultivated in 1739, by Mr. Miller, as appears from Rand's catalogue, for it is not in the Dictionary^u.]

11. Root perennial, fibrous. Lower leaves ovate, small, close to the ground. Stalk slender, near a foot high. Leaves smaller, light green, sessile, ending in blunt points. Flowers small, bright yellow. Capsules short, ovate, furrowed.

[This is distinguished from all the species with yellow flowers by the inferiority of its size; in its most luxuriant state rarely exceeding a foot in height, and commonly far more humble. It sends up many flowering-stems, producing blossoms from April to July, open in the morning as well as evening. The stalks are rather ascending than prostrate^x.

Linneus describes the stem as a palm in height, herbaceous, round, flexuose, very much divaricated: leaves elliptic-lanceolate, quite entire: flowers erect, subsessile, with yellow, obcordate petals, marked with lines: capsules obovate, blunt, octangular, with four of the angles wider and compressed.

Native of North America. Cultivated in 1757, by Mr. Miller: who had the seeds from Monf. Richard^y, the King of France's gardener at Trianon.

There are several other species of *Oenothera* known, but not yet sufficiently ascertained. Two are figured by Jacquin in his magnificent work entitled *Icones Plantarum Rariorum*. One by Mr. Curtis. And I raised another from seed given me by Governor Philip, on his return from his government. Mr. Donn cultivates sixteen sorts, in the botanic garden at Cambridge.]

PROPAGATION AND CULTURE.

The first and some of the other species (3, 4, 9), are very hardy biennial plants. Sow the seeds in au-

turn; when the plants come up, thin them, and keep them clean: the following autumn, transplant them to the places where they are designed to flower. As the roots strike deep in the ground, care should be taken not to cut or break them in removing: They will thrive in almost any soil or situation; and will flower even in London, better than most other plants. If once introduced, and the seeds permitted to scatter, there will be a supply of plants without any care.

2, 5, 6, 7. Are more tender, and commonly considered as green-house plants, but as they produce flowers and seeds in the open air, the plants are seldom preserved.

[5. Is an annual, (or rather biennial) of ready growth, and very productive of seeds, some of which ripen early. Sow them in the open border, where they are intended to flower, in March or the beginning of April. A single plant is sufficient for one spot. Put a stick to it early of four feet in length, to which tie its branches, when about a foot long^z.]

6. Will come up from scattered seeds like the first.

[7. May be increased either by cuttings or seeds. These are plentifully produced. Sow them in the spring with tender annuals: when the plants have acquired a proper age and the season is favourable, plant them out singly in the open border.

8. Is an annual of ready growth. Sow the seeds and transplant, as directed for the preceding sort.

10. May be increased by seeds, by parting the roots and by cuttings. It is hardy enough to bear the open air^a.]

11. This may be propagated by parting the roots or by seeds. The best time for the former is the spring: but seeds should be sown in the autumn, in pots, placed under a hot-bed frame in winter. In the spring the plants will appear: when fit to remove, plant a few in small pots, to be sheltered under a common frame in winter: plant the others in a sheltered border, where they will endure the cold of our ordinary winters very well, and the following summer produce flowers and seeds in plenty. The seedling plants will be much stronger, and flower better, than those from offsets.

[*OENOTHERA OCTOVALVIS* & *HIRTA*. See

OEPATA. See *Avicennia*.

OFTIA. See *Spielmannia*.

OIL-SEED and *OIL-TREE*. See *Ricinus*.

OILY-GRAIN. See *Sesamum*.

OKRA and *OKRO*. See *Hibiscus*.

OLAX. (From *Ὠλαξ*, *fulcus*, a furrow.)

Lin. gen. n. 45. Reich. n. 49. Schreb. n. 61.

Gartn. t. 179. Juss. 153.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Sapotæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, concave, very short, quite entire (trifid with blunt teeth, G.)

COR. one-petalled, funnel-form: border trifid, blunt; the third segment deeper.

Nectaries four (three, G.) round, petioled, shorter than the corolla, from erect-converging, in the throat of the corolla.

STAM. Filaments three, awl-shaped, alternate with the nectaries, and shorter. Anthers simple.

PIST. Germ superior, roundish. Style filiform, longer than the stamens, caducous. Stigma capitate.

PER. Berry fleshy, three-celled, half covered with the permanent calyx and corolla. G.

SEEDS several (six or eight in each cell) small, oblong, pale, with a navel in the middle of the inner side. G.

ESSENTIAL CHARACTER.

Cal. entire (trifid, G.) *Cor.* funnel-form, trifid. *Nect.* four (three, G.) *Berry* three-celled, many-seeded.

SPECIES.

1. *Olex zeylanica*.

Lin. spec. 48. Reich. 1. 92. Willd. 185. fl. zeyl.

n. 34. amoen. 1. 387. Gartn. fruct. 2. 474.

Vahl symb. 3. 7.

Arbor stercorearia zeylanica glandifera. Burm. zeyl. 26?

Malla holla. Herm. zeyl. 13? Burm. ind. 17?

^z Curtis.

^a Idem.

DESCRIP-

^p Hort. kew.

^q Curtis

^r Linn. mant.

^s Hort. kew.

^t Curtis.

^u Hort. kew.

^x Curtis.

^y Hort. kew.

DESCRIPTION, &c.

This is a tree, with flaccid branches, wrinkled like those of Viscum or Mistletoe, alternate. Leaves ovate, smooth, veinless, alternate, quite entire, petioled. Peduncles very short, somewhat branched, from the axils of the leaves^b.

Branches angular with flexuose decurrent lines, smooth, covered with a yellowish green bark, very finely wrinkled across. Leaves two or three inches long, ovate-lanceolate, very smooth and even, with a groove along the middle above, very finely nerved, scarcely veined, blunt. Racemes axillary, quite simple, shorter than the leaf, usually solitary, very seldom in pairs. Peduncles filiform, after the flowers are fallen toothletted^c.

Berry half covered with the permanent calyx and corolla, small, the size of a radish seed, black, with a firm and as it were coriaceous flesh, the pulp of the cells gelatinous. Receptacles, very thin membranaceous ligules, from the central angle of the cells, radiating towards the periphery^d.

Gærtner is of opinion that the Olax of Linneus, which agrees with his specimens except in the nectaries, is different from the Arbor stercoraria of Burmann, and the Malla-holla of Hermann.—Native of Ceylon.]

OLDENLANDIA. (So named by Plumier, in memory of Henr. Bernh. Oldenland, a Dane, who collected plants at the Cape of Good Hope in 1695. They came into the possession of Burmann, and there is an account of them in the sixth volume of the *Amoenitates*.)

Lin. gen. n. 154. Reich. n. 162. Schreb. n. 205. Gærtner. t. 30. Juss. 198.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-parted, the parts awl-shaped, superior, permanent.

COR. one-petalled: tube cylindrical, closed by a beard: border four-parted, acute, spreading, a little longer than the calyx.

STAM. Filaments four, simple, within the tube. Anthers small.

PIST. Germ roundish, inferior. Style simple, the length of the stamens. Stigma bifid, obtuse.

PER. Capsule twin, roundish, two-celled, opening between the teeth of the calyx.

SEEDS numerous, very small.

OBS. According to Schreber, it scarcely differs from *Hedyotis*, and therefore one of the genera might be spared. There is a difference however in the calyx, corolla and receptacle.

ESSENTIAL CHARACTER.

Cal. fastened to the pericarp, with four free awl-shaped teeth at top. *Cor.* one-petalled four-cleft. *Caps.* inferior, two-celled. *Recept.* free, fastened to the partition by the base only.

SPECIES.

[1. *Oldenlandia verticillata*. Whorled *Oldenlandia*.

Lin. syst. 161. Reich. 1. 337. mant. 40.

Crateogonum amboinicum. Rumph. amb. 6. 25. t. 10. Flowers in whorls sessile, stipules bristle-bearing.

2. *Oldenlandia repens*. Creeping *Oldenlandia*.

Lin. syst. 161. Reich. 1. 337. mant. 40. Burm. ind. t. 15. f. 2. Lour. cochinch. 78.

Crufta ollae minima. Rumph. amb. 6. 460. t. 170. f. 4. Pluk. phyt. t. 356. f. 5.

Capsules sessile hispid, leaves lanceolate.

3. *Oldenlandia capensis*. Cape *Oldenlandia*.

Lin. syst. 161. suppl. 127. Thunb. prodr. cap. 29. Flowers in whorls peduncled, leaves linear.

4. *Oldenlandia uniflora*. One-flowered or *Water Oldenland*.

Lin. spec. 174. Reich. 1. 337. Gron. virg. 138. Brown. jam. 146. 2. Pluk. phyt. t. 74. f. 5. bad. (Alfine).

Peduncles quite simple lateral, fruits rough-haired, leaves subovate acute.

5. *Oldenlandia biflora*. Two-flowered *Oldenlandia*.

Lin. spec. 174. syst. 161. Reich. 1. 338. fl. zeyl. n. 63. Burm. zeyl. 22. t. 11. (Antirrhinum).

^b Linn. zeyl.

^c Vahl.

^d Gærtner.

Peduncles two-flowered longer than the petiole, leaves lanceolate.

6. *Oldenlandia umbellata*. Umbelled *Oldenlandia*, or *East India Madder*.

Lin. spec. 174. Reich. 1. 338. fl. zeyl. n. 67.

Roxb. corom. 1. 2. t. 3. Pluk. phyt. t. 119. f. 4.

Umbels naked lateral alternate, leaves linear.

7. *Oldenlandia hirsuta*. Hairy *Oldenlandia*.

Lin. syst. 162. suppl. 127.

Umbels axillary, stem and calyxes hispid, leaves ovate acute.]

8. *Oldenlandia corymbosa*. Hyssop-leaved *Oldenlandia*.

Lin. spec. 174. & 1679. Reich. 1. 338. Gærtner.

fruct. 1. 147. Brown. jam. 146. 1.

O. humilis hyssopifolia. Plum. gen. 42. ic. 212. f. 1.

Ehret. pict. t. 2. f. 1.

Peduncles many-flowered, leaves linear-lanceolate.

[9. *Oldenlandia paniculata*. Panicked *Oldenlandia*.

Lin. spec. 1667. syst. 162. Reich. 1. 338. Lour. cochinch. 78.

Mollugo zeylanica. Burm. zeyl. 161. t. 71. f. 2. ind. t. 15. f. 1.

Peduncles paniced terminating, leaves oval-lanceolate.

10. *Oldenlandia pentandra*. Five-stamened *Oldenlandia*.

Retz. obs. 4. 22. n. 64.

Flowers five-stamened one-styled, leaves linear, peduncles two-flowered.

11. *Oldenlandia digyna*. Two-styled *Oldenlandia*.

Retz. obs. 4. 23. n. 65.

Flowers five-stamened two-styled sessile, leaves lanceolate.

12. *Oldenlandia trinervia*. Three-nerved *Oldenlandia*.

Retz. obs. 4. 23. n. 66.

Stem decumbent, leaves ovate three-nerved, flowers in whorls axillary, capsules hispid.

13. *Oldenlandia foetida*. Stinking *Oldenlandia*.

Forst. flor. austral. n. 55.

Umbel terminating trichotomous, leaves spatulate.

14. *Oldenlandia debilis*. Weak *Oldenlandia*.

Forst. flor. austral. n. 56.

Umbels axillary peduncled few-flowered, leaves ovate sessile.

15. *Oldenlandia tenuifolia*. Fine-leaved *Oldenlandia*.

Forst. flor. austral. n. 57. Burm. ind. 47. t. 14. f. 1.

Peduncles axillary solitary one-flowered, leaves linear-subulate.

16. *Oldenlandia zanguebariae*. African *Oldenlandia*.

Lour. cochinch. 78.

Peduncles few-flowered, corollas salver-shaped, leaves linear.

DESCRIPTIONS, &c.

These are herbaceous plants, some of them inclined to be woody. Peduncles terminating or axillary, one or many-flowered. Leaves joined at the base by a ciliary sheath^e.

1. Stems about a foot high, simple jointed, even, round, with a groove on each side. Leaves opposite, sessile, narrow-lanceolate with the midrib scored, acuminate, rugged. Stipules membranaceous, divided into bristles, as in *Spermacoce*, some of which are capillary, and longer than the flowers. Capsule roundish, two-celled, many-seeded, connate with the four acuminate leaflets of the calyx^f.—Native of Amboina and Jamaica, on open hills.

2. Stem creeping, filiform, branched, jointed, rooting at every joint, even. Leaves opposite, subpetioled, quite entire, even, small. Flowers axillary, solitary, alternate, subsessile. Capsule subglobular, covered with blunt, hollow pellucid hairs, two-celled, many-seeded.

Stem ten inches high, cespitose, herbaceous, branched, procumbent, jointed, creeping. Leaves linear-lanceolate, quite entire, smooth, opposite, sessile. Flowers white, axillary, solitary, on very short peduncles. Corolla four-cleft, bell-shaped. Capsule calycine, two-celled, many-seeded, opening irregularly. Rumphius's figure represents the leaves wider and rounded, whereas they appeared to Loureiro to be strict and acute.

Native of the East Indies, and of China near Canton^g.

^e Jussieu

^f Linn. mant.

^g Loureiro.

3. This resembles the preceding very much, but the capsule is smooth.—Native of the Cape of Good Hope, where it was found by Thunbergⁿ.

4. Stems branched and creeping. Leaves opposite, lanceolate-ovate, subpetioled, quite entire. Flowers axillary, few, each on its proper peduncle. Germs hispid.—Native of Virginia and Jamaica. In the latter, according to Browne, it is found frequently in the waters, and then it grows of a length proportioned to the depth of the stream, with which it yields and bends: both leaves and stalks are then of a reddish colour. Sometimes it is found upon the banks, and then it is of a green colour and a creeper, generally running more or less according to the quantity of moisture^l.

5. Stem herbaceous, erect, jointed, dichotomous. Leaves quite entire, narrower at the base, ending in the petioles, opposite. Flowers two together at a joint on elongated peduncles, pendulous; or a bifid peduncle bears two flowers.—Native of the East Indies. Annual^k.

6. This is a small biennial, rarely triennial plant. Root very long, from one to two feet, slender, with few lateral fibres, when fresh the bark is orange-coloured; in the cultivated sort it is longest, and with fewer fibres. Stem in the cultivated sort erect, round, jointed below, very ramous, somewhat scabrous, from six to twelve inches high. Branches axillary, the under opposite, decussated, spreading horizontally, and nearly as long as the stem, above alternate or in pairs from the axils.—In the wild sort there is scarce any stem, but many diffuse scraggy branches, with their flower-bearing extremities erect. Leaves opposite, or by threes or fours, sessile, linear, pointed, scabrous, spreading, from half to three quarters of an inch long, by one-third of an inch in breadth. In the axils of the principal leaves are generally fascicles of smaller leaves. Stipules connecting, ciliate. Flowers terminating, small, white, very numerous, the whole forming a large umbel, composed of small three-cleft umbellules. Bractes minute, awl-shaped.

Native of the East Indies, growing in very light dry sandy ground near the sea: flowering during the latter part of the wet season; and the seed ripe in January. It is much cultivated on the coast of Coromandel, where its roots descend to a great depth in the sand. It is used in dying red, purple, a deep clear brown, orange, and to paint the red figures on chints; of all which Dr. Roxburgh has given a full account.

The woody part of the Chay root, as it is called, is white and tasteless; it is the bark only that is possessed of the colouring principle: when fresh it is orange-coloured, tinges the spittle yellow, and leaves a slight degree of acrimony on the point of the tongue for some hours after chewing: to appearance it loses its yellow colour in drying, but still retains the above property on being chewed. It impregnates cold water or spirits with a straw colour; to boiling water it gives a brownish porter colour. The watery infusions and spirituous tinctures are changed into a bright and deep red by alkaline substances; and are rendered paler, or nearly destroyed, by acids. The colouring powers of this root is said to improve by keeping three or four years. When the wild sort can be had in any quantity, it is esteemed one-third or one-fourth stronger, and yields a better colour: and when these roots can be had of two years growth, they are reckoned still better.

This plant is the *Tsheri-vello* of the Telingas; and the *Saya-ver*, or *Imburel* of the Tamuls. The Telinga physicians do not give any part of the plant a place in their *Materia Medica*; but the Malabar physicians say that the roots cure poisonous bites, colds and cutaneous disorders, and warm the constitution^l.

This plant has been introduced into the island of Jamaica.

7. This is a diffused plant. Leaves opposite, petioled, quite entire, veined, nerved. Umbels few-flowered, peduncled. Calyxes bell-shaped.

Native of Java, where it was found by Thunbergⁿ.]

8. This is a low annual plant, seldom above three or four inches high, dividing into many branches which spread near the ground. Leaves long, narrow and opposite. Flower-stalks axillary, an inch or little more in length, and dividing into three or four smaller foot-stalks; on the top of each of these stands one small white flower.

[According to Browne, it rises generally to the height of ten or fourteen inches: the peduncles are sometimes simple, but oftener branched; and rise immediately from the axils, or shoot from the top of the smaller ramifications: all the parts of the plant are very delicate.

Linneus describes the stems, to be almost prostrate, ascending, four-cornered, even, with opposite branches. Leaves opposite, even, marked with a longitudinal line, the length of the internodes. Stipules opposite, very blunt, connecting the leaves, with three awns at the tip, as in *Spermacoce*; by which also it is allied to *Houstonia*. Peduncles alternate, solitary, lateral, filiform, naked, each within each stipule, the length of the leaf, terminated by an umbel of about four flowers, without an involucre. Flowers white.

According to Gærtner, the capsule is inferior, small, crowned with the distant toothlets of the calyx, subglobular, twin, two-celled, opening at top by a transverse chink: partition contrary to the chink. Receptacle oblong, fungous, excavated, having a lateral peduncle, inserted into the lower part of the partition, free above, one to each cell. Seeds very numerous and small, subglobular, shagreened, ferruginous.

Native of Jamaica. Introduced before 1739, by Mr. Robert Millarⁿ.

9. Stem almost upright, even, dichotomous. Leaves opposite, acute, quite entire, even. Panicle leafless. Fruits even^o.

Stem herbaceous, manifold, diffused, suberect, six inches high. Leaves lanceolate, subsessile, smooth, somewhat fleshy. Flowers purple, on a long common peduncle. Capsule calycine, twin, turbinate-round, two-celled, many-seeded, crowned with the four sharp teeth of the calyx^p.—Native of the East Indies.

Loureiro remarks, that *Mollugo zeylanica* of Burmann, though it seems like this in the flower, yet by no means agrees with it in its stellate leaves, and indeed it is doubtful whether it be an *Oldenlandia*.

10. This resembles *Oldenlandia biflora*, but is larger, and half a foot high. Stem erect, pubescent. Leaves opposite, sessile, quite entire, pubescent. Peduncles axillary, solitary, simple, bifid at top, shorter than the leaves. Petals five, small, white tinged with red. Calyx five-toothed, pubescent. Stamens five. Pistil one.—Koenig sent it from Tranquebar.

11. The appearance of this is different from that of the *Oldenlandias*. Stems branched, decumbent. Leaves entire, sessile. Flowers axillary, sessile or on very short peduncles. Calyx five-cleft with a globular tube. Petals five, minute, white. Stamens five. Styles two. Capsule two-celled, two-valved.—Koenig sent this also from Tranquebar.

12. Root branched, slender. Stems depressed, angular, branched. Leaves opposite, petioled, broad-ovate, quite entire, somewhat hairy. Flowers on short pedicels. Fruit twin, four-toothed.—Sent from the East Indies by Koenig^q.

13. 14. Natives of the island of Tonga-tabu in the South Seas.

15. Native of the East Indies; and of the island of Tanna in the South Seas^r.

16. Stem herbaceous, manifold, eight inches high. Leaves quite entire, smooth, sessile, opposite. Peduncles erect, terminating. Corolla four-cleft, purple. Stigma lanceolate. Capsule calycine, twin, two-celled, many-seeded. Stamens four, short.—Native of the Eastern coast of Africa^s.

Loureiro remarks, that he never saw a flower of *Oldenlandia* with four petals. Other little differences

^l Linn. suppl.

ⁱ Linn. spec.

^k Linn. zeyl.

^l Roxburgh.

^m Linn. suppl.

ⁿ Hort. kew.

^o Linn. spec.

^p Loureiro.

^q Retzius.

^r Forster.

^s Loureiro.

that occur, are perhaps (in his opinion) scarcely sufficient to separate this genus from Hedyotis.]

PROPAGATION AND CULTURE.

Sow the seeds early in the spring on a hot-bed, and when the plants are come up, transplant them to another hot-bed, or into small pots plunged into the bark-bed. Water and shade them until they have taken root; then give them free air in warm weather, and frequently refresh them with water. Some seeds will ripen in July, gather them from time to time, as they become ripe; for there will be fresh flowers produced until autumn. Or if the seeds be permitted to scatter in the pots, the plants will soon appear, and will live through the winter in the stove, and flower early the following spring.

[OLDENLANDIA. See *Isnardia*.

OLD-MAN'S-BEARD. See *Clematis* and *Geropogon*.]

OLEA. (From *Ελαια*, which is from *λειος*, *levis*, smooth. Olea is commonly put for the tree; Oliva for the fruit; and Oleum for the juice of the fruit, but this is not constant.)

Lin. gen. n. 20. Reich. n. 20. Schreb. n. 25. Tournef. t. 370. Vaill. mem. par. 1722. Juss. 105. Gært. t. 93.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Sepiariae*. *Jasmineae*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, small, deciduous: mouth four-toothed, erect.

COR. one-petalled, funnel-form: tube cylindrical, the length of the calyx: border four-parted, flat; segments subovate.

STAM. Filaments two, opposite, awl-shaped, short. Anthers erect.

PIST. Germ roundish. Style simple, very short. Stigma bifid, thickish, with the clefts emarginate.

PER. Drupe subovate, smooth, one-celled.

SEED. Nut ovate-oblong, wrinkled, (subbilocular, G.)

OBS. *O. americana* has male and female flowers on the same plant with the hermaphrodites; the nut obovate, substriated, perforated at the base.

ESSENTIAL CHARACTER.

Cor. four-cleft, with subovate segments. Drupe one-seeded.

SPECIES.

1. *Olea europæa*. European Olive.

Lin. spec. 11. Reich. 1. 19. Willd. 44. mat. med. 37. Woodv. med. bot. 369. t. 136. Forsk. descr. 8. 802. Gron. orient. n. 6. Scop. carn. n. 5. Plenck, ic. t. 11. Gært. fruct. 2. 75. Mart. in Virg. georg. 146. ic.

α. *O. communis*. Common European Olive.

Ait. hort. kew. 1. 13. Lin. hort. cliff. 4.

O. sylvestris. Mill. dict. n. 3. Raii hist. 1544.

O. sylv. folio duro subtus incano. Baub. pin. 470. Blackw. t. 213.

Leaves lanceolate flat hoary underneath.

β. *O. verrucosa*. Warted Olive.

Willd. Linn. spec. 44.

O. europæa. Thunb. prodr. 2.

Leaves lanceolate flat villose underneath, branches warted.

γ. *O. longifolia*. Long-leaved European Olive.

Ait. hort. kew. 1. 13.

O. gallica. Mill. dict. n. 1.

Leaves linear-lanceolate flat silvery underneath.

δ. *O. latifolia*. Broad-leaved European Olive.

Ait. hort. kew. 1. 13. Lin. hort. cliff. 4.

O. hispanica. Mill. dict. n. 2.

O. fativa. Baub. pin. 472. Raii hist. 1541. Blackw. t. 199.

Olea. Dod. pempt. 821. Duham. arb. 2. 57.

Leaves oblong flat hoary underneath.

ε. *O. ferruginea*. Iron-coloured European Olive.

Ait. hort. kew. 1. 13.

Leaves lanceolate ferruginous underneath.

ζ. *O. obliqua*. Twisted-leaved European Olive.

Ait. hort. kew. 1. 13.

Leaves oblong bent obliquely pale underneath.

n. *O. buxifolia*. Box-leaved European Olive.

Ait. hort. kew. 1. 13.

Leaves oblong-oval, branches spreading divaricated.

Leaves lanceolate quite entire, racemes axillary contracted.

[2. *Olea capensis*. Cape Olive.

Lin. spec. 11. Reich. 1. 19. Willd. 45. hort. cliff. 4.

Berg. cap. 1. Thunb. prodr. 2.

α. *O. coriacea*. Leatherly-leaved Cape Olive.

Ait. hort. kew. 1. 13. Dill. elth. 193. t. 160.

f. 194. (Ligustrum).

Sideroxylum foliis subrotundis integris. Burm. afr.

234. t. 81. f. 2.

Leaves ovate-oblong rigid flat, petioles red.

β. *O. undulata*. Wave-leaved Cape Olive.

Ait. hort. kew. 1. 13.

S. fol. oblongis. integris. Burm. afr. 233. t. 81.

f. 1.

Leaves elliptic waved, petioles green.

Leaves ovate quite entire, racemes panicle-shaped divaricate.

3. *Olea americana*. American Olive.

Lin. syst. 57. Reich. 1. 19. Willd. 45. mant. 24.

Catesb. car. 1. t. 61. (Ligustrum).

Leaves lanceolate-elliptic quite entire, racemes narrowed, all the bractes permanent connate small,

4. *Olea cernua*. Nodding-flowered Olive.

Lin. spec. Willd. 45. Vahl symb. 3. 3. Lamarck encycl. t. 8. f. 2.

Leaves oblong lanceolate very blunt, racemes axillary simple, flowers drooping.

5. *Olea apetala*. Apetalous Olive.

Lin. spec. Willd. 45. Vahl symb. 3. 3.

Leaves elliptic, flowers in racemes apetalous.

6. *Olea excelsa*. Laurel-leaved Olive.

Lin. spec. Willd. 46. Vahl symb. 3. 3. Ait. hort. kew. 1. 14.

Leaves elliptic acute, bractes perfoliate, the lowest cup-shaped permanent, the upper ones leafy large deciduous.

7. *Olea fragrans*. Sweet-scented Olive.

Lin. syst. 57. Willd. 46. Thunb. jap. 18. t. 2.

Osmanthus fragrans. Lour. cochinch. 29. 35.

Quai-fa. Osb. it. 250. engl. edit. 2. 14.

Mokfei. Kämpf. amoen. 5. 844.

Leaves lanceolate serrate, peduncles lateral aggregate one-flowered.

DESCRIPTIONS, &c.

These are evergreen trees. Leaves very seldom alternate. Flowers in panicles, axillary or terminating. The first species has one seed frequently abortive².]

1. α. The wild Olive grows naturally in woods, in the South of France, Spain and Italy, and is therefore not cultivated. The leaves are much shorter and stiffer than those of the cultivated Olive. The branches are frequently armed with thorns, and the fruit is small and of no value.

[β. Native of the Cape of Good Hope. Given by Thunberg as the common European Olive, of which it is a variety.]

γ. The inhabitants of the South of France chiefly cultivate this, from which they make the best oil, a great branch of trade in Provence and Languedoc; the young fruit is also the most esteemed when pickled. Of this there are several varieties.

δ. This is chiefly cultivated in Spain, where the trees grow to a much larger size than the preceding; the leaves are much larger, and not so white on their under side. The fruit is near twice the size of the Provence Olive, but of a strong rank flavour, and the oil is too strong for most English palates.

The Olive seldom becomes a large tree; but two or three stems frequently rise from the same root, from twenty to thirty feet high, putting out branches almost their whole length, covered with a gray bark. Leaves stiff, about two inches and a half long, and half an inch broad in the middle, gradually diminishing to both ends, of a lively green on their upper side, and hoary on their under, standing opposite. The flowers are produced in small axillary bunches; they are small, white, and have short tubes, spreading open at top.

² Jussieu.

[The fruit is a superior berried drupe, of an oblong spheroidal form, and of a yellowish green colour, turning black when ripe: flesh hardish, thick, glaucous: shell bony, ovate-oblong, acuminate at both ends, above at the tip marked with two oblong lateral calluses, the rest of the surface very obscurely wrinkled; it is thick, and is divided within into two cells; one of them however is very frequently obliterated, one only being fertile, and that lined with a highly polished cartilaginous crust. Receptacle filiform, springing from the bottom of the cell, and fastened to the side of it, reaching upwards to the seed, and inserted a little below the tip into the umbilical scar. Seed oblong, roundish, acuminate downwards, pale dun or straw-coloured^a.

The common mode of making oil from Olives in the kingdom of Naples, is to crush the fruit to a paste with a perpendicular mill-stone, running round a trough. This paste is put into flat round baskets, made of rushes, piled one upon another under the press. After the first pressure, scalding water is poured into each basket, its contents stirred up, and the operation repeated till no more oil can be skimmed off the surface of the tubs beneath. By this method the oil is seldom pure, keeps ill, and soon grows rancid.

Another process is recommended, which is performed by pounding the fruit in a mortar. A handful of the crushed substance is thrown into a long woollen bag, which is rubbed very hard upon a sloping board, and then wrung; afterwards hot water is added, and it continues to be pressed as long as a drop of oil can be drawn from it. This is supposed to have been the original mode of extraction, and if performed by a skilful stout workman, to be much more effectual than the common one^{*}.

The Olive, in all ages, has been held in peculiar estimation, as the bounteous gift of heaven. It is still considered as emblematic of peace and plenty; and the great quantity of oil which it produces in some countries, effectually realizes the latter of these blessings.

Unripe Olives pickled, especially the Provence and Lucca sorts, are to many persons extremely grateful, and are supposed to excite appetite and promote digestion. They are prepared by repeatedly steeping them in water, to which some add alkaline salt or quick lime, in order to shorten the operation; after this they are washed, and preserved in a pickle of common salt and water, to which an aromatic is sometimes added.

But the principal consumption of Olives is in the preparation of common salad oil. The best is of a bright pale amber colour, bland to the taste, and without any smell. It becomes rancid by age, especially if kept in a warm place. It congeals by cold at 38° of Fahrenheit's thermometer, and does not become rancid if kept in a degree of cold equal to the freezing point of water. All the mild expressed oils of vegetables are nearly of the same nature; a preference however is generally given to the most fluid; hence the oils of Olives and Almonds are most commonly directed for internal use in medicine. Oil, in some shape, forms a considerable part of our food, both animal and vegetable, and affords much nourishment: but with some oily substances do not unite with the contents of the stomach, especially where acids abound. Oil as a medicine is supposed to correct acrimony, to lubricate and relax the fibres, and hence is prescribed in coughs, catarrhal affections and erosions; in worm cases, in nephritic pains, spasms, colics, constipations of the bowels, &c. Externally it has been found an useful application to bites and stings of poisonous animals, to burns, tumours, &c. both alone and mixed in liniments and poultices.

Oil was much used by the ancients to rub over their bodies; this has been found of great service in dropsies, particularly in ascites: it is said to have been successful even in rabies canina; but having been since used in a similar case without success, little confidence is to be placed on a solitary instance. Though the

effects of oil taken internally extend over the primæ viæ, yet it may be doubted, whether it produces any medicinal effect after having passed into the blood.

Oil enters several officinal compositions, and when united with water, by the intervention of alkali, is usually given in coughs, hoarsenesses, &c.^y

The Olive is commonly supposed to be a native of the southern countries of Europe: but it seems probable that although it be now found wild in some parts of our continent, it came originally from Asia. It grows abundantly about Aleppo, mount Lebanon, and many parts of Palæstine. In the northern parts of Africa; and one of the varieties (β) at the Cape of Good Hope.

It appears by the catalogue of the botanic garden at Oxford, that it was cultivated there in 1648^z.

Several Olive trees were planted against a warm wall at Camden house near Kensington, which succeeded very well, till their tops advanced above the wall; after which they were generally cut down to the top of the wall in winter. These in 1719 produced a good number of fruit, which grew so large as to be fit for pickling, but after that time their fruit seldom grew to any size. With a little protection in severe frost, the Olive-tree may be maintained against a wall, in the latitude of London; but in Devonshire there are some of these trees, which have grown in the open air many years, and are seldom injured by frost, but their summers are not warm enough to bring the fruit to maturity.

The olive was, by the ancients, considered as a maritime tree, and they supposed it would not thrive at any distance from the sea; but by experience, we find it will succeed very well in any country, where the air is of a proper temperature, though it is found to bear the spray of the sea better than most other trees.

[The varieties of this tree are numerous, as in most vegetables that have much attracted the attention of mankind. Several distinctions from the form of the leaves have been recited in the enumeration of the species: others are taken from the shape, size and colour of the fruit.

Virgil enumerates only three varieties—

“Orchites, et radii, et amara pausia bacca.”

The first bears a small round fruit, called Olivola by Cæsalpinus, and Olivastre by Matthioli. The Radius is a long Olive, so called from its similitude to a weaver's shuttle. The Pausia is called bitter because it was gathered unripe; and then it has a very austere taste.

Cato mentions eight, and Columella ten varieties of Olives, among which these three of Virgil are enumerated. Many more are recited by Pliny and other authors. It is remarkable that Matthioli informs us, there were no more than three sorts known in his time in Tuscany^a.]

In Languedoc they chiefly propagate the Corneau, the Ampoulan, and Moureau. [In Provence the small oblong, the oblong dark green, the small roundish white or Aglandan, the large fleshy or royal, the large round or Ampoulan, and the small round reddish-black Olive. In Spain they have several varieties of their large fruit. In Italy, the small Lucca Olive is much esteemed: and in the southern provinces of the kingdom of Naples, where this tree is much cultivated, they have, 1. The Salentine Olive, called by the peasants Ogliarola. 2. Faule, which bears a small Olive, kept for eating. 3. Cellina, Scuranese or Cascia, yielding less oil than the first in the proportion of two to three; but the tree grows to a greater size, resists weather better, and is more fruitful. 4. A Wild sort; the fruit of which grows white as it ripens; the ancients speak of such a sort; but this is not cultivated^b.

2. Cape Olive is a small tree or rather shrub, not branching much. Trunk straight, with many joints; bark subhirsute, blackish brown with ash-coloured dots and lines. Leaves conjugate, decussated, sometimes sinuated at the end, but commonly entire, dense and rigid, moderately concave, paler or deeper green, but

^y Woodville.

^z Hort. kew.

^a Virg. georg. ed. Mart. 2. 86. not.

^b Swinburne.

^u Gærner.

^{*} Swinburne's travels, 1. 373.

always paler underneath, with oblique smooth veins, less conspicuous underneath than above. From the axils and at the end of the branches the flowers come out in racemes in June and July, sometimes thinly disposed, but sometimes so numerous that the racemes hang down. The corolla is white and small.

Native of the Cape of Good Hope^c. Cultivated 1732 by James Sherard, M.D.^d Dillenius speaks of the plant at Eltham as being then, ten or eleven years old.

3. Leaves opposite, evergreen, petioled, shining. Racemes short, axillary, brachiate, with opposite pedicels. Segments of the corolla revolute. Style so short as to be scarcely any. Stigma bifid. Drupe globular, even, handsome. Nut obovate, substriated, perforated at the base. There are male and female flowers on the same plant with the hermaphrodites^e.

Native of Carolina and Florida. Cultivated in 1758 by Mr. Miller. It flowers in June^f.

4. Branches round, smooth, with an ash-coloured bark, and raised scattered dots, compressed a little at the top. Leaves opposite, coriaceous, broad-lanceolate, attenuated at the base, acute, rounded at the tip, frequently emarginate, quite entire, smooth, even, veinless, an inch and half long, bent back at the edge. Petiole a quarter of an inch long, convex underneath. Racemes a little longer than the petiole, two or three, but sometimes solitary. Pedicels opposite. Bracte minute, ovate at the base of the pedicels, and two others lanceolate under the calyx. Flowers twice as large as in the common sort.—Native of Madagascar, where it was found by Thouin.

5. Branches round at bottom, with an ash-coloured dotted bark, alternately compressed towards the top. Leaves opposite, two inches long and more, spreading very much, sharp at both ends, quite entire, coriaceous, smooth, without veins or nerves. Petiole half an inch long. Racemes axillary, opposite, subsolitary, quite simple, a little longer than the petiole. Pedicels opposite. Bractes none, except two opposite ovate scales at the base of the common peduncle. Calyx four-cleft, with minute acute segments. Filaments very short. Anthers diverging.—Native of New Zealand.

6. Branches round, with an ash-coloured bark, smooth, having raised dots scattered over them; branchlets alternately compressed at top, as in all the species, with the joints narrower at the base, a little dilated above. Leaves opposite and alternate, two or three inches in length, or a little longer, an inch and half wide, attenuated to both ends, quite entire, smooth, even, coriaceous, veinless, paler underneath, obscurely nerved. Petiole half an inch long, flat above, convex underneath. Racemes axillary, opposite, commonly solitary, seldom in pairs, an inch long, simple. Peduncle from a cyathiform bracte, bifid, with divaricated segments, like the pedicels, angular. Pedicels opposite, one-flowered, the length of the corolla. Bractes oblong, membranaceous, concave, sometimes villose at the edge, the upper ones larger and deciduous, the four lowest permanent. The flowers twice as large as those of the common Olive. Calyx very small, with very blunt teeth. Corolla four times as large as the calyx, deeply four-cleft. Filaments scarcely any. Anthers the length of the corolla. Germ conical, acuminate, shorter than the anthers^g.

Native of Madeira, where it was found by Mr. Francis Masson. Introduced in 1784^h.

7. This is a large tree. Branches and branchlets trichotomous, obscurely four-cornered, smooth. Leaves decussated, oblong, sharp, a little bent back at the edge, parallel-nerved, reticulated, smooth, deep green above, paler underneath, spreading, frequent on the branchlets, a finger's length. Petioles semicylindric, grooved, smooth, a quarter of an inch in length. Flowers on the branchlets, aggregate in umbels, about six or eight together; peduncles filiform, one-flowered, smooth, half an inch long. Calyx very small, obscurely four-toothed, whitish, smooth. Corolla wheel-shaped, yellowish-white, with scarcely any tube,

and a spreading four-cleft border; the segments ovate, blunt, concave, thickish. Filaments very short, inserted into the mouth of the tube: anthers ovate, largish, twinⁱ.

Loureiro, taking this tree to be of a different genus from the Olive, named it *Osmanthus*, from the remarkable sweetness of the flower. He never could find any fruit, and supposed the flowers to be always abortive. He describes it as an upright shrub, about seven feet in height, with ascending branches, sometimes climbing. Leaves curved inwards, smooth, opposite, on short petioles. Flowers pale, small, on short, subfastigate, axillary and terminating racemes, on short pedicels. Filaments flat. Anthers lateral, two on each filament. Styles two, thick, awl-shaped, embracing the germ with their dilated base.

Osbeck mentions it as one of the ornamental trees in the Chinese gardens. He says it is about six yards high, with small, white, sweet-scented flowers, three or four in one involucre.

Native of Cochinchina, China and Japan. It was introduced in 1771, by Benjamin Torin, Esq; and flowers in July and August^k.]

PROPAGATION AND CULTURE.

In Languedoc and Provence, they propagate the Olive by truncheons, split from the roots of the trees. When their tops are killed by hard frosts in winter, they send up several stalks from the root; when these are grown pretty strong, they separate them with an axe from the root, in doing which they are careful to preserve a few roots to them. They are cut off in the spring, after the danger of frost is over, and planted about two feet deep in the ground, covering the surface with litter or mulch, to prevent the sun and wind from penetrating the ground and drying the roots: when the plants have taken new root, they stir the ground, and destroy the weeds.

In countries where the inhabitants are curious in making oil, they graft their truncheons with that sort of Olive which they prefer.

The Olive will grow in almost any soil, but when it is planted in rich moist ground, the tree grows larger and makes a finer appearance than in poor land; but the oil is not so good as in a leaner soil. Calcareous ground is esteemed the best for these trees; the oil being finer and keeping longer than in any other.

[Accordingly we commonly find the Olive in the South of Europe, on white marl or potter's clay, or on limestone rock, in mountainous situations, unfit for Vines. Virgil's direction corresponds:

“Difficiles primum terræ, collesque maligni,
“Tenuis ubi argilla, & dumosis calculus arvis,
“Palladia gaudent sylva vivacis Olivæ
“Indicio est, tractu surgens oleaster eodem
“Plurimus, et strati baccis sylvestribus agri.”

Stubborn lands and unkindly hills, where the soil is a potter's clay mixed with pebbles, and producing only bushes, are adapted to the Olive, which is a long-lived slow-growing tree. That such lands are congenial to this tree is evident from the abundance of wild Olives that spring in them, and the quantity of berries strewed over them. It may be remarked that *Argilla* is not common clay, but white potter's-clay; as appears from Columella: “Creta, qua utuntur figuli, quamque nonnulli *argillam* vocant, inimicissima est viti, nec minus jejuna sabulo.” It may be remarked farther, that *Creta* is never put for chalk, of which there is none in Italy, but for this potter's-clay, or a sort of white marl.

Virgil, Cato, and Columella recommend the propagation of the Olive by truncheons as the best method: and Virgil affirms that even pieces of the trunk will grow. For the culture of Olives, see Bernard de l'Olivier. Couture, *Traité de l'Olivier*, 1786. Duhamel, *Traité des Arbres*, &c.]

In England the Olive may be propagated by laying down the tender branches (in the manner practised for other trees,) which should remain undisturbed two

^c Dillenius.

^d Hort. kew.

^e Linn. mant.

^f Hort. kew.

^g Vahl.

^h Hort. kew.

ⁱ Thunberg.

^k Hort. kew.

years; in which time they will have put out roots, and may then be taken off from the old plants, and transplanted either into pots filled with fresh light earth, or into the open ground in a warm situation. The best season for transplanting is the beginning of april, when you should, if possible, take the opportunity of a moist season; and those which are planted in pots, should be placed in a shady part of the greenhouse until they have taken root; but those planted in the ground should have mulch laid about their roots, to prevent the earth from drying too fast, and now and then refreshed with water; but you must by no means let them have too much moisture, which will rot the tender fibres of their roots, and destroy the trees. When the plants have taken fresh root, those in the pots may be exposed to the open air, with other hardy exotics, with which they should be housed in winter, and treated as Myrtles, and other less tender trees and shrubs; but those in the open air will require no farther care until the winter following, when you should mulch the ground about their roots, to prevent the frost from penetrating deep into it; and if the frost should prove very severe, you should cover them with mats, which will defend them from being injured thereby; but you must be cautious not to let the mats continue over them after the frost is past, lest by keeping them too close, their leaves and tender branches should turn mouldy for want of free air; which will be of as bad consequence to the trees, as if they had been exposed to the frost, and many times worse; for it seldom happens, if they have taken much of this mould, or have been long covered, so that it has entered the bark, that they are ever recoverable again; whereas it often happens, that the frost only destroys the tender shoots; but the body and larger branches remaining unhurt, put out again the succeeding spring.

These trees are generally brought over from Italy every spring, by the persons who import Orange-trees, Jasmynes, &c. from whom they may be procured pretty reasonable; which is a better method than to raise them from layers in this country, that being too tedious; and those which are thus brought over, have many times very large stems, to which size young plants in this country would not arrive in ten or twelve years. When you first procure these stems, you should (after having soaked their roots twenty-four hours in water, and cleaned them from the filth they have contracted in their passage) plant them in pots filled with fresh light sandy earth, and plunge them into a moderate hot-bed, observing to screen them from the violence of the sun in the heat of the day, and also to refresh them with water, as you shall find the earth in the pots dry. In this situation they will begin to shoot in six weeks or two months after, when you should let them have air in proportion to the warmth of the season; and after they have made pretty good shoots, you should inure them to the open air by degrees, into which they should be removed, placing them in a situation where they may be defended from strong winds; in this place they should remain till october following, when they must be removed into the green-house, as was before directed. Having thus managed these plants until they have acquired strong roots, and made tolerable good heads, you may draw them out of the pots, preserving the earth to their roots, and plant them in the open air in a warm situation, where you must manage them as was before directed for the young ones; and these will in two or three years produce flowers, and in very warm seasons some fruit, provided they do well. The Lucca and Box-leaved Olives are the hardiest, for which reason they should be preferred to plant in the open air, but the first sort will grow to be the largest trees.

[*Olea fragrans* may be increased from cuttings, in the same manner as *Gardenia*.

OLEA barbadensis. See *Bontia*.

— malabarica. See *Melia*.

— sylvestris. See *Elæagnus*.

OLEANDER. See *Nerium*.

OLEASTER. See *Elæagnus*.

VOL. II.

OLIVE. See *Olea*.

OLLARIA. See *Lecythis*.

OLUSATRUM. See *Smyrniun*.

OLUS calappoides. See *Cycas*.

— crudum. See *Apocynum*.

— scrophinum. See *Conyza*.

— squillarum. See *Illecebrum*.

— vagum. See *Convolvulus*.

OLYRA. (*Ὀλῦρα* of Homer, Herodotus, Hippocrates; *Dioscorides*, &c.)

Lin. gen. n. 1045. Reich. n. 1136. Schreb. n. 1406.

Juss. 33. Swartz obs. 347.

Class. 21. 3. Monoecia Triandria.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

* Male Flowers, below the females.

CAL. Glume two-valved, one-flowered: valves equal, lanceolate: outer subventricose, terminating in a capillary, straight, even awn; inner narrower; acute; folded in on both sides.

COR. none.

Nectary two-leaved, very small: leaflets obovate, sub-emarginate, membranaceous, erect.

STAM. Filaments three, capillary, very short. Anthers linear, acute at both ends.

* Females solitary, terminating on the same panicle, much larger than the males.

CAL. Glume two-valved, one-flowered, large, spreading: valves almost equal, ovate, concave, nerved; outer terminating in a long, awl-shaped, subflexuose awn villose at bottom: inner narrower, acuminate.

COR. Glume two-valved, much shorter than the calyx; coriaceous, shining, awnless, blunt: outer much longer.

Nectary three-leaved, very small: leaflets obovate, membranaceous, erect.

PIST. Germ oblong. Style filiform, almost the length of the calyx. Stigma capillary; pubescent.

PER. Glume of the corolla involving, falling.

SEED ovate.

ESSENTIAL CHARACTER.

MALE. Cal. Glume one-flowered, awned. Cor: glume awnless, (Cor. none. Sw.)

FEM. Cal. Glume one-flowered, spreading, ovate. Style bifid. Seed cartilaginous.

SPECIES:

1. *Olyra paniculata*.

Swartz prodr. 21. obs. 347.

O. latifolia. Lin. spec. 1379. Reich. 4. 97. amoen. 5. 408. Sloan. jam. 1. 107. t. 64. f. 2. (Gramen panicum). Brown. jam. 335. (Coix).

Panicle terminating, culm branched.

2. *Olyra pauciflora*.

Swartz prodr. 21. descr. 125. Loebl. it. 243. 100.

Flowers axillary.

DESCRIPTIONS, &c.

1. Roots filiform, long, thicker. Culm erect; a fathom high, jointed, round, branched at bottom. Joints simple. Leaves sheathing, as it were shortly petioled at the end of the sheath, broad-lanceolate, acuminate, horizontal, spreading, smooth, striated, marked with lines below. Sheaths pubescent. Panicle terminating, erect, spreading, many-flowered. Branches angular, rugged, flexuose. Male spikelets numerous, pressed close to the branches of the panicle, alternate, pedicelled, three commonly contiguous. Pedicels flexuose, filiform, short. Female flowers solitary, terminating the male spikes, and three times the size of the males.

Native of Jamaica, in dry coppices; flowering from january to july¹. Introduced in 1783, by Mr. William Forsyth^m.

2. This also is a native of Jamaicaⁿ. Loureiro has a third species, which he names O. orientalis.

OMPHALANDRIA. See *Omphalea*.

OMPHALEA. (Frm *Ὀμφαλος*, umbilicus. Altered by Linnaeus from *Omphalandria* of Browne.

Lin. gen. Schreb. n. 1468. Swartz prodr. 95. obs. 349.

t. 10. f. 6. Juss. 392. Omphalandria. Brown.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of Tricoccæ. Euphorbiæ, Juss.

¹ Swartz.

^m Hort. kew.

ⁿ Swartz.

OMP

GENERIC CHARACTER.

* Male flowers.

CAL. Perianth four or five-leaved, spreading: leaflets two opposite larger, ovate, convex, coloured.

COR. none.

Nectary. Glands four, or a fleshy ring encircling the germ.

STAM. Filament one, columnar, thick, short. Anthers two, oblong, incumbent, connate at top, polliniferous at the edge: or one, plano-convex, trifid.

* Female flowers, in the same raceme.

CAL. Perianth five-leaved: leaflets three larger, ovate, encircling the germ.

COR. none.

PIST. Germ ovate. Style none. Stigma trifid.

PER. Capsule oblong or roundish, fleshy, bluntly triangular, three-celled, three-valved.

SEEDS. Nuts solitary, ovate, hard.

ESSENTIAL CHARACTER.

MALE. Cal. four-leaved. Cor. none. Filam. columnar, with the anthers inserted into it.

FEM. Cal. five-leaved. Cor. none. Stigma trifid. Caps. fleshy, three-celled. Nuts solitary.

SPECIES.

1. *Omphalea axillaris*.

Swartz prodr. 95.

Racemes axillary, leaves distich ovate acuminate shining, on very short petioles, stipules mucronate, stem shrubby.

2. *Omphalea cauliflora*.

Swartz prodr. 95.

Racemes cauline scaly at the base, leaves distich oblong acute shining, stem arborescent.

3. *Omphalea cordata*.

Swartz prodr. 95. obs. 350.

O. diandra. Lin. spec. 1377. Reich. 4. 118. Brown. jam. 334. Aubl. guian. 843. t. 328.

Racemes compound leafy terminating, leaves scattered cordate villose underneath, biglandular at the base, stem scandent.

4. *Omphalea nucifera*.

Swartz prodr. 95. obs. 351.

O. triandra. Lin. spec. 1377. Reich. 4. 118. amoen. 5. 408. Brown. jam. 335. sed non t. 22. f. 4. (Sw.)

Racemes compound leafy terminating, leaves scattered oblong very smooth biglandular at the base, stem arboreous.

DESCRIPTIONS, &c.

1, 2. Natives of Jamaica.

3. Stems shrubby, scandent, subdivided, diverging, round, pubescent. Leaves alternate, acuminate, subcoriaceous, thick, entire, smooth, pubescent underneath; on longish, loose, biglandular petioles: glands depressed, roundish. Stipules at the base of the leaves, small, lanceolate, deciduous. Racemes branched, diverging, loose. Bractes lanceolate, pedicelled, obtuse, smooth, at the base of the racemelets; which are many-flowered; the flowers in clusters, peduncled, small, green. Calyx four-parted, with roundish segments, two of which are larger. Filament from the centre of a coloured concave disk, convex at top: anthers purple, inserted into the margin of the filament. Germ roundish, three-cornered. Style very short, fleshy, three-cornered. Stigma trifid, villose. Capsule large, yellowish, containing three brittle nuts; with oblong, angular kernels.

Native of rocky coppices in Jamaica, and other parts of the West Indies.

4. This is a small tree, with an upright even trunk, from twelve to fifteen feet high: the branches spreading horizontally, bent down, warted, subdivided, elliptic-elongated, alternate, scattered, a foot and half long, nodding, attenuated at the base, blunt at top, entire, very smooth, nerved. Petioles bent down, long, roundish, smooth. Glands in pairs, flat, depressed, round, perforated in the middle, distilling moisture. Racemes solitary, the length of the leaves, nodding, loose. Bractes petioled, subaxillary, oblong, entire, biglandular at the base. Racemelets alternate, divaricating, with two or three male flowers on a pedicel, and one female in the middle of each. Calyx five-leaved, three of the leaflets larger, ovate, convex, membranaceous at the edge, coloured. Nectary a

ONO

fleshy, blood-red ring. Filament purple, from the middle of the disk. Anther plano-convex, purple, trifid, with three polliniferous incisures. Germ oblong, three-cornered, striated with six lines. Stigma perforated. Capsule pendulous large, roundish, obtusely three-cornered, containing three very hard, black, oblong nuts, with a whitish kernel in each surrounded by a yellow membrane. Cotyledons two-leaved, compressed, veined, the length of the kernel.

Native of Jamaica, where it is frequently cultivated. It is called by the English Cobnut, by the French Noisetier. The kernels are esculent and sapid, the cotyledons only being emetic. The branches and petioles on being broken pour out a tenacious watery liquor.

Cultivated in 1763, by Mr. Miller. It flowers in June and July^p.]

OMPHALODES. See *Cynoglossum*.

ONAGRA. See [*Jussieua*, *Montzelia*,] *Oenothera*.

ONE-BERRY. See *Paris*.

ONION. See *Allium*.

[ONOBROMA. See *Carthamus*.]

ONOBRYCHIS. See [*Astragalus*, *Campanula*,] *Hedysarum*, [*Thesium*.]

ONOCLEA.

Lin. gen. n. 1170. Reich. n. 1287. Schreb. n. 1624.

Juss. 15. Angiopteris. Mitch. 29.

Class. 24. 2. Cryptogamia Filices.

Nat. order of Filices or Ferns.

GENERIC CHARACTER.

Capsules under the recurved and contracted pinnules of the frond, resembling pericarps.

SPECIES.

1. *Onoclea sensibilis*.

Lin. syst. 926. Reich. 4. 376. mant. 504. hort. cliff.

372. Gron. virg. 196. (Osmunda).

Polypodium sensibile. Munt. hist. 290.

Filix mariana, Osmundæ facie, racemifera. Pluk. mant. 80. t. 404. f. 2.

Filix indica, polypodii facie. Mentz. pug. 6. t. 10. — Osmundæ facie. Bod. à Stapel. 320.

Polypodium virginianum majus, Osmundæ facie, tenerius. Mor. hist. 3. 563. f. 14. t. 2. f. 10.

Fronds pinnate, subracemose at the tip.

2. *Onoclea polypodioides*.

Lin. syst. 926. Reich. 4. 376. mant. 306.

Fronds bipinnate, fructifications three-valved.

DESCRIPTIONS, &c.

1. Fronds thin, pale green, even; the divisions opposite, wide, sinuate, so very tender, that on being touched or ever so little compressed, they wither and perish.

Native of Virginia. Cultivated in 1758, by Mr. Miller. It must have been many years before, in the Oxford garden, since in the third volume of the Historia Oxoniensis (1699) it is said, that they had not been able to remark the fructification, though they had received it several years since from Virginia, and had cultivated it.

2. Root creeping, filiform, shining, rufous. Frond compound. Leaflets bipinnate, opposite, spreading. Pinnas subopposite, remote, linear, pinnatifid to the very midrib, bluntish. Fructifications as in Polypodium, marginal towards the base of the toothlets, thin, flattish, covered. Calyx three-valved, or membranaceous three-parted, cloven from the centre towards the base.

Obs. Fructifications rounded, covered with a membranaceous three-valved lid, fixed at the edge, seem rather to indicate this to be an Onoclea than of any other genus; although the other species has pinnate leaves somewhat racemose at top.

Native of the Cape of Good Hope, in fissures of the rocks near the top of the Table Mountain; where it was found by Koenig.

ONONIS (of Pliny. Ovaris of Theophrastus. Ovaris of Dioscorides. From Ovos, asinus, & ovini, q. asini oblectamentum.)

° Swartz.

° Hort. kew.

° Morison.

° Hort. kew.

° Linn mant.

Lin.

Lin. gen. n. 863. Reich. n. 935. Schreb. n. 1173.
Gartn. 154. Juss. 354. Anonis. Tournef.
t. 408.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth five-parted, almost the length of the corolla: segments linear, acuminate, slightly arched upwards; the lowest under the keel.

COR. papilionaceous. Banner cordate, striated, depressed at the sides more than the other petals. Wings ovate, shorter by half than the banner. Keel acuminate, as long as or longer than the wings.

STAM. Filaments ten, connate in an entire cylinder. Anthers simple.

PIST. Germ oblong, villose. Style simple, rising. Stigma blunt.

PER. Legume rhomb-shaped, turgid, subvillose, one-celled, two-valved, sessile.

SEEDS few, kidney-form.

ESSENTIAL CHARACTER.

Cal. five-parted, with linear segments. Banner striated. Legume turgid, sessile. Filaments connate without a fissure.

SPECIES.

* With subsessile flowers.

[1. *Ononis antiquorum*.

Lin. spec. 1006. Reich. 3. 424. Allion. pedem. n. 1161. Villars dauph. 3. 426.

Anonis legitima antiquorum. Tournef. cor. 28.

Flowers solitary larger than the leaflet, lower leaves ternate, branches almost even spiny.]

2. *Ononis spinosa*. Thorny Rest-harrow.

Lin. syst. 651. fl. suec. n. 637. hort. cliff. 359.

Gartn. fruct. 2. 343. Retz. obs. 2. 21. n. 68.

prodr. scandin. 732. Hudf. angl. 312. Wither.

arr. ed. 3. 627. Sibth. oxon. n. 616. Kniph.

cent. 5. n. 61. Regn. bot. (l'Arrete-boeuf).

Villars dauph. 3. 427. Krock. files. n. 1151.

Fl. dan. 783. Fl. rust. 129.

O. spinosa β. Lin. spec. 1006. Neck. gallob. 303.

Anonis spinosa. Scop. carn. n. 877. Hall. helv. n. 356.

Mor. hist. 2. 17. 1.—flore purpureo. Bauh. pin. 389.

Park. theat. 994. 1. Raii hist. 957. syn. 332.

Anonis. Fuchf. hist. 60. Riv. tetr. t. 69. Blackw.

301.—f. *Resta bovis*. Ger. 1141. 1. emac. 1322. 1.

—*vulgaris purpurea spinosa*. Bauh. hist. 2. 391. 2.

—*Resta bovis*. Trag. 869.

β. *Floribus albis*. White thorny Rest-harrow.

Flowers axillary in pairs, leaves ternate, upper ones solitary, branches thorny villose.

3. *Ononis arvensis*. Hairy Rest-harrow.

Lin. syst. 651. Reich. 3. 425. Wither. arr. ed. 3.

627. Sibth. oxon. n. 615.

O. mitis. Mill. dict. n. 2.

O. inermis arvensis. Hudf. angl. 313. 2.

Anonis spinis carens purpurea. Bauh. pin. 389.

A. non spinosa purpurea. Ger. 1142. 3. (non. ic.)

Raii hist. 957. syn. 332.

A. non spinosa flore purpureo. Park. theat. 993. 5.

Bauh. hist. 2. 393.

β. *O. repens*. Hudf. angl. 313. 2. β. Wither. arr.

628. var. 2.

A. procumbens maritima, fol. hirsutis pubescentibus.

Raii syn. 332. Dill. elth. t. 25. f. 28.

Flowers axillary in pairs, leaves ternate, upper ones solitary, branches unarmed subvillose.

4. *Ononis repens*. Creeping Rest-harrow.

Lin. spec. 1006. syst. 651. Reich. 3. 425.

Stems diffused, branches erect, upper leaves solitary, branches unarmed subvillose.

[5. *Ononis hircina*. Stinking Rest-harrow.

Lin. syst. 651. Ait. hort. kew. 3. 21. Jacqu.

hort. 1. 40. t. 93. Krock. files. n. 1152.

O. foetens. Allion. pedem. n. 1164. t. 41. f. 1.

O. altissima. Lamarck encycl. 1. 506.

O. arvensis. Retz. obs. 2. 21. n. 67. act. lund. 1. 130.

O. mitior flore purpureo. Best. syst. aest. 10. t. 2.

f. 2.

O. mitior 1. purp. flore. Clus. hist. 1. 99.

O. non spinosa purpurea. Ger. 1142. 3. ic. emac.

1322. 2. ic.

Anonis non spinosa, flore thyrsoides carneo, polonica.

Barr. ic. 1214.

Flowers subsessile in pairs, lower leaves ternate, upper solitary somewhat villose, branches hairy-villose.

6. *Ononis terrata*. Serrate-leaved Rest-harrow.

Vahl symb. 1. 52. Forsk. descr. 131.

Flowers subsessile solitary, lower leaves ternate serrate-toothed wedge-form, with three teeth usually at the tip.]

7. *Ononis minutissima*. Small-flowered Rest-harrow.

Lin. syst. 651. Reich. 3. 425. Jacqu. austr. 3. 23.

t. 240. Villars dauph. 3. 428. Allion. pedem.

n. 1165.

O. lutea sylvestris minima. Col. ecphr. 1. 304. t. 301.

Raii hist. 958.

Anonis spinosa lutea minor. Bauh. pin. 389.

A. montana spin. lut. min. Park. theat. 993. 3.

Flowers subsessile lateral, leaves ternate smooth, stipules ensiform, calyxes scarious longer than the corolla.

8. *Ononis mitissima*. Cluster-flowered annual Rest-harrow.

Lin. spec. 1007. Reich. 3. 425. Dill. elth. 28.

t. 24. f. 27. Mor. hist. 2. 169. f. 2. t. 17. f. 4.

Flowers sessile in spikes, bracts stipular ovate ventricose scarious imbricated.

9. *Ononis alopecuroides*. Foxtail Rest-harrow.

Lin. spec. 1008. Reich. 3. 426. hort. cliff. 358.

Kniph. cent. 8. n. 75.

Anonis sicula alopecuroides. Tournef. inst. 408.

A. spicata f. *alop. lusitanica non spinosa*. Raii suppl.

468.

A. purpurea spic. alop. major. Boerb. lugdb. 2. 33.

Spikes leafy, leaves simple blunt, stipules dilated.

[10. *Ononis variegata*. Variegated Rest-harrow.

Lin. spec. 1008. syst. 651. Reich. 3. 426.

Anonis lutea, trixaginis folio, maritima. Barr. ic. 776.

A. marit. mitis, fol. lucido ferrato. Bocc. sic. 7. t. 38.

f. 3.

A. non spinosa, flore luteo variegato, angustifolia marit.

Tournef. inst. 409.

A. lut. parva procumbens marit. Raii hist. 958.

** Flowers peduncled, peduncle awnless.

11. *Ononis alba*. White Rest-harrow.

Vahl symb. 2. 80. Poit. it. 2. 210.

Peduncles awnless very short, leaves simple, stipules dilated serrate at top.

12. *Ononis pubescens*. Downy Rest-harrow.

Lin. syst. 651. mant. 267. Reich. 3. 427.

O. Morisoni. Gouan illustr. 47.

Anonis purpurea procumbens verna f. *præcox fruticosa annua viscosa*, filiquis crassioribus lentiformibus rarius dispositis. Mor. hist. 2. 168. Raii hist. 958.

Peduncles awnless very short, upper leaves simple, stipules ovate-lanceolate quite entire.]

13. *Ononis cernua*. Hanging-podded Rest-harrow.

Lin. spec. 1011. syst. 652. Reich. 3. 427. amoen. 6.

af. 42.

Lotus africana annua hirsuta, floribus luteis. Comm.

hort. 2. 163. t. 82.

β. *Cytisus æthiopicus*.

Lin. spec. 1042. Mill. dict. n. 9. Pluk. phyt. t. 278.

f. 3?

Racemes strict, leaves wedge-form, legumes drooping linear recurved.

[14. *Ononis geminata*. Two-flowered Rest-harrow.

Ait. hort. kew. 3. 23.

Leaves ternate obovate, peduncles lateral two-flowered.

15. *Ononis umbellata*. Umbelled Rest-harrow.

Lin. syst. 652. Reich. 3. 428. mant. 266.

Peduncles awnless umbelled, leaves ternate emarginate, stems prostrate.

16. *Ononis argentea*. Silvery Rest-harrow.

Lin. syst. 652. suppl. 324.

Twining, peduncles awnless umbelled, leaves ternate, leaflets sessile silvery-tomentose.

17. *Ononis involucrata*. Involucrated Rest-harrow.

Lin. syst. 652. suppl. 324.

Hirsute, prostrate, peduncles awnless involucrated, involucre four-leaved, leaves ternate wedge-form.

18. *Ononis filiformis*. Thread-stalked Rest-harrow.

Lin. syst. 652. Reich. 3. 428. mant. 266. Berg.

cap. 227. (Lotus).

Peduncles

- Peduncles awnless subtriflorous, leaves ternate subsessile, leaflets ovate mucronate.*
19. *Ononis capensis*. Cape Rest-harrow.
Lin. spec. 1011. *Reich.* 3. 428. *amoen.* 6. *afr.* 41.
Racemes on long peduncles, leaves ternate suborbiculate.
20. *Ononis prostrata*. Prostrate Rest-harrow.
Lin. syst. 652. *Reich.* 3. 428. *mant.* 266.
Lotus prostratus. Lin. spec. 1090.
Peduncles awnless one-flowered very long, leaves ternate acute, stipules awl-shaped, stems prostrate.
21. *Ononis reclinata*. Spreading Rest-harrow.
Lin. spec. 1011. *syst.* 652. *Reich.* 3. 429.
Anonis pusilla hirsuta, flore ex albo & rubro colore mixto. Mor. hist. 2. 171.
A. purpurea non spinosa minor. Barr. ic. 354.
A. annua pumila, flore purpurascens. Tournef. inst. 408.
Peduncles awnless one-flowered, leaves ternate roundish crenate, legumes drooping.]
22. *Ononis cenisia*. Narrow-leaved trailing Rest-harrow.
Lin. syst. 652. *Reich.* 3. 429. *mant.* 267. *Allion. pedem. n.* 1173. *t.* 10. *f.* 3. *Villars dauph.* 3. 433.
O. cristata. Mill. dict. n. 9.
Anonis luteo-purpurea minima angustifolia. Barr. ic. 833 *t.* 1104.
Peduncles awnless one-flowered, leaves ternate wedged, stipules serrate, stems prostrate.
*** *With awned peduncles.*
- [23. *Ononis vaginalis*. Sheathed Rest-harrow.
Vahl symb. 1. 53.
O. Cherleri. Forsk. descr. 131.
Peduncles one-flowered awned, leaves sessile ternate and stipules sheathing toothed.
24. *Ononis Cherleri*. Dwarf Rest-harrow.
Lin. spec. 1007. *syst.* 653. *Reich.* 3. 429. *Ger. prov.* 487. 6. *Sauv. monsp.* 189. *Allion. pedem. n.* 1167.
A. pusilla villosa & viscosa, purpurascens flore. Tournef. inst. 408.
A. trifoliis affinis minima hirsuta Cherleri. Baub. hist. 2. 394. *Raii hist.* 959. 13. *Mor. hist. f.* 2. *t.* 17. *f.* 11.
Peduncles one-flowered awned, leaves ternate, stipules serrate.]
25. *Ononis viscosa*. Clammy Rest-harrow.
Lin. spec. 1009. *syst.* 653. *Reich.* 3. 430. *Ger. prov.* 486. 5. *Allion. pedem. n.* 1168.
Anonis lutea viscosa latifolia minor, flore pallido. Barr. rar. 840. *t.* 1239.
β. A. annua erectior latifolia glutinosa lusitanica. Tournef. inst. 409.
Peduncles one-flowered awned, leaves simple, the lowest ternate.
26. *Ononis ornithopodioides*. Bird's-foot Rest-harrow.
Lin. spec. 1009. *syst.* 653. *Reich.* 3. 430.
Anonis siliquis ornithopodii. Boerb. lugdb. 2. 34.
Foenum græcum siculum, fil. ornith. Tournef. inst. 409.
Peduncles two-flowered awned, legumes linear drooping.
- [27. *Ononis pinguis*. Greasy Rest-harrow.
Lin. spec. 1009. *syst.* 653. *Reich.* 3. 430. *Krock. siles. n.* 1153.
Anonis non spinosa, flore luteo variegato. Baub. pin. 389. *Raii hist.* 958. 10.
A. lutea non spinosa, Natrix Plinii. Dalech. hist. 449.
β. A. lutea mitis oxytriphylia ad foliorum petiolos capreolata. Pluk. phyt. t. 135. *f.* 5.
Peduncles one-flowered awned, leaves ternate lanceolate, stipules quite entire.]
28. *Ononis Natrix*. Yellow-flowered shrubby Rest-harrow.
Lin. spec. 1008. *syst.* 653. *Reich.* 3. 431. *mant.* 440. *hort. cliff.* 358. *Sauv. monsp.* 189. *Villars dauph.* 3. 431. *Allion. pedem. n.* 1170. *Mill. fig. t.* 37. *Curt. magaz.* 329.
Anonis Natrix. Scop. carn. n. 878. *Hall. helv. n.* 358.
A. viscosa spinis carens lutea major. Baub. pin. 389. *Raii hist.* 958.
A. lutea non spinosa, Dalechampio Natrix. Baub. hist. Mor. hist. f. 2. *t.* 17. *f.* 9.
A. f. Spina lutea. Ger. 1142. 4. *emac.* 1323. 4.
Ononis lutea. Camer. epit. 445.
Natrix. Riv. tetr. 68. *Lob. ic.* 2. 28.
N. Plinii f. Anonis non spinosa lutea major. Park. theat. 994. 6.

- Peduncles one-flowered awned, leaves ternate viscid, stipules quite entire, stem shrubby.*
**** *Shrubby.*
29. *Ononis tridentata*. Three-tooth-leaved Rest-harrow.
Lin. spec. 1009. *Reich.* 3. 431.
Anonis hispanica frutescens, folio tridentato carnosio. Toarnef. inst. 408. *Magn. hort.* 16. *t.* 16. *Raii suppl.* 466.
Shrubby, leaves ternate fleshy sublinear three-toothed, peduncles two-flowered.
- [30. *Ononis crispa*. Curled-leaved Rest-harrow.
Lin. spec. 1010. *syst.* 653. *Reich.* 3. 432.
Anonis hispanica frutescens, folio rotundiore. Magn. monsp. 17. *t.* 17. *Raii suppl.* 466.
β. A. hisp. frut. folio Rosæ sylvestris. Tournef. inst. 409.
Shrubby, leaves ternate waved roundish toothed viscid-pubescent, peduncles one-flowered awnless.
31. *Ononis hispanica*. Spanish Rest-harrow.
Lin. syst. 653. *suppl.* 324. *Barr. ic. t.* 775.
Shrubby, peduncles awned one or two-flowered, all the leaves ternate channelled recurved, serrate all along the edge.]
32. *Ononis fruticosa*. Shrubby Rest-harrow.
Lin. spec. 1010. *syst.* 653. *Reich.* 3. 432. *hort. cliff.* 358. *Ger. prov.* 487. 7. *Allion. pedem. n.* 1171. *Villars dauph.* 3. 432. *Mill. fig. t.* 36. *Curt. magaz.* 317.
Anonis purpurea frutescens non spinosa. Dodart. mem. t. 57.
A. purp. verna præcox frut. flore rubro amplo. Mor. hist. 2. 170. *Raii hist.* 960. *Dubam. arb.* 1. *t.* 58.
Cicer sylvestre alterum triphyllum. Park. theat. 1077. 6.
Shrubby, leaves sessile ternate lanceolate serrate, stipules sheathing, peduncles subtriflorous.
33. *Ononis rotundifolia*. Round-leaved Rest-harrow.
Lin. spec. 1010. *syst.* 653. *Reich.* 3. 432. *mant.* 440. *hort. cliff.* 348. *Ger. prov.* 488. 8. *Villars dauph.* 3. 432. *Allion. pedem. n.* 1172. *Curt. magaz.* 335. *Jacqu. austr.* 5. 55. *app. t.* 49. *Hall. helv. n.* 357. (Anonis).
Cicer sylvestre latifolium triphyllum. Baub. pin. 347.
C. sylv. tertium. Dod. pempt. 525.
C. sylv. verius. Lob. ic. 2. 73.
C. sylv. triph. Park. theat. 1077. 5.
C. sylv. latif. Ger. 1948. *emac.* 1223. 2.
Anonis latif. Cicer sylv. trifolium. Baub. hist. 2. 295. *Raii hist.* 959. 16.
A. purpurea perennis foliis latioribus rotundioribus profunde serratis. Mor. hist. 2. 170. *n.* 7.
Shrubby, leaves ternate ovate toothed, calyxes three-leaved-bracted, peduncles subtriflorous.
- [34. *Ononis microphylla*. Small-leaved Rest-harrow.
Lin. syst. 653. *suppl.* 324.
Shrubby, thorny, leaves minute ternate quite entire, legumes recurved.
35. *Ononis mauritanica*. Barbary Rest-harrow.
Lin. syst. 653. *Reich.* 3. 433. *mant.* 267. 453.
Lotus mauritanicus. Lin. spec. 1091.
L. fruticosus. Berg. cap. 226.
Shrubby, leaves quinate obovate mucronate silky underneath, stipules filiform, peduncles racemed.
36. *Ononis subocculta*.
Villars dauph. 3. 429.
O. Columnæ. Allion. pedem. n. 1166. *t.* 20. *f.* 3.
O. lutea sylvestris minima. Col. ecphr. 1. 304. *t.* 301?
Anonis spinosa lutea minor. Baub. pin. 389.
A. flore luteo parvo. H. R. Par. 20. *Tourn. par.* 98. *inst.* 409. *Vaill. par.* 13.
Flowers sessile, all the leaves ternate, leaflets orbiculate, stipules lanceolate serrate, calyxes of the same length with the corolla.
37. *Ononis striata*.
Villars dauph. 3. 430. *Gouan illustr.* 47.
Stems prostrate, leaves ternate smooth striated, stipules ovate acute serrate, peduncles one-flowered, calyxes and legumes hirsute.]
38. *Ononis decumbens*.
Mill. dict. n. 15.
Anonis americana angustifolia humilior & minus hirsuta. Houtt. MSS.
Leaves ternate linear-lanceolate, stem decumbent, flowers in axillary spikes, legumes smooth.

[These are herbaceous plants or undershrubs. Leaves ternate, with the leaflets often serrulate. Stipules fastened to the bottom of the petiole. Flowers yellow or purple, axillary or terminating, sessile or more frequently peduncled, the peduncles sometimes awned, sometimes not, one or many-flowered. Legume in some oblong, in others very short, nearly equal to the calyx, containing one or two seeds¹.—N. 7. 8, 9, 10, 11, 12. 19. 21. 25. are annual; the others are perennial or shrubby.

1. Root perennial. Stems straight, hard, smooth and almost woody. Flowers purple. The leaves are smaller and less villose than those of the next species, of which perhaps it is no more than a variety². According to Linneus, it is shorter, stiffer, more thorny, almost smooth; with solitary peduncles, twice as long as the bracte.

Native of the South of Europe, as Dauphiné, the county of Nice, &c. in meadows and pastures.

2. In our common thorny Rest-harrow, at the base of the branches are strong thorns, and the branches themselves terminate in soft thorns. Stem slightly hairy. Leaves almost smooth. Calyx hairy, with five awl-shaped unequal segments. Flowers twice as long as the calyx. The whole plant is more rigid and woody, than our thornless Rest-harrow³; for which, in its young state, before the thorns are formed, it has frequently been mistaken. The corolla is red⁴.]

It has a strong creeping root, which spreads far in the ground, and is with great difficulty eradicated, hence its names of *Resta bovis* and *Arrete boeuf*. Stems a foot and half high, slender, purple, hairy, sending out many lateral branches, armed with sharp prickles. The flowers come out singly from the side of the branches, they are of a bright purple colour marked with lines, and are succeeded by small pods, containing one or two kidney-shaped seeds. [Four or six, according to Gärtner, shagreened with very minute dots.

It is thus described by Retzius:—Stems decumbent, villose, red, thorny especially from the base to the middle. Thorns two inches long, awl-shaped, pungent, sometimes but seldom furnished with a small leaf or two. Leaves and petioles smaller than in his *arvensis*, which is our *hircina*, obovate, hairy on both sides, and not serrated along the whole circumference. Flowers remote, at the distance of one or two inches, and therefore scarcely racemed, commonly solitary, but if there be two together they are on a common bifid peduncle. The corolla has the banner by no means emarginate, but furnished with a soft awl-shaped little point: keel more gaping underneath somewhat longer than the wings. The plant, except in length, is less than *hircina*, more woody, and of a darker colour.

Monf. Villars does not distinguish our *arvensis* from this. He says that it has no spines whilst it is young, but acquires them with age, and that they become stronger as the plant grows older, especially in poor land. It is a little villose and viscid when young, or in strong land, but loses part of its down and all its clamminess in low poor wet grounds: it then approaches to the first sort. It varies with white flowers, but this variety differs no otherwise from the common sort. All the varieties have ternate leaves; the leaflets are oblong, elliptic, sharply toothed; the branches do not acquire thorns till the second or third year; the flowers form a spike in the young plant, and become axillary or lateral when it is older. Loefelius long since and Haller affirmed that the young plant of Rest-harrow is smooth, and acquires thorns with age.—See what is said on the next sort.

Native of Europe, chiefly in barren pastures, both in a sandy and strong soil. Flowering the greater part of the summer from June.

It is named in English *Thorny Rest-harrow*, *Cammock*, *Petty Whin*, *Ground Furze*; in Yorkshire *Rust-burn*, perhaps corruptly from Rest-bourn. Gerarde says, the root is long and runneth far abroad, very tough and hard to be torn in pieces with the plough,

¹ Jussieu. ² Villars. ³ Woodw. Mss. ⁴ Withering.

inasmuch that the oxen can hardly pass forward, whereupon it was called Rest Plough or Rest Harrow. I am at a loss to conceive how the latter name prevailed, since that implies a superficial impediment, whereas it proceeds from the roots. This quality of the plant makes it very fit to be sown on sea and fen banks.

A decoction of these roots has been recommended in cases of stone and jaundice. Kine and goats eat it; sheep are fond of it; horses and swine refuse it². Dr. Stokes says, that a horse refused the whole branch, but eat of the younger shoots when picked off.

Mr. Woodward remarks of the figure in the Flora Danica, that the leaves are too pointed, and too deeply serrated, and that spines are represented at the ends of the branches only.

3. Our hairy or thornless Rest-harrow has the stem, branches and leaves soft and whitish with down. Flowers numerous, mostly solitary, alternate on the young shoots: corolla but little longer than the calyx; the segments of which are more tapering than in *O. spinosa*³.—This is a smaller plant than that. Stems and branches woody, cylindrical, a little hairy. Leaves set with glandular hairs; the upper oblong-ovate, toothed. Petioles short, fixed to a broad toothed stipule. Flowers scattered, intermixed with leaves. Calyx, some of the hairs long and tapering, others short and tipped with glands; segments, four of them pressing on the standard, the lowermost supporting the keel. Standard of the corolla circular, with a small point at the end, with short hairs on the outside, of a fine rose-colour, streaked with deeper coloured lines; wings more than half as long as the standard, ovate, white: keel coloured and streaked as the standard. Germ with hairs tipped with glands. Seeds about six. Flowers sometimes nearly white. The hairiness of the leaves, and the want of thorns, best distinguish this from *O. spinosa*, the leaves of which are scarcely, if at all hairy on the upper surface, though in both they are edged with hair-like glands terminating in a small globule⁴.

Linneus and others suppose this to be a mere variety of the thorny Rest-harrow, or the same plant in the younger period of its life.] Mr. Miller affirms that he has cultivated both by seeds, and has always found the plants retain their difference; that the stalks of this are hairy and more diffused than those of the *spinosa*; the leaves broader and sitting closer on the branches; the stalks not so upright and without spines.

[Mr. Woodward relates, that in the autumn of 1779, he examined many hundred plants in the corn-fields about Berkhamstead in Hertfordshire, without meeting with a single one thorny; whereas in the neighbourhood of Bungay he never met with one without spines in any part of the year. Dr. Withering also informs us that Mr. Pitt of Pendeford near Wolverhampton sent him specimens which never became thorny, and that the thorny sort is never found in that neighbourhood: and that he found it in great plenty on St. Vincent's rocks, without the least appearance of thorns on any of the plants, though he examined a great number. These accounts agree entirely with my experience. In the part of the country where I live, in the counties of Bedford and Huntingdon, the *Ononis* has never occurred to me without thorns. It is found in pastures and the borders of corn fields, chiefly in light lands. The *arvensis* of many places on the continent is the fifth species, which is not found wild in England. It varies with white flowers as well as the foregoing sort.

β. A variety of *O. arvensis* has been found on our sea coasts in Cornwall, near Deal in Kent and Yarmouth in Norfolk; also by Charlton Church, Woolwich, and Gravesend. At Sandscale, and in Walney, in Low Furness, &c. This was supposed to be the same with *O. repens* of Linneus, but according to Mr. Afzelius that species has not been found in England. Mr. Hudson cultivated both our plants four years, and could not discover any specific difference. Both, according to him, are villose and somewhat clammy, with the flowers solitary, or two together, sometimes

² Linn.

³ Woodw. Mss.

⁴ Withering.

three. Mr. Woodward says it is not so downy as the *arvensis*, that the flowers are larger and fewer, the segments of the calyx shorter and blunter, the leaves longer, broader at the extremity, and more tapering at the base (oblong wedge-shaped.) Removed into a garden it grows upright, and is more downy.

4. This is very nearly allied to the preceding, but differs in having the stems procumbent diffused every way, and in being smaller. Flowers solitary from the axils.

Native of the Levant^c, but not of England, as Linneus supposed it to be. Perhaps it may not be really different from the preceding. The species seem to have been too much multiplied.

5. This has never any thorns. The branches and especially the calyx are very villose. Leaves soft, finely hairy. Flowers terminating in a spike, two together, peduncled. Standard reflex, almost flat; keel bent in at an obtuse angle. Fruit shorter than the calyx, very hirsute. In the common Rest-harrow the stipules are much smaller, hooked; the fruit less hirsute, longer than the calyx; the keel of the flower bent in at a right angle. Flowers solitary^d.

Retzius thus describes his *arvensis*, which is this species.—Stems almost upright, villose, green, viscid, twice as thick as those of the thorny Rest-harrow, without any thorns. Leaves simple and ternate, ovate, ferrate all round, naked underneath, above villose, with hairs having a globular gland at top. Petioles winged, stipule-shaped, with large, ferrate, almost embracing wings. Flowers almost twice as large as those of thorny Rest-harrow, in a terminating raceme, commonly two together: both peduncles from the same point. Calyx villose, five-cleft, with linear, acuminate, striated teeth, the two uppermost of which follow the back of the standard; the two middle ones lie over the edges of the standard, and the fifth covers the opening of the keel at bottom. Standard a little emarginate. Wings the length of the keel. The whole plant is larger than that of *spinosa*, more succulent, paler, and has a goatish smell. It neither has thorns nor creeps. Clusius says, that this goatish smell resembles that of *Fraxinella*, than which nothing seems to me more different. In Ray's synopsis it is said of our common thornless Rest-harrow, *hircum olet hæc planta*.

Native of Sweden, Germany, Italy and Hungary. Introduced in 1774, by Joseph Nicholas de Jacquin, M. D. It flowers from may to august^e.

This species seems to be stronger than our common Rest-harrow, and together with the *Natrix* and *viscosa*, is recommended by some foreign physicians as a powerful diuretic, and serviceable for cleansing the urinary passages, and in an incipient dropsy. The bark of the root is the most efficacious part of the plant.

6. Stem herbaceous, round, decumbent, subdichotomous. Branches slender. Lower leaves ternate, upper simple, at the tops of the branches scarcely any, all petioled. Leaflets wedge-form-linear, ferrate-toothed with three teeth on each side, at top transverse, three-toothed seldom five-toothed, a quarter of an inch in length; the lateral ones smaller. Petiole the length of the leaves. Stipules fastened on each side to the petiole, and only half its length, ovate-lanceolate, striated, toothletted. Flowers axillary, solitary, subsessile, the lower ones more remote, the uppermost supported by a stipule at the base. Calyx five-toothed, striated, with lanceolate-linear segments, the length of the corolla. Legume villose, oblong, four-seeded, the length of the calyx^f.

7. This is an annual plant, about nine inches high, sending out one or two side branches towards the bottom. Leaves small, ovate, indented on their edges, and standing upon pretty long foot-stalks. Flowers axillary, solitary, small, yellow, sessile, with a sharp bristly bracte. Pods very short, turgid; containing two or three kidney-shaped seeds.

[Stems filiform, diffused, smooth, suffruticose. Stipules very much acuminate, subbipartite, quite

entire. Leaflets somewhat oblong and rigid, ferrate, recurved, scarcely mucronate. Petioles very short. Flowers axillary, solitary. Calyxes smooth, deeply five-cleft, straight, awl-shaped. Corolla yellow. Legume ovate, brown, shorter than the calyx. Upper floral leaves simple^g.

Villars remarks, that the stems are many, simple, from six to eight inches in height; leaves ternate, on a petiole supported by two stipules, lengthened out into an awn, and entire; leaflets smooth, very dark green, oblong a little enlarged at the end, with sharp teeth, not very deep. Flowers on the upper part of the stem and branches, yellow, small, axillary, solitary. The leaves which support these are often simple. Calyx cut to the base, bristle-shaped, longer than the flower and fruit. Legume oval, blackish, smooth.

Native of the South of Europe. Cultivated in 1739, by Mr. Miller. It flowers in june and july^h.]

8. Stem upright, a foot and half high, sending out small side branches. Leaflets roundish, ferrate, on short foot-stalks. Flowers in short leafy spikes at the ends of the branches; they are small, and of a pale purple colour. Pods short, turgid, containing two or three kidney-shaped seeds.

[According to Linneus, the stem-leaves are ternate; the floral leaves simple. Stipules and bractes embracing, membranaceous-cartilaginous, even, ovate, concave, among the flowers imbricate in a spike, covering the calyxes. Calycine segments ovate, bent back at the sides, having viscid bristles scattered over the inside, as the legume has also.

Dillenius says that it is a mean between the upright and procumbent species, the principal stem being upright, from a foot to two feet in height, the other stems and branches procumbent; they are round and hairy; the shoots terminate in spikes of flowers from half an inch to an inch in length. Corolla small, pale purple. It has no spines, it is not clammy, and it has not any ill smell.

Native of Spain and Portugal. Cultivated in 1732, by James Sherard, M. D.ⁱ]

9. This is an annual plant, rising with upright branching stalks a foot high. Leaves single, sessile; the larger leaves oval, about an inch long, and three quarters of an inch broad; the upper leaves narrow, ending in obtuse points, and slightly indented at their ends. Flowers in leafy spikes at the ends of the stalks set close together, having hairy calyxes; they are pretty large, of a purple colour, and appear in july. Pods taper, about an inch long, inclosing four or five kidney-shaped seeds.

[Native of Spain and Portugal. Cultivated in 1696, by Mr. Jacob Bobart^k.

10. This has the appearance of an *Euphrasia*, branched, diffused, viscid-pubescent. Stipules cordate, very wide, plaited, toothed, emarginate, wider than the leaves. Leaves simple, wedge-form-obovate, plaited, finely toothletted. Flowers axillary, solitary, subpeduncled. Calyxes shorter than the corolla^l.

Native of the South of Europe, on the sea coast, as in Italy, and in Sicily very abundant. Annual.

11. Stem a foot high, diffused, round, a little flexuose at bottom, hairy-subviscid, branched. Branches of the same structure with the stem, quite simple, the lower ones procumbent, the upper ones spreading. Leaves alternate, half an inch long, remote, spreading, oblong, finely ferrulate: floral leaves pubescent, of the same form with the stem-leaves, but smaller. Stipules the length of the petiole, narrower by half than the leaves, quite entire at bottom, finely ferrate at top. Flowers from the upper axils, at first close together in a short spike, afterwards remote, on short peduncles, solitary. Pedicels the length of the petiole. Bractes none. Calyx five-cleft, hairy viscid; segments lanceolate, ciliate, the lowest twice as broad as the rest. Corolla the length of the calyx, pale red.

^g Linn. syst.

^h Hort. kew.

ⁱ Idem.

^k Idem.

^l Linn. spec.

^c Linn.

^d Allione.

^e Hort. kew.

^f Vahl.

It is a mean between *O. alopecuroides* and pubescens. From the former it differs in its ferrate stipules, the floral leaves of the same structure with the stem-leaves only smaller, not linear and narrower towards the base: from the latter, in having all the leaves simple, and the stipules ferrate^m.

Native of Barbary, on the sea-shore, flowering in the month of June. The whole plant is covered with a light down except the leaves, and it is a little viscid^a.

12. Stem a foot high, branched, diffused, round. The whole plant pubescent-viscid. The ends of the branches heaped with leaves and flowers, which gradually become more remote. Lower leaves ternate, the rest simple. Leaflets ovate or oval, obtuse, acutely ferrate. Stipules ovate-lanceolate, fastened to a petiole of the same length, quite entire. Petioles the length of the leaves. Peduncles axillary, awnless, the length of the petioles. Calyxes lanceolate, bluntish, the length of the corolla^o.

Native of the South of Europe. Gouan had the seeds from Majorca or Minorca. Annual. Introduced in 1783, by Mons. Thouin. It flowers in August^p.

13. This is a shrub, having the appearance of *Genista canariensis*. Branches round, purple, with whitish hairs scattered over them. Leaves ternate, petioled, small, purplish underneath: leaflets sessile, somewhat wedge-shaped, blunt, scarcely emarginate. Racemes erect, hairy, as are also the calyxes. Corollas small, yellow. Stamens connate, with a cleft above. Legume linear, drooping, sickled backwards, compressed torulose^{*}.

Linneus first named it *Cytisus æthiopicus*, under which name Mr. Miller describes it thus. Stalk soft, shrubby, eight or ten feet high, putting out many slender branches on every side. Leaves small, wedge-shaped, indented at the top, dark green, smooth. Flowers frequently single from the side of the branches, large and of a bright yellow. He says that it grows naturally about Algiers whence Dr. Shaw brought the seeds, which succeeded in the Chelsea garden.

[Native of the Cape of Good Hope. Introduced in 1774, by Mr. Francis Masson. It flowers from July to September.

14. This also is a native of the Cape, and was introduced by Masson in 1787^q.

15. Stems a foot high, branched, rod-like, numerous, prostrate, filiform. Leaflets sessile, obcordate or obovate, obtuse, naked. Petioles the length of the leaves, scarcely pubescent. Stipules minute, lanceolate. Flowers in umbels about five together (four to eight); sometimes but seldom two flowers under the umbel, without any evident involucre. Common peduncles axillary and terminating, very long, filiform. Calyxes pubescent. Filaments connate. Legume with the dorsal suture rugged.

Native of the Cape of Good Hope^r.

16. This resembles a *Glycine*, but has not the character. It was found at the Cape by Thunberg.

17. In appearance it agrees with *O. umbellata*. This also was found at the Cape by Thunberg^s.

18. This has the stature of *Lotus corniculata*. Root simple, descending. Stems numerous, branched, hardish, filiform, diffused, a span high. Leaves subsessile. Leaflets ovate, mucronate, small, subpubescent. Stipules none. Peduncles axillary, filiform, much longer than the leaves, subtriflorous at top: flowers alternate, pedicelled. Legume cylindric, acute.—Native of the Cape^t.

19. Herbaceous, pubescent. Stipules subcordate. Petioles longer than the leaflets, which are mucronate, the middle one on a longer petiole, and more refuse. Racemes axillary, solitary, simple, twice as long as the leaves, composed of about six alternate flowers. Corolla yellow and violet purple. It is an annual plant, and native of the Cape^u.

20. Stems numerous, a span long, filiform, weak, herbaceous. Leaves petioled, lanceolate, mucronate at both ends, smooth, pubescent underneath. Stipules

very minute, acuminate. Peduncles filiform, jointed below the top. Calyx the size of the leaves. Legume subtomentose, mucronate, horizontal, twice as long as the calyx. That it belongs to this genus, appears from the coalescent stamens^x. Linneus had first ranged it with *Lotus*. Native of the Cape.

21. This is an annual plant, pubescent viscid, small, diffused, spreading. Leaves petioled, orbiculate, thickish, plaited, pubescent-viscid. Stipules oval, spreading, blunt, ferrate. Peduncles axillary, scarcely the length of the leaves. Calyxes the length of the peduncle, blunt. Corollas white with the standard purple underneath. Calyx after flowering bent back at top to the stem. Legume half as long again as the calyx, villose, closely bent back under the peduncle, brown. Native of Spain and Italy^y.

22. Stems a finger's length, somewhat branched, even. Leaflets even, rounded at the top, sharply and very finely ferrate. Stipules lanceolate. Peduncles lateral, much longer than the leaves. Calyx short, even. Standard purple, striated^z.

It is small, though woody; entirely smooth except the calyx. Stems thin and hard. At the base of the leaflets are two green pointed lanceolate toothed stipules. Leaflets oblong, sharply toothed. Flowers large in proportion to the plant, growing one by one from the axils of the upper leaves, on a peduncle about an inch in length. Standard rounded, bent back at top, purple with darker red veins; wings and keel much shorter, white. Capsule smooth, short, swelling^a.

Native of Italy, at the foot of mont Cenis, &c. and of Dauphiné. Villars is of opinion that Linneus intended this plant, when he speaks of the *reclinata* as a native of Dauphiné; and Allione supposes the *reclinata* of Linneus to belong to this species. He says, that it varies with smooth and hairy leaves; with the flowers close on short peduncles, and remote on long peduncles. The whole plant is sometimes covered with flowers, and sometimes they are only at the ends of the branches.

Mr. Miller describes it under the name of *Ononis cristata*. He therefore cultivated it before 1759. According to the Kew catalogue it was introduced in 1778, by Mons. Thouin.

23. Viscid-villose, with a woody stem. Leaflets wedge-form, striated, toothed, towards the base quite entire, the lateral ones smaller. Stipules cowled, covering the whole stem, oblique to the stem, bifid on the outside, striated, the lower ones dry. Peduncles alternate, from the middle to the end of the stem, solitary, awned a little below the calyx with a linear leaflet the length of the calyx, erect, an inch in length. Calyx striated, with lanceolate segments, shorter than the corolla. Corolla yellow, with a purple-striated standard. Legume bent back. At one time of the year it puts on an appearance so different as to be easily taken for a distinct species: with the branchlets clustered, half an inch long, leafless and the stipules smaller closely imbricate^b.

24. Allied to *O. minutissima*, but the leaves viscid-villose underneath, and not smooth. Stipules diverging, ferrate, lanceolate at the top, not sheathing, quite entire or setaceous. Calyxes pubescent, the length of the corolla; not smooth and longer than the corolla^c.

Root woody. Stem procumbent, diffused, wrapped in stipules every way. Leaves subsessile, toothed at top. Stipules lanceolate, sharp, ferrate. Peduncles axillary, longer than the stem, villose and viscid, terminated by a very short truncated thread, coming out below the flower. Calyx five-cleft, villose and viscid, with lanceolate-linear, acute, long segments. Standard large. Legume ovate, flat, nodding. Flowering peduncles erect; fruiting peduncles nodding^d.

Native of the South of Europe. Introduced in 1771, by Mons. Richard. It flowers in June and July^e.]

25. This is an annual plant, with a strong herbaceous hairy stalk, a foot and half high, sending out branches the whole length. The middle leaflet is

^m Vahl. ⁿ Poiret. ^o Linn. mant. ^p Hort. kew.
^q Linn. syst. ^r Hort. kew. ^s Linn. mant.
^t Linn. suppl. ^u Linn. mant. ^v Linn. amoen.

^x Linn. mant. ^y Linn. spec. and syst. ^z Linn. mant.
^a Villars. ^b Vahl. ^c Linn. spec. ^d Ger. prov.
^e Hort. kew.

large and oval, the side ones are long and narrow, rounded at their points, indented on their edges, and very clammy. Peduncles axillary, solitary, each sustaining one pale-yellow flower, standing erect in the middle of the peduncle.

[The whole plant is beset with glutinous hairs. Stem angular, branched. Leaves on the stem often ternate, subferrate; on the branches simple. Stipules embracing, bifid. Peduncles terminated by a bristle longer than the flower. Calyx deeply cut into linear segments. Legume ovate, turgid, nodding, longer than the calyx^f.

Native of the South of France and Spain. Cultivated by Mr. Miller in 1768^g.] He says that the seeds were sent him from Portugal, where it grows naturally.

[^g. Is larger, and the calyxes are longer than the corolla^h.

26. Stem erect, flexuose, with short alternate branches. Leaves on oblong petioles, viscid: leaflets obovate, ferrate, the middle one double the size of the two others. Stipules semi-cordate. Peduncles longer than the petiole. Calycine leaflets filiform. Legumes compressed, toruloseⁱ.]

Annual; nine inches high, with one or two branches towards the bottom. Leaves small, on short foot-stalks, each sustaining two small yellow flowers. Pods jointed, compressed like those of Bird's-foot, having four or five seeds. It flowers in July, and the seeds ripen in the autumn.

Native of Sicily, [at Capo Passaro. Cultivated by Mr. Miller in 1759.

27. This resembles *O. Natrix* very much, but the stem is more succulent and more angular; the leaves larger, lanceolate-oblong; the awns of the peduncles the length of the flower, shorter than in the preceding species. According to Mons. Gerard it is a variety of *O. Natrix*^k.—Native of the South of Europe.

28. This is a very strong-smelling plant, with the odour of *Theriaca*, and not very clammy. Leaves oval, flattish, ferrate only at the top, not fleshy. Peduncle the length of the awn. Calyxes viscid^l.

Root large and wrinkled. Stems more or less upright, commonly a foot high. Leaflets oblong, villose, toothed at the end. Flowers large, yellow, solitary, on a peduncle elbowed at two thirds of its length, whence springs a thread like an awn. The upper part of the flower is rayed with red lines. Legumes oblong and villose. The whole plant is viscid and has a resinous smell^m.

Mons. Villars insists that *O. viscida* of Linneus is no more than a variety of this, only more upright, more viscid and succulent, with longer leaves, and growing in woods.

Native of the South of France, Spain and Portugal, Carniola and Switzerland. Ray observed it first in Sicily, at Capo Passaro, then by the river Arve near Geneva, and about Montpellier abundantly: he remarks that the Sicilian plant is larger and higher than the others.—It was cultivated here in 1683, by Mr. James Sutherlandⁿ.

29. Stem erect, panicled. Stipules awl-shaped, minute. Leaflets somewhat channelled, three-toothed at top, with some obsolete toothlets at the sides. Raceme terminating, small, hispid-glutinous. Flowers purple^o.]

Stalks shrubby, a foot and half high, dividing into slender branches very full of joints. Leaflets narrow, thick, fleshy, on short foot-stalks. Flowers at the ends of the branches in loose panicles, some of the peduncles sustaining two, and others but one flower: they are of a fine purple colour, and appear in June; the seeds ripens in September.

Native of Spain and Portugal. [Cultivated before 1759, by Mr. Miller.

30. Stem erect, panicled, pubescent-viscid. Leaflets obovate, blunt, recurved, channelled, plaited, somewhat toothed, curled. Stipules bifid, embracing,

toothed, hairy and viscid, as is the whole plant. Flowers lateral, axillary, solitary, on a very short peduncle. Calyx five-parted; segments shorter by half than the corolla, almost equal, three-toothed. Corolla yellow, the size of the leaves; with the standard streaked of a blood-red colour on the outside, as in *O. Natrix*, which it resembles very much; but differs in being curled, more viscid, and having awnless peduncles, which, when the flowering is past, are very much recurved, inasmuch that the fruit approximates to the stem^p.

Native of Spain. Cultivated in 1752, by Mr. Miller^q. It is omitted in the seventh and eighth editions of the Dictionary.

31. Plant strict, viscid, inodorous. Leaves thickish, less than those of *O. Natrix* but thicker. Stipules spreading, recurved. Peduncles lateral, with an awn the length of the petiole. Flowers like those of *O. Natrix*, yellow streaked with red. Perhaps it may be a variety of *O. crispa*.—Native of Spain^r.]

32. This is a very beautiful low shrub, rising with slender stalks about two feet high, dividing into many branches. The flowers come out in panicles at the ends of the branches upon long peduncles, which for the most part sustain three large purple flowers. Legumes turgid, about an inch long, hairy, inclosing three or four seeds.

[Stems many, woody, a foot high, smooth, round, straight, with frequent joints, divided into short branches. Stem-leaves sessile; branch-leaves petioled. Leaflets smooth, unequally ferrate, fleshy, shining. Stipules striated, dividing into unequal segments at top; according to Linneus four-awned and dry. Peduncles alternate, longer, contained within leafless sheaths. Calyx five-parted, subvillose, with equal linear segments. Flowers nodding, forming handsome bunches, red or purple. Legumes hoary, longer^s.

Native of the South of France, on hills and mountains. Cultivated in 1748, by Mr. Miller. It flowers in May and June; and varies with white flowers^t.

33. Stem round, striated, somewhat villose, a foot and half or two feet in height. Leaves petioled, ferrate-toothed, with the teeth alternately larger and smaller, villose, large; the end leaflet larger and rounder than the others. Stipules green, sheathing, obsolete ferrate, with longitudinal prominent nerves. The flowers form handsome bunches at the ends of the branches; they are on a long peduncle, frequently three together, each on its proper pedicel, of a purple colour. The standard is very large, roundish^u, and pubescent. The wings shorter than the keel: the calyxes surrounded by three, cordate, approximating, shorter bractes.

It differs from the preceding in having a higher stalk, with wider leaflets. The stipules also in this are of the same colour with the leaves, and always leafy; whereas in the preceding they are shrivelled, and on the flowering stem leafless^v.

Mr. Miller describes the corolla as pale yellow, which is certainly a mistake, it being purple: in other respects his description accords well enough with the plant.—It is a native of Switzerland, and was cultivated here in 1570, by Mr. Hugh Morgan, as appears from Lobel. It flowers from May to July^w.

34. This shrub is very much branched, somewhat spreading, and armed with stout thorns. Leaves petioled. Leaflets oblong, bluntish, even. Legumes petioled, linear, torulose, acute, even: containing five or six seeds.

Native of the Cape of Good Hope, where it was found by Thunberg^x.

35. Leaflets in fives, besides the minute stipules^y.—Native of the Cape.

In the *Species Plantarum* Linneus describes it under the name of *Lotus*, as a small shrub, with filiform stiffish branches. Leaves petioled, with white hairs scattered over them on both sides. Stipules the size of the leaves, lanceolate-ovate. Peduncles axillary,

^f Ger. prov.

^g Hort. kew.

^h Linn. spec.

ⁱ Linn. spec. and syst.

^k Idem.

^l Linn. spec.

^m Villars.

ⁿ Hort. kew.

^o Linn. spec.

^p Linn. spec.

^q Hort. kew. from Mill. dict. ed. 6.

^r Linn. suppl.

^s Gerard and Villars.

^t Hort. kew.

^u Gerard and Villars.

^v Linn.

^w Gerard.

^x Hort. kew.

^y Linn. suppl.

^z Linn. syst.

long. Legumes smooth, half as long again as the leaves.

36. This resembles *O. minutissima*, and has been taken by most authors for the same plant. Allione and Villars however regard it as distinct. The stems are of the same size, and have the same habit; but in this the whole plant, not excepting the fruit is villose and a little clammy; the leaflets are round, with the teeth straight and shallow; the stipules are rusted, less hard and toothed, not blackish awned and entire; the calycine leaflets are less hard, shorter, and do not terminate in an awn; the flower is smaller, and yet is of the same length with the calyx, as well as the fruit.

It is singular, that in autumn, the petals become so small, as to be concealed under the germ, at the bottom of the calyx, so as not to be seen; the fruit however is not on this account abortive. All parts of the flower are straight, distinct, not touching each other, but pale and flat, and seeming to be the commencement of a regular flower of four unequal petals. This plant is more frequently found thus, than with the flowers developed, coloured, and equal in length to the calyx. Hence the name of *suboculta*.

Native of Dauphiné, the county of Nice, &c. Allione affirms it to be perennial; but Villars rather takes it to be biennial.

37. This approaches to the preceding and the *minutissima* in size, but is a little different in habit. A hard, knobbed, perennial root, full of tubercles, furnishes several creeping stems, commonly simple, from four to six inches in length. They have few leaves on their lower part, and at top have a parcel of yellow flowers in a raceme. Stipules small, acute, toothed, semicordate. Leaflets almost triangular, truncated on the upper edge which is toothed, rayed or grooved on their upper surface, of a deep green colour. Peduncle a line and half in length. Calyx villose, almost as long as the corolla, with linear segments. Petals yellow. Legume villose, a little clammy, oval, inclosed within the calyx. The whole plant has the habit rather of *Medicago falcata* than an *Ononis*.

Native of Dauphiné, but rare. Monf. Villars does not think that the synonyms of Monf. Gouan belong to this plant.]

38. This is a perennial plant, from whose roots come out several pretty strong branches, which spread and incline towards the ground. Leaves narrow, very little hairy. The flowers come out in loose panicles at the end of the branches; they are yellow, and are succeeded by smooth turgid pods about half an inch long, each containing two or three kidney-shaped seeds. It flowers in July; and the seeds sometimes ripen here in the autumn. It was discovered by Dr. Houstoun, at La Vera Cruz in New Spain, whence he sent the seeds to England. This species is omitted in the quarto edition of the Dictionary.

PROPAGATION AND CULTURE.

2, 3. The common wild sorts of *Ononis* are very troublesome weeds in pastures and corn fields; the roots spreading and multiplying greatly in the ground, and being so tough and strong, that the plough-share will scarcely cut through them. They are only cultivated in botanic gardens.

1, 4, 5. Are hardy plants, like the others, cultivated only in botanic gardens.

7. A hardy annual plant, propagated by seeds, sown in the place where they are to remain, and requiring no other care but to thin them where they are too close, and to keep them clean from weeds.

8. This rises easily from seeds in the open air, and may be managed as the preceding, together with the other annual hardy sorts.

28. This is propagated by seeds, sown thin in drills upon a bed of light earth. When the plants come up, keep them clean from weeds till autumn; then take them up carefully, and transplant them into the borders of the pleasure garden, where they are to remain: the second year they will flower and produce ripe seeds, but the roots will continue several years, and are very hardy.

* Villars.

* Ibid.

[The general practice is to consider this species as tender. Mr. Miller's treatment may suit it in mild winters; but it will be prudent to keep some plants in the green-house. In the course of two or three years it is apt to grow out of form, and therefore is generally renewed by seeds, which it produces in abundance; or kept closely cut in. It is also easily increased by cuttings.]

29, &c. The shrubby sorts are propagated by seeds sown upon a bed of light earth in April. The plants will come up in May, when they must be kept clean from weeds, and if they are too close, some of them should be carefully drawn up in moist weather, and transplanted at four or five inches distance: in the autumn they should be transplanted again to the places where they are to remain. Those plants which were left growing in the bed where they were sown, must be treated in the same way. These will not thrive in pots. They flower the second year, when they make a fine appearance, during the continuance of their flowers.

The twenty-ninth sort is too tender to thrive in the open air in England, unless it be planted in a warm situation, and in very severe frost covered to protect it. The seeds of this must be sown on a warm sheltered border, being impatient of cold.

The thirty-second will thrive very well in a shady border, and produce seeds in plenty.

[According to Mr. Curtis, the situation it affects is dry and sandy, but it is by no means nice as to soil or place, and is so hardy as to bear the severity even of a hard winter. In the collections about London it is frequently found in pots, and kept with greenhouse plants. The best mode of raising it is from seed.

The thirty-third sort flowers in our open borders, and ripens its seed, by which it is in general propagated. It may also be increased by slips, is very hardy, and easy of culture. Its beauty has gained it a general admission into our nurseries.]

ONONIS. See *Anthyllis*, *Glycine*, *Lotus*, *Pisoraia*.]

ONOPORDUM (of Pliny, l. 27. c. 11. From *ovos* and *περδω*, *q. crepitus asini*.)

Lin. gen. n. 927. Reich. n. 1006. Schreb. n. 1256.

Vaill. mem. par. 1718. 152. f. 37. Juss. 173.

Gertn. 161. Cardui species. Tournef. t. 253.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Capitatæ*. *Cinarocephalæ*, Juss.

GENERIC CHARACTER.

CAL. Common roundish, ventricose, imbricate: scales numerous, spiny, prominent every way.

COR. Compound tubular, uniform: corollets hermaphrodite, equal.

Proper one-petalled, funnel-form: tube very slender; border upright, ventricose, five-cleft; segments equal, one more deeply separated.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular, the length of the corolla, five-toothed.

PIST. Germ ovate. Style filiform, longer than the stamens. Stigma crowned.

PER. none. Calyx slightly converging.

SEEDS solitary. Down capillary, sessile.

REC. chaffy: chaffs coadunate into the cells, truncate, mucronate, shorter than the seeds.

ESSENTIAL CHARACTER.

Cal. scales mucronate. Recept. honey-combed.

SPECIES.

1. *Onopordum Acanthium*. Woolly *Onopordum* or Cotton Thistle.

Lin. spec. 1158. Juss. 728. Reich. 3. 690. hort.

cliff. 393. f. succ. n. 724. Hudf. angl. 354.

Wither. arr. ed. 3. 704. Curt. lond. 5. 57. 334.

Lightf. scot. 459. Relb. cant. n. 595. Hall. herb.

n. 159. Pollich pal. n. 772. Neck. gallob. 340.

Allion. pedem. n. 525. Villars dauph. 3. 26.

Krock. siles. n. 1351. Fl. dan. t. 909.

Acanos Spina. Scop. carn. n. 1013.

Spina alba. Fuchf. hist. 57.—*sylvestris* Fuchfii. Baub.

hist. 3. 54. 2.—*tomentosa latifolia sylvestris*. Baub.

pin. 382. Locf. pruss. 261. t. 82.

Acanthium. Dod. pempt. 721. Matth. 671. Mor.

hist. f. 7. t. 30. f. 1. ord. 1 & 2.—*vulgare*, Park.

* Curtis.

* Idem.

theat.

- theat.* 979. 1. *Raii hist.* 313.—album. *Ger.* 988. 1. *emac.* 1149. 1. & 1174. 5. *ic.*
- Carduus tomentosus*, *Acanthium dictus*, vulgaris. *Raii syn.* 196. *Petiv. brit. t.* 21. f. 10.
- Calyxes squarrose*, scales spreading, leaves ovate-oblong sinuated.
2. *Onopordum illyricum*. *Illyrian Onopordum*.
Lin. spec. 1158. *syft.* 728. *Reich.* 3. 691. *Jacqu. hort.* 2. 69. t. 148. *Gouan monsp.* 424. *Sauv. monsp.* 290. *Villars dauph.* 3. 26. *Gärtn. fruct.* 2. 376.
- Spina tomentosa altera spinosior*. *Baub. pin.* 382.
- Carduus quibusdam dictus Acanthium illyricum*, aliis *Onopordon*. *Baub. hist.* 3. 55.
- Acanthium illyricum*. *Lob. ic.* 1. *Barr. ic.* 501. *Park. theat.* 979. f. 2. *Raii hist.* 313. *Mor. hist.* f. 7. t. 30. f. 3.—purpureum. *Ger.* 988. 2. *emac.* 1149. 2.
- Calyxes squarrose*, lower scales hooked, leaves lanceolate pinnatifid.
- [3. *Onopordum deltoides*. *Siberian Onopordum*.
Ait. hort. kew. 3. 147.
Calyxes squarrose cobwebbed-tomentose, leaves petioled ovate angular tomentose underneath.]
4. *Onopordum arabicum*. *Arabian Onopordum*.
Lin. spec. 1159. *syft.* 728. *Reich.* 3. 691. *hort. upf.* 249. *Jacqu. hort.* 2. 70. t. 149.
- Carduus tomentosus*, *Acanthi folio*, altissimus lusitanicus. *Tournef. inst.* 441. *Barr. ic.* 591.
- C. toment.* *Acanthium dictus arabicus*. *Pluk. phyt.* t. 154. f. 5.
- Acanthium lusitanicum*. *Mor. blas.* *Raii hist.* 313.—altissimum. *Hort. reg. par.* *Mor. hist.* 3. 153. n. 5.
- Calyxes imbricated*.
5. *Onopordum græcum*. *Grecian Onopordum*.
Lin. syft. 728. *suppl.* 349. *Gouan obs.* 64. t. 25.
- Carduus græcus parvus*, *Acanthi folio tomentoso*, flore minore. *Tournef. cor.* 31.
- Calyxes squarrose cobwebbed-tomentose*, leaves spiny subulate-lanceolate sinuate tomentose.
6. *Onopordum acaulon*. *Dwarf Onopordum*.
Lin. spec. 1159. *syft.* 728. *Reich.* 3. 691. *Jacqu. misc.* 2. 310.
- O. acaulon ferme*, flore albicante. *Juss. Vaill. art.* 153. *Hall. goett.* 357.
- O. uniflorum*. *Cavan. hisp.* 60. n. 96. t. 88? *Stemless*.
7. *Onopordum orientale*. *Oriental Onopordum*.
Mill. dict. n. 4.
- Carduus tomentosus*, *Acanthi folio aleppicus*, magno flore. *Tournef. inst.* 441.
- Calyxes squarrose*, leaves oblong pinnate-sinuate decurrent, head large.

DESCRIPTIONS, &c.

These are in general tall large herbaceous plants, with great leaves like those of *Acanthus*, prickly and frequently tomentose. Roots biennial. The sixth has the flower growing close to the ground; and the third is said to be perennial.]

1. Cotton Thistle the first year puts out many large downy leaves, sinuated on their edges and very prickly; they spread on the ground, and continue the following winter. In the spring the stalk arises in the middle of the leaves, upon dunghills or good ground growing five or six feet high, and dividing at top into many branches, which have leafy borders running along them, indented, and each indenture terminated by a spine. The stalks are terminated by scaly heads of purple flowers, appearing in June. To these succeed oblong angular seeds crowned with a hairy down.

[The whole plant is generally covered with a close down, giving it a whitish green colour. Root-leaves small, waved and pinnatifid. Stem-leaves oval-lanceolate, decurrent, the lower ones very large, with deep triangular teeth; these again toothed, each tooth terminated with a sharp whitish spine, being the elongated nerves increased in thickness and rendered rigid, just before they approach the margin. Upper leaves lanceolate, with a few distant teeth terminated by spines. The decurrent membranes are also irregularly toothed,

each tooth furnished with similar spines, which proceed from the stem, and extend the membranes. Flowers simple, upright, terminating. Calyx of numerous expanding awl-shaped scales, terminating in sharp spines. Florets purple, sometimes white^z. Seeds obovate, a little flattened, faintly angular, wrinkled, blackish; crowned with a down, which is slightly hispid when magnified. Receptacle reticulated with square membranous cells, like a honeycomb. It is distinguished from the Thistles by the last circumstance; and when the flowering is over, the innermost scales of the calyx close strongly together. In the Thistles, as soon as the seed is ripe, the first hot day opens the heads, expands the pappus, and the least wind carries away the seeds: but in this plant they remain shut up, and strongly defended; nor can they commit themselves to the earth, or be eaten by birds, till long exposure to the weather has decayed the calyx; on this account, they afford sustenance to birds late in the year. It is not very subject to the depredations of insects; and it is defended by its strong spines from the attacks of most quadrupeds^h; the ass alone will sometimes browse on it.

The receptacle of the flowers, and the tender stalks peeled and boiled, may be eaten in the same manner as Artichokes and Cardoons. The ancients thought this plant a specific in cancerous casesⁱ; some of the moderns recommend its use externally in a cancer of the lips and face. According to Scopoli, a decoction of the root is reckoned a specific in a recent gonorrhæa.

Native of Europe, on dry banks and in waste places near habitations, seldom in open fields. It flowers in June and July.

Its names in English are Cotton Thistle, Oat Thistle, wild White Thistle, Argentine or Silver Thistle; in Yorkshire Pig-leaves.]

2. This rises with a taller stalk than the former; the leaves are much longer and narrower, and the indentures on their sides are regular, ending in sharp spines. The heads of flowers are larger, and the spines of the calyx are longer than those of the first sort.

[The stem has six prickly wings; the peduncles are naked. The seeds have transverse wrinkles, and are crowned by a sessile egret of open feathered hairs, shorter than the tube of the floret, and even than the calyx: the seeds are more lengthened out than those of the preceding, which have none of the transverse wrinkles, and the hairs of the egret are less feathered^k.

According to Linneus, it is a hoary ash-coloured plant; the stem has waved wings ending for a space below the calyx, the lower scales of which are lanceolate, bent back and hooked.

Receptacle flat, alveolate, and within each cell accompanied with a very small chaff, adhering to the base of the seed, and falling with it. Seeds obovate, compressed-rhomb-shaped, striated with a few longitudinal raised lines, and transverse obsolete wrinkles between them, ash-coloured. Pappus, egret or down twice as long as the seed, caducous, with filiform rays, very frequently toothletted, almost equal, united at the base in a ring.

The seeds of the first species are in every respect like this, except that they are somewhat smaller and rufescent. The falling of the chaff with the seed is singular in this genus^l.

Native of the South of Europe.] Mr. Miller says, Spain, Portugal and the Levant. [Mr. Ray is surprised that Botanists should fetch this plant from Illyria, when it is common not only in Italy and Sicily, but in the South of France: he found it abundantly about Orange.—It was cultivated here in 1640, as appears from Parkinson.

3. Native of Siberia. Introduced in 1784, by Mr. John Bell. It flowers in August, and is perennial^m.]

4. This grows to the height of nine or ten feet; the stalks divide into many branches; the leaves are

^z Woodw. Mfs.^h Curtis.ⁱ Withering.^k Villars.^l Gärtn.^m Hort. kew.

longer than in any of the other species; the heads of flowers are large and of a purple colour.

[Native of the South of Europe. Miller says, Spain and Portugal; Linneus, Portugal and the South of France.—Cultivated in 1692, in the botanic garden at Oxford, as appears from Plukenet^a. Ray must have had it much earlier, for in his history, published in 1686, he says: "Carduum hunc Cantabrigiæ olim in hortulo nostro aluimus, e semine Londino accepto ortum."

5. This is an annual plant, of a middle nature between the *arabicum* and *Acanthium*. Stem from a palm or foot to three feet in height, and very tomentose. Root-leaves lanceolate, a foot and half long or more, a palm in width, closely tomentose and hoary, ending in a pinnatifid petiole, sinuate-pinnatifid and prickly. Stem-leaves running down the stem. Peduncles solitary, one-flowered, short, scarcely an inch long, curled with one or two decurrent leaflets. Calyx more ovate, and more cobwebbed-tomentose than in the rest, the size of a large walnut: scales more erect and more lanceolate than in *O. Acanthium*, less than in *O. arabicum*; hence the calyxes are less squarrose, or more imbricate. Corollas purple, very narrow.

It differs therefore from *O. Acanthium* by its lanceolate tomentose-hairy leaves; which in that are ovate and greenish, scarcely tomentose except the young ones: by its imbricate calyxes, with lanceolate scales, the lower and outer shorter: whereas in *O. Acanthium* the calyxes are squarrose, with awl-shaped scales, all nearly equal, namely the outer of the same length with the inner ones.—Native of the Levant^a.

6. Root biennial, fusiform, half a foot long, straight, black and irregular on the outside. Stem single, not more than two inches in height, erect, terminated by a sessile flower. Leaves of the first year radical; of the second cauline, many, clustered especially at the top of the stalk and spreading out in a ring, so that the plant when seen from above appears to be stemless; they are petioled, tomentose and hoary on both sides, oblong, pinnatifid, thickish, veined, somewhat wrinkled at the back, tooth-spiny at the edges, pungent and squarrose. The petioles of some of the inner leaves bear a sessile flower, and are then round and thick, whereas at other times they are flat at top; they may perhaps more properly be called peduncles, or one-flowered branchlets, springing from the stem, and furnished with a leaf next the flower. Calyx smooth, green, pungent and squarrose, with the inner scales erect and purple. Florets quite white. Seeds angular. Down hairy, prickly-hispid when examined by a glass^b.

The native place of this species is not known. It was cultivated in 1739, by Mr. Miller, and flowers in July and August^c.

Cavanilles has a plant, which he names *O. uniflorum*, a native of Catalonia, that seems to be the same with this. He describes the root as brown, the spines of the leaves as yellow, the flowers as solitary and sessile, the scales of the calyx as numerous and smooth, the outer ones shorter, all ending in a rigid thorny point. Receptacle naked, honeycombed. Seeds crowned with a long down. He makes no mention of any secondary heads of flowers, nor are any represented in the figure. He does not mention the colour of the florets.]

7. This rises with an upright branching stalk seven or eight feet high; the leaves are long and regularly sinuated on their borders, like pinnatifid leaves; the heads of flowers are very large, and the calyxes very squarrose and prickly. It grows naturally about Aleppo.

PROPAGATION AND CULTURE.

Some of these plants were formerly cultivated for the table, but it was before the English gardens were well supplied with other esculent plants: at present they are rarely eaten here. They require no culture; and if the seeds are permitted to fall, the plants will come up fast enough.

[ONOPTERIS. See *Asplenium*.]

^a Hort. kew. ^b Gouan. ^c Jacquin. ^d Hort. kew.

ONOSMA. (The name of an herb in Dioscorides and Galen, from *οσμη*, odor.)

Lin. gen. n. 187. Reich. n. 199. Schreb. n. 247.

Gærtn. t. 67. Juss. 130.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliae*. *Borragineæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted: segments lanceolate, erect, permanent.

COR. one-petalled, bell-shaped. Tube very short. Border tubular-ventricose, a little thicker than the tube: mouth subquinquefid. Throat naked, pervious.

STAM. Filaments five, awl-shaped, very short. Anthers sagittate, erect, the length of the corolla.

PIST. Germ four-parted. Style filiform, the length of the corolla. Stigma blunt.

PER. none. Calyx unchanged.

SEEDS four ovate.

ESSENTIAL CHARACTER.

Cor. bell-shaped, with the throat pervious. Seeds four.

SPECIES.

1. *Onosma simplicissima*. Simple *Onosma*.

Lin. spec. 196. Syst. 188. Reich. 1. 396. Gmel.

Sib. 4. 76. t. 40. Pallas it. 2. 14.

O. simplex. Gærtn. fruct. 1. 325.

Echium creticum. Alp. exot. 130. t. 129. Mor.

hist. 3. 439. f. 11. t. 27. f. 3?

Leaves clustered lanceolate-linear hairy.

2. *Onosma orientalis*. Oriental *Onosma*.

Lin. spec. 196. Reich. 1. 396.

Cerinthe orientalis. Lin. amoen. 4. 267.

Leaves lanceolate hispid, fruits pendulous.

3. *Onosma echioides*. Hairy *Onosma*.

Lin. spec. 196. Syst. 188. Reich. 1. 396. Jacq.

austr. 3. 52. t. 295. Pallas it. 1. 154. & 2. 463.

Plenck, 1c. 81. Allion. pedem. n. 179. Villars

dauph. 2. 453. Krock. filif. n. 286. Gærtn.

fruct. 1. 326.

Cerinthe echioides. Scop. carn. n. 197. Lin. hort. cliff. 48.

Symphytum foliis lingulatis hispidis. Hall. belv. n. 601.

Anchusa lutea minor. Baub. pin. 255. Baub. hist.

Park. theat. 515. Raii hist. 497. Sabb. hort. 2.

t. 32.

A. echioides lutea, *Cerinthos flore*, *montana*. Col.

ecphr. 1. 182. t. 183.

Symphytum angustifolium apulum. Park.

β. *Anchusa lutea*. Dalech. hist. 1102. Baub. hist.

Ger. 656. 2. emac. 800. 2. Raii hist. 497.

A. lutea major. Baub. pin. 255. Park. theat. 516.

f. 1.

A. tertia. Camer. epit. 736.

Leaves lanceolate hispid, fruits erect.

DESCRIPTIONS, &c.

1. [Flowering top nodding, yellowish white. Corolla of *Symphytum*, scarcely five-cleft: but it has none of the rays which that has, so that the throat is naked. Corolla constantly white. The wild plant is never more than a foot high, and soft to the touch. Seeds, which Gærtner calls nuts, small, stony, ovate, with a little beak, slightly convex on one side, angular on the other, with a triangular little area at the base, not perforated; the rest highly polished and shining, whitish ash-colour, variegated with testaceous dots and very slender lines, one-celled, valveless. Seed ovate-acuminate, compressed a little, brown-bay, fastened by a capillary chord at the apex.

Native of Siberia: abundant on the calcareous rocks by the Wolga, but not descending to the Ukraine, where the last species is very common^a.

2. Native of the Levant. Pallas thinks that he has given a figure of this species, which he found growing near the Caspian sea, in the second volume of his travels, *tab. L*. It is marked as a shrub by Linneus.] Miller says that this and the preceding are generally biennial plants, at least here; though sometimes, when they grow out of the joints of walls, or the fissures of rocks, they will abide three or four years.

3. [Root

^a Linn.

^b Gærtner.

3. [Root fusiform, with a bark peeling off in scales, which are red as vermillion. Leaves long and narrow, rough, villose and whitish. Flowers terminating, resembling those of *Symphytum*¹. Seeds or nuts larger by half than those of the first sort, bay ash-coloured all over, frequently marked on the side of the back with two whitish eyes surrounded with a brown ring; they are very smooth and shining, and sharply beaked².

Native of the South of Europe: Italy, France, Switzerland, Austria, Hungary. Cultivated here in 1683, by Mr. James Sutherland. It flowers from march to june^x.

β. The larger variety was observed by John Bauhin between Vienne and Lyons, and on the Euganean hills by Padua; by Ray near Lyons, on the road to Geneva^y. The roots of both yielding a very fine red dye, might serve all the purposes of *Anchusa tinctoria* or *Alkanet*^z.

Dr. Smith thinks that Columna's plant is a different species from this, being less hairy, and the bristles on the leaves curiously stellated at their base^a.]

PROPAGATION AND CULTURE.

These plants being natives of rocks, are best cultivated on a wall or rubbish. Sow the seeds soon after they are ripe, laying the stalks over the place, to shade them from the sun. When the plants are well established, if they are permitted to scatter their seeds, they will maintain themselves very well. In the common ground they are short-lived and apt to rot.

[OOSTERDYKIA. See *Cunonia*.

OPERCULARIA. (*From operculum, a lid.*)

Lin. gen. Schreb. n. 152. & p. 819. Gært. t. 24.

Rubioides. Soland. An Pomax. Soland.

Class. 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* common one-leaved, bell-shaped, three to six-flowered, six to nine-toothed: teeth acute, unequal: permanent.

Perianth proper none.

COR. *Universal* equal.

Proper one-petalled, funnel-form: *mouth* four or five-cleft, erect.

STAM. *Filaments* four, inserted into the receptacle. *Antthers* distinct.

PIST. *Germ* inferior, immersed in the receptacle. *Style* filiform. *Stigma* thickish, bifid.

PER. none.

SEEDS solitary, convex on one side, grooved on the other.

REC. *Common*, flat above, closing the aperture of the calyx below the teeth, below pyramidal, grooved-angular: the angles continued into partitions, by which the cavity of the calyx is divided into cells equal to the number of seeds: deciduous.

ESSENTIAL CHARACTER.

Flower compound. *Cal.* common one-leaved, unequally toothed, closed by a common receptacle, flowering above, feeding below, falling when ripe!

SPECIES.

1. *Opercularia umbellata*.

Gært. fruct. 1. 112.

Pomax umbellata. Soland. Mfs.

Florets in the disk three, *corollets* three-toothed.

2. *Opercularia aspera*.

Gært. fruct. 1. 112.

Rubioides aspera. Soland. Mfs.

Corollets four or six, *border* four or five-parted.

3. *Opercularia diphylla*.

Gært. fruct. 1. 113.

Rubioides diphylla. Soland. Mfs.

Common calyxes hispid.

DESCRIPTIONS, &c.

1. *Florets* in the disk three, separate. *Corollets* three-toothed. *Stamen* one. *Style* one, or sometimes but seldom two. *Pericarp* none, unless the common calyx of the flower be reckoned as such; it is bell-shaped, cut with seven or nine unequal teeth; the

seeds are inclosed within the cavity of it, equal in number to the corollets. Common receptacle fungous, above flat, corolliferous, rounded, exactly closing the aperture of the calyx near the teeth. Proper receptacle a small scar at the inner angle of the cells, from which the seeds hang downward. Seeds in each partial cell one, in the whole fruit commonly three, seldom four, obovate, variously shagreened with tubercles and wrinkles, slightly convex on one side, angular with a prominent groove on the other, black.—Native of New Holland.

2. *Corollets* to each calyx four or six, funnel-form, white: tube widening at top, twice as long as the calyx; border four or five-parted, segments lanceolate, acute, shorter than the tube. *Stamens* four or five, inserted into the receptacle not the corolla. *Antthers* separate. *Style* deeply bifid. Common calyxes heaped into a globular peduncled head, almost hemispherical, grooved, with from six to nine unequal acuminate teeth. Common receptacle almost hemispherical, four or six-grooved. Seeds four or six, obovate, brown, convex on one side, and having two raised fungous white grooves on the other.—Native of New Zealand.

3. Heads as in the preceding, but little more than half the size. Common calyxes hispid with rigid bristles. Cells three or four, below as many four-stamened flowers. Seeds small, elliptic, white, roughened on every side with irregular tubercles, slightly convex on one side, angular on the other with a raised wrinkled longitudinal groove.—Native of New Zealand^b.

OPHIOGLOSSUM (*of Pliny. From opis, a serpent, and γλωσσα, a tongue.*)

[Lin. gen. n. 1171. Reich. n. 1288. Schreb. n. 1621. Tournef. t. 325. Juss. 14. Hedw. theor. 41. t. 4. f. 21—23.

Class. 24. 2. Cryptogamia Filices.

Nat. order of *Filices* or *Ferns*.

GENERIC CHARACTER.

Capsules numerous, connected by a membrane into a distich spike, subglobular, when ripe opening transversely, without any elastic ring.

Seeds very many, extremely minute.

Obs. *Ophioglossum scandens*, and perhaps those species which are very nearly allied to this with a twining stem, recede in some degree from the common sort and those which resemble it, in the fructification.

SPECIES.

1. *Ophioglossum vulgatum*. Common Adder's-tongue.

Lin. spec. 1518. syst. 926. Reich. 4. 377. fl. suec. n. 932. hort. cliff. 472. Hudf. angl. 449. Wither. arr. ed. 3. 761. Engl. bot. 108. Lightf. scot. 651. Relb. cant. n. 754. Sibth. oxon. n. 737. Hall. helv. n. 1685. Scop. carn. n. 1256. Pollich pal. n. 953. Weis. crypt. 283. Fl. dan. 147. Villars dauph. 3. 836. Kniph. cent. 6. n. 64. Knorr. del. hort. 2. t. O. 3. Blackw. t. 416. Sheldr. 28. Bauh. pin. 354. Plum. fl. 36. t. B. f. 5. Mor. hist. 3. 595. f. 14. t. 5. f. 1. Bolton 3.

Ophioglossum. Bauh. hist. 3. 708. 2. Camer. epit. 364. Ger. 327. emac. 404. 1. Raii hist. 126. syn. 128. Trag. 323. Matth. 594. Fuchf. 577. Dod. pempt. 139. 1. Lonic. 1. 103. Lob. obs. 471. 1. ic. 1. 808. 2.

O. f. *Lingua serpentina*. Park. theat. 506.

Serpentaria secunda. Brunfels.

Lingua serpentina. Cesalp.

α. *Folio sinuato*.

β. *Folio anguloso*. Bauh. pin. 354. 2. prodr. 150. 1.

γ. *Minus subrotundo folio*. Bauh. pin. 354. 3. prodr. 150. 2.

δ. *Spica multiplici*.

Wither. arr. var. 2. Blackw. 416. 3. Bolt. 1. 1.

Lob. ic. 1. 809. 1. Ger. emac. 404. 2. Mor.

f. 2—6. Camer. epit. 364. Park. theat. 506.

Frond ovate veinless bearing the spike.

^b Gartner.

¹ Villars.

^u Gartner.

^x Hort. kew.

^y Ray hist.

^z Villars.

^a Travels 2. 308.

2. *Ophioglossum nudicaule*. *Naked Adder's-tongue*.
Lin. syst. 926. *suppl.* 443.
Fronds ovate, scape leafless.
3. *Ophioglossum lusitanicum*. *Portuguese Adder's-tongue*.
Lin. spec. 1518. *Reich.* 4. 377. *Griseb. lufit. Barr.*
rar. 1280. *t.* 252. *f.* 2. *Lour. cochinch.* 672.
Frond lanceolate.
4. *Ophioglossum reticulatum*. *Netted Adder's-tongue*.
Lin. spec. 1518. *Reich.* 4. 377. *Brown. jam.* 108. 1.
Plum. fil. 141. *t.* 164. *Pet. fil.* 179. *t.* 10. *f.* 4.
Frond cordate.
5. *Ophioglossum palmatum*. *Palmate-leaved Adder's-tongue*.
Lin. spec. 1518. *Reich.* 4. 377. *Plum. fil.* 139.
t. 163. *Pet. fil.* 178. *t.* 11. *f.* 2.
Frond palmate with the spike at the base.
6. *Ophioglossum pendulum*. *Pendulous Adder's-tongue*.
Lin. spec. 1518. *Reich.* 4. 377.
Scolopendra major. *Rumph. amb.* 6. 84. *t.* 37. *f.* 3.
Fronds linear very long undivided.
7. *Ophioglossum scandens*. *Climbing Adder's-tongue*.
Lin. spec. 1518. *Reich.* 4. 378. *hort. cliff.* 473.
fl. zeyl. n. 374. *Lour. cochinch.* 672. *Burm. ind.*
227. *Brown. jam.* 100, 24. (Polypodium).
Filix scandens pulchra brasiliensis. *Breyn. cent.* 185.
t. 96.
Lonchitis scand. bras. pinnulis eleganter laciniatis.
Mor. hist. 3. 568. *f.* 14. *t.* 3. *f.* 15.
Adiantum volubile. *Rumph. amb.* 6. 75. *t.* 32. *f.* 2.
Tsieri-valli-panna. *Rheed. mal.* 12. 65. *t.* 33.
Stem flexuose round, fronds conjugate pinnate, leaflets
spike-bearing on both sides.
8. *Ophioglossum flexuosum*. *Winding-stalked Adder's-tongue*.
Lin. spec. 1519. *syst.* 926. *Reich.* 4. 378. *suppl.*
443. *fl. zeyl. n.* 375.
Adiantum volubile majus. *Rumph. amb.* 6. 75. *t.* 32.
Valli-panna. *Rheed. mal.* 12. 6. *t.* 32.
Scape flexuose round, fronds opposite petioled palmate,
pinnas lanceolate quite entire smooth.
9. *Ophioglossum japonicum*. *Japanese Adder's-tongue*.
Lin. syst. 926. *Thunb. jap.* 328.
Stem flexuose angular, fronds superdecompound, pinnules
alternate gashed.

DESCRIPTIONS, &c.

These are Ferns in habit and fructification, but not having the seed on the back of the frond, Ray did not include them among his hypophyllospermæ or true Ferns, nor has Dr. Smith treated of them among his Dorsiferæ.

According to Jussieu, the genuine *Ophioglossums* have a radical leaf, not convoluted, generally simple and nerveless, putting forth a spike usually simple and peduncled. The spurious sorts have branched fronds, several times pinnate, or superdecompound, when young convoluted like the true Ferns, when older radiately spike-bearing in the circumference of the leaflets, the spikes sessile imbricately and distichally scaled: the genus therefore ought to be divided, as it is it constitutes a middle link between the Mosses and Ferns. Jussieu doubts whether the spike be male only, or as Hedwig is inclined to think, has both sexes in each cell of it.

1. Common Adder's-tongue has a fibrous root, and a single stem, round, very smooth, upright, simple or unbranched, from a hand or finger's length to a span or more in height; terminated by a distich, jointed, tongue-shaped, greenish spike, brown when ripe; subtended by a single, long-ovate, succulent, nerveless leaf, embracing the stalk with its base: the joints burst transversely when ripe, and throw out numerous very minute seeds. The leaf is commonly quite entire, but it is sometimes sinuated, angular, or slightly lobed with small appendages on one or both sides. Bauhin has also described a variety which is smaller with a roundish leaf. The spike is naturally simple, but sometimes the stalk divides at top, each branch supporting a spike, and the spike itself sometimes divides into two or three.

^c Lightfoot.

^d Bolton and Withering.

Many of the stalks are barren, producing a leaf only, without a spike.

The common people make an ointment with the fresh leaves, and use it to green wounds, calling it Adder-spear ointment. It is a very ancient application, recommended by Matthiolus, Tragus and others.

Native of Europe, in moist meadows. In England it is not uncommon; in Scotland, but not very common; in Ireland, in meadows by the banks of rivers, that leave sand and mud after floods. With us it was found by Mr. Newton by Bow, Hackney Marsh: by Dr. Sibthorp at Botley, Cowley, Headington and South Leigh in Oxfordshire. In Granchester meadow, Whitwell, &c. in Cambridgeshire. At Bedingham near Bungay, and near Meltingham-castle in Suffolk. Broadmoore near Birmingham; and near Blymhill in Staffordshire. Love-lane near Derby. Observed in meadows and by the sides of rivulets in the north of Yorkshire by Mr. Curtis. Between Ospringe and Ore in Kent. Near Hampstead and Harefield in Middlesex. Eastwood and Gedling in Nottinghamshire.

2. This is a very small plant, not an inch high. Root bundled, filiform. Leaves few, radical, petioled, quite entire. Scape filiform. Spike the length of the scape, a little thicker.—Native of the Cape of Good Hope. Found there by Thunberg.

3. Herb annual, stemless, two inches high, erect. Leaf single, petioled, acute, quite entire, smooth, the length three times as great as the breadth. Spike solitary, fastened to the base of the leaf, simple, linear, compressed, straight, equal, divided on both sides by many lateral notches, emitting a yellow pollen, or rather perhaps very minute seeds.—Native of Portugal, China and Cochinchina.

4. This plant rises commonly to the height of five or six inches above the root.—Native of Jamaica and the continent of South America.

5. Native of South America.

6. Native of the East Indies, parasitical on trees, from which it hangs down.

7. This is a climber, and rises to a considerable height on trees: the stalk is smooth and slender, the leaves of a nervous texture, and sometimes divided into two or more unequal parts. Pinnas cordate-hastate or hastate-lanceolate. Fronds not opposite, but conjugate at the tubercles of the branches.

Stem suffruticose, long, slender, round, branched. Fronds unequally pinnate, with about four pairs of leaflets; which are hastate-lanceolate, the lobes rounded at the base. Spikes linear, distich, longish, fastened to the leaflets.

Native of both Indies, China and Cochinchina, and every where within the tropics.

8. Very nearly allied to the preceding. Fronds remote on the stem, three or four-lobed.—Native of the East Indies.

9. Stem filiform, two-angled, smooth, scandent. Fronds alternate; lower three-parted, the middle lobe lanceolate, gash-ferrate; lateral ones bifid, ferrate, smaller; the upper bipinnate with gashed pinnules; the uppermost flowering, with linear, equal, entire pinnules.

It differs from *O. flexuosum* in its superdecompound frond, alternate not opposite pinnas, alternate pinnules, gash-pinnatifid, with ferrate incisures, and the flowering pinnules linear. It differs from *O. scandens* in having the outmost pinna not elongated, not eared at the base, and the frond decompound with about three pinnas, three-gashed.—Native of Japan.

Ophioglossum zeilanicum. *Houtt.* the same with *Acrostichum quercifolium* of Retzius, and *Osmunda trifida*. *Jacqu. collect.* 1.

OPHIORHIZA. (From *ὄφις*, a serpent, and *ρίζα*, a root.)

Lin. gen. n. 210. *Reich. n.* 223. *Schreb. n.* 273.

Fl. zeyl.—*Gærtn. t.* 55. *Juss.* 143.

Mitreola, *edit. prior.* *Mitra. Houtt.*

^e Lightfoot.

^h Browne.

^f Linn. suppl.

ⁱ Linn.

^k Browne.

^m Linn. suppl.

^{*} Thunberg.

^g Loureiro.

^l Loureiro.

Class. 5. 1. Pentandria Monogynia.
Nat. order of *Stellatæ*. *Gentianæ*, Juss.
GENERIC CHARACTER.

- CAL. *Perianth* one-leafed, erect, compressed, five-toothed, equal, permanent.
COR. one-petalled, funnel-form: *tube* inflated at the base: *throat* almost closed with hairs: *border* five-cleft, blunt, spreading.
STAM. *Filaments* five, filiform, very short, inserted into the tube. *Anthers* oblong, the height of the tube.
PIST. *Germ* bifid, superior. *Style* filiform, the length of the stamens, thicker above. *Stigmas* two, blunt.
PER. *Capsule* two-lobed, wide, bluntish: lobes oblong, divaricated, two-celled: opening inwards with a contrary partition.
SEEDS numerous, angular, fixed all round to an oblong pedicelled receptacle, loose in the middle of each cell.
ESSENTIAL CHARACTER.
Cor. funnel-form. Germ bifid. Stigmas two. Fruit two-lobed.

SPECIES.

1. *Ophiorhiza Mungos*.
Lin. spec. 213. *syft.* 197. *Reich.* 1. 426. *fl. zeyl.* n. 402. *mat. med.* 59. t. 1. *amoen.* 2. 118. *Plenck.* ic. 90. *Gært.* *fruct.* 1. 264.
Leaves lanceolate-ovate.
2. *Ophiorhiza Mitreola*.
Lin. spec. 213. *syft.* 197. *Reich.* 1. 426. *Swartz.* *obs.* 59. t. 3. f. 2.
Mitreola. *Lin. hort. cliff.* 492. *Gron. virg.* 28.
Mitra. *Houft.*
Leaves ovate.
3. *Ophiorhiza subumbellata*.
Forst. flor. austral. n. 66.
Stem shrubby, leaves lanceolate acute, umbels axillary trifid.

DESCRIPTIONS, &c.

1. Stem simple. Leaves opposite, quite entire, smooth, with obliquely transverse nerves, petioled. Peduncle terminating the stem with a corymb of simple or bifid spikes, digested umbel-wise, from one centre, and spreading. Flowers sessile from the upper side of the horizontal spike. Capsule transversely wider or two-lobed; lobes oblong, diverging, blunt, above compressed to a membranaceous edge, below subventricose, with a groove along the middle on each side, two-celled, opening along the upper edge: partition very narrow, contrary to the valves. Receptacle long, slender, cylindric-acuminate, attenuated below into a very short peduncle, and fastened on both sides to the middle of the partition, in other parts loose, ascending from the horizontal line, deciduous in maturity. Seeds very numerous and slender, variously angular, remarkably acuminate towards the navel, ferruginous.

Native of the East Indies. Called in Ceylon *Ekawerya* and *Nagbawalli*, from Nagha the Ribband Snake, for the bite of which the leaves of this plant are accounted a specific. This is quite different from the true *Radix Mungos*, *Kæmpf. amoen.* 578. as appears, from a comparison of the fruits.

2. Roots from the lower joints of the stem in bundles, long, filiform, white. Stem herbaceous, a foot high, simple or branched, erect, four-cornered at bottom, towards the upper part roundish, smooth, loose. Leaves petioled, opposite, lanceolate-ovate, acuminate, entire, smooth on both sides. Leaflets in the axils of the larger ones. Peduncles terminating, dichotomous, loose; flowers minute, sessile, directed one way, distinct, white: and a solitary flower in the forks of the peduncles. Calyx minute, five-parted, with erect segments. Corolla tubular, longer than the calyx; segments of the border ovate, acute, erect, often bent in: throat villose, white. Filaments from the middle of the tube. Anthers converging under the pile of hairs above the stigmas. Germ two-parted at the base, oblong. Styles two. Stigmas roundish, white, pubescent. Capsule at the base bifid, one-celled, two-valved; the valves opening at the side

* Linn. zeyl.

° Gærtner.
² Gærtner.

P Linn. zeyl.

c Swartz.

s Forster.

t Linn. zeyl.

within longitudinally. Seeds numerous, inserted into two receptacles fastened to each valve. Annual; flowering in spring.—Native of America: in Virginia, and in Jamaica, in wet meadows on the banks of rivers.

3. Native of the island of Otaheite or Taheiti.

OPHIOXYLON. See *Buddlea*.

OPHIOXYLUM. (*From οφίς and ξύλον. Serpentine wood.*)

Lin. gen. n. 1142. *Reich. n.* 1264. *Schreb. n.* 1578.

Gært. l. 109. *Juss.* 149.

Class. 23. 1. Polygamia Monoecia.

Nat. order of *Apocineæ*, Juss.

GENERIC CHARACTER.

* *Hermaphrodite* flowers.

- CAL. *Perianth* five-cleft, acute, erect, very small.
COR. one-petalled, funnel-form: *tube* long, filiform, thickened in the middle: *border* five-parted, spreading a little, without a nectary.
STAM. *Filaments* five, very short, in the middle of the tube. *Anthers* acuminate.
PIST. *Germ* superior, roundish. *Style* filiform, the length of the stamens. *Stigma* capitate.
PER. *Berry* twin, two-celled.
SEEDS solitary, roundish.

* *Male* flowers on the same plant.

- CAL. as in the hermaphrodites (bifid, *syft.* & G.)
COR. one-petalled, funnel-form: *tube* long; *border* five-cleft.

Nectary in the mouth of the corolla, cylindric, quite entire.

STAM. *Filaments* two, very short. *Anthers* acuminate, converging within the nectary.

ESSENTIAL CHARACTER.

- HERM. Cal. five-cleft. Cor. five-cleft, funnel-form. Stam. five. Pist. one.
MALE. Cal. bifid. Cor. five-cleft, with a funnel-form mouth. Nect. cylindric. Stam. two.

SPECIES.

1. *Ophioxylum serpentinum. Scarlet-flowered Ophioxylum.*
Lin. spec. 1478. *syft.* 921. *Reich.* 4. 329. *fl. zeyl.* n. 398. *mat. med.* 219.
- O. trifoliatum. Gært. fruct.* 2. 129.
- Ligustrum foliis ad singula genicula ternis. Burm. zeyl.* 141. t. 64.
- Radix mustelæ rubra. Rumph. amb.* 7. p. 30. *descr. non ic. sec. Gært.*
- Tsjovanna. Rheed. mal.* 6. 87. t. 7.
- Clematis indica, persicæ foliis, fructu periclymeni. Baub. pin.* 304.

DESCRIPTION, &c.

Stem upright, round, quite simple. Leaves in fours placed cross-wise, lanceolate-ovate, smooth, acuminate, petioled. Nectary like that of *Narcissus*. Calyx bifid. Stamens two in the mouth of the corolla.

According to Burmann the stem is three-cornered, jointed, striated, at each joint are three leaves, which are oblong acuminate, entire not ferrate, in which they differ from those of the Peach-tree, whose form they resemble: petioles short. At the top of the stem are many florets in a sort of umbel. Stamens two.

This shrub, as Jussieu describes it, has three or four leaves in whorls; flowers glomerate, terminating, males mixed with the hermaphrodites, two-stamened only, with a cylindric entire crown at the throat of the tube, without any germ.

Berry fleshy, two-lobed, within a very small three or five-cleft calyx, lenticular-compressed, two-celled, of a brick-red: pulp thin, firm: stones ovate, acuminate at both ends, but most towards the base, obsoletely wrinkled, thick, lenticular-compressed, one-celled. Seeds solitary, ovate, narrowed upwards, compressed a little, pale.—The fresh fruits, according to Rumphius, have a twin and very blunt berry, composed of two globes, as in the Honeysuckle, and filled with a watery pulp. Gærtner has described them as they appeared to him, and as Burmann has represented them. Rumphius's figure is not of this species, but of another, which Gærtner names *alba*, with

opposite cruciate leaves, white flowers, and black berries*.

They are both natives of the East Indies.—Scarlet-flowered *Ophioxylum* was cultivated in 1690, in the Royal Garden at Hampton Court. It flowers in may and june*.

OPHIRA.

Lin. gen. Reich. n. 525. Schreb. n. 662. Juss. 321. a Jo. Burmanno.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Onagrace*, Juss.

GENERIC CHARACTER.

CAL. Involucre two-valved, three-flowered: valves lateral, kidney-form, emarginate, conduplicate, permanent.

COR. four-petalled, superior. Petals oblong, converging.

STAM. Filaments eight, the length of the corolla. Anthers ovate.

PIST. Germ inferior, turbinate, hispid. Style filiform, shorter than the stamens. Stigma emarginate.

PER. Berry one-celled.

SEEDS TWO.

OBS. It bears much resemblance to *Grubbia* of Bergius, which has a superior germ and simple stigma. Mantiff.

ESSENTIAL CHARACTER.

Invol. two-valved, three-flowered. Cor. four-petalled, superior. Berry one-celled.

SPECIES.

1. *Ophira stricta*.

Lin. syst. 371. Reich. 2. 189. mant. 229.

DESCRIPTION, &c.

This is an upright shrub, with opposite, ovate-linear leaves, and lateral sessile flowers. Found in Africa by Burmann*.

Jussieu remarks that it is allied to *Cornus*, and that hence *Grubbia* is allied to *Empetrum*.]

OPHRYS (of Pliny. From *oppus*, the eye-brow; one species having been used either to blacken the eye-brows or to make them grow.)

Lin. gen. n. 1011. Reich. n. 1096. Schreb. n. 1369. Tournef. t. 250. Juss. 65.

Class. 20. 1. Gynandria Diandria.

Nat. order of *Orchideæ*.

GENERIC CHARACTER.

CAL. Spathes wandering. Spadix simple. Perianth none.

COR. Petals five oblong, converging upwards, equal: two of these exterior.

Nectary longer than the petals, hanging down, posteriorly one somewhat keeled.

STAM. Filaments two, very short, placed on the pistil. Anthers erect, covered with the inner margin of the nectary.

PIST. Germ oblong, contorted, inferior. Style fastened to the inner margin of the nectary. Stigma obsolete.

PER. Capsule subovate, three-cornered, blunt, striated, three-valved, one-celled, opening at the keeled angles.

SEEDS numerous, like saw-dust. Receptacle linear, fastened to each valve of the pericarp.

OBS. *O. Corallorhiza* has four stamens or two in each cell.

ESSENTIAL CHARACTER.

Nectary somewhat keeled underneath.

SPECIES.

* With branched Bulbs.

1. *Ophrys Nidus avis*. Bird's-nest *Ophrys*.

Lin. spec. 1339. syst. 812. Reich. 4. 21. mant. 488. fl. suec. n. 815. Hudf. angl. 388. Wither. arr. ed. 3. 32. Engl. bot. 48. Lightf. scot. 522. Relb. cant. n. 652. Sibth. oxon. 12. Fl. dan. t. 181. Scop. carn. n. 1131. Pollich pal. n. 853. Gmel. fib. 1. 25. n. 24. Villars dauph. 2. 45.

Epipactis *Nidus avis*. Hall. belv. n. 1290. t. 37. Allion. pedem. n. 1849.

Nidus avis. Lob. ic. 1. 195. 1. Dalech. 1673. Raii syn. 382. Petiv. brit. t. 70. f. 3. Riv. hex. t. 7.

Orchis abortiva fusca. Baub. pin. 86. Mor. hist. f. 12. t. 16. f. 18.

Or. abortiva rufa, f. *Nidus avis*. Park. theat. 1362.

* Gærtner

* Hort. kew.

* Linn. mant.

Satyrion abortivum f. *Nidus avis*. Ger. 166. emac. 228.

Orobanche affinis Nidus avis. Baub. hist. 2. 782. Raii hist. 1228.

Neottia. Dod. pempt. 553. 2. Aët. upf. 1740. p. 33. Bulbs in bundles of fibres, stem sheathed leafless, lip of the nectary bifid.

[2. *Ophrys Corallorhiza*. Coral-rooted *Ophrys*.

Lin. spec. 1339. syst. 812. Reich. 4. 21. fl. suec. n. 816. Hudf. angl. 388. Wither. arr. ed. 3. 32. Lightf. scot. 523. t. 23. Fl. dan. t. 451. Villars dauph. 2. 45.

Corallorhiza. Gmel. fib. 1. 26. Gunn. norv. 2. t. 6. f. 3. Hall. belv. n. 1301. t. 44.

C. Neottia. Scop. carn. n. 1134.

Neottia. Aët. upf. 1740. p. 34. Lin. suec. ed. 1. n. 743. lapp. n. 315.

Dentaria aphyllus minor. Tabern. ic. 848. Baub. hist. 2. 785. Ger. 1387. emac. 1585. 2. Park. theat. 1363. 5.

D. coralloides radice 3. Clus. pannon. 450.—f. *aphyllus*. 3. hist. 2. 120. 2.

Orobanche radice coralloide. Baub. pin. 88. Raii hist. 1229. Mor. hist. f. 12. t. 16. f. 21.

O. sueonum rad. corall. flore albo. Rudb. elyf. 2. 234. f. 16.

O. spuria f. *Corallorhiza*. Rupp. gen. 284. t. 2.

O. rad. coralloide ruberrima. Mentz. pug. t. 9. f. 1.

O. virginiana. Pluk. phyt. t. 211. f. 1, 2.

Bulbs branched flexuose, stem sheathed leafless, lip of the nectary trifid.]

3. *Ophrys spiralis*. Spiral *Ophrys*, or Triple Lady's Traces.

Lin. spec. 1340. syst. 812. Reich. 4. 22. Hudf. angl. 389. Wither. arr. ed. 3. 33. Curt. lond. 4. 59. 270. Relb. cant. n. 654. Sibth. oxon. n. 34. Fl. dan. t. 387. Segu. ver. t. 8. f. 9. Vaill. par. 147. Pollich pal. n. 854. Villars dauph. 2. 46. Aët. upf. 1740. p. 32.

Epipactis spiralis. Allion. pedem. n. 1852. Hall. belv. n. 1294. t. 38.

Serapias spiralis. Scop. carn. n. 1125.

Orchis spiralis. Riv. hex. t. 14.—*alba odorata*. Baub. hist. 2. 769. Raii hist. 1217. syn. 378.

Triorchis. Ger. 167. emac. 218.—*alba odorata minor*. Baub. pin. 84. Park. theat. 1354. 3.

Satyrion 3. vel *odoriferum*. Brunf. herb. 1. 105.

Testiculus odoratus. Lob. obs. 89. 2. ic. 186. 1. Dalech. 1555.—*minor*. Dod. pempt. 239. 2.

Orchistrum autumnale pratense spirale album odoratum. Mich. gen. 30. Segu. suppl. 253.

β. *Triorchis vel tetrorchis alba odorata major*. Baub. pin. 84. Pollich, 854. β. Mor. hist. 3. 496.

Testiculus odoratus major. Dod. 239. 1.

γ. *Orchistrum æstivum palustre album odoratum*. Mich. gen. 30. t. 26.

δ. *Epipactis foliis plerisque ex lineari-lanceolatis*. Gmel. fib. 2. 13. t. 3. f. 1.

Bulbs aggregate oblong, stem somewhat leafy, flowers in a spiral directed one way, lip of the nectary undivided crenulate.

[4. *Ophrys cernua*. Nodding *Ophrys*.

Lin. spec. 1340. Reich. 4. 22.

Bulbs in bundles, stem leafy, flowers drooping, lip of the nectary oblong entire acute.

5. *Ophrys ovata*. Common *Ophrys* or Twayblade.

Lin. spec. 1340. syst. 813. Reich. 4. 22. hort. cliff. 429. Aët. upf. 1740. p. 28. fl. suec. n. 808. Hudf. angl. 388. Wither. arr. ed. 3. 34. Curt. lond. 3. 60. 177. Lightf. scot. 523. Relb. cant. n. 653. Sibth. oxon. n. 35. Fl. dan. t. 137. Scop. carn. n. 1132. Neck. gallob. 373. Pollich pal. n. 855. Gmel. fib. 1. 25. Villars dauph. 2. 46.

Ophrys. Fuchf. hist. 565. Matth. 1225. Dalech. hist. 1261. Camer. epit. 943.

O. bifolia. Ger. 326. emac. 402. Baub. pin. 87.

Pseudo-orchis bif. rad. fibrosa major. Mor. hist. f. 12. t. 11. f. 1.

Bifolium. Dod. pempt. 242. 1. Lob. obs. 161. 3. ic. 1. 302. 2. Lonic. 1. 241. 2. Riv. hex. t. 7.

Bifolium

- Bifolium sylvestre vulgare.* *Park. theat.* 504. 1. *Raii syn.* 385. *Petiv. brit. t.* 50. f. 10.
B. majus f. *O. major.* *Baub. hist.* 3. 533. 2. *Raii hist.* 1232.
Epipactis ovata. *Allion. pedem. n.* 1850. *Hall. belv. n.* 1291. t. 37. 1.
Perfoliata sylvestris mas. *Brumf.*
Satyrrium 10 & *bifolium.* *Trag.*
Alisma. *Cord.*
β. Ophrys trifolia. *Baub. pin.* 87.
Bulb fibrous, stem two-leaved, leaves ovate, lip of the nectary bifid.]
 6. *Ophrys cordata.* *Mountain Ophrys or least Twayblade.* *Lin. spec.* 1340. *fst.* 813. *Reich.* 4. 23. *fl. lapp. n.* 247. *suec. n.* 809. *aët. upf.* 1740. p. 29. *Huds. angl.* 388. *Wither. arr. ed.* 3. 35. *Lightf. scot.* 524. *Engl. bot.* 358. *Scop. carn. n.* 1133. *Gunn. norv.* 2. t. 3. f. 6. *Gagn. aët. belv.* 2. p. 75. t. 6. *Gmel. fib.* 1. 25. *Villars dauph.* 2. 47.
O. minima. *Baub. pin.* 87. *prodr.* 31.
Pseudo-orchis minima *bif. floribus purpureo-croceis.* *Mor. hist. f.* 12. t. 11. f. 4.
Bifolium minimum. *Baub. hist.* 3. 534. 2. *Raii hist.* 1233. *syn.* 385. *Petiv. brit. t.* 70. f. 1.
Epipactis cordata. *Allion. pedem. n.* 1851. *Hall. belv. n.* 1292. t. 22. f. 4.
Bulb fibrous, stem two-leaved, leaves cordate.
 * *With round Bulbs.*
 [7. *Ophrys lilifolia.* *Lily-leaved Ophrys.* *Lin. spec.* 1341. *fst.* 813. *Reich.* 4. 23. *Gron. virg.* 185. 138. *Ehret in philos. transf.* 1764. n. 53. p. 81. t. 4.
Bulb roundish, scape naked, leaves lanceolate, lip of the nectary entire, dorsal petals linear.
 8. *Ophrys Loeselii.* *Dwarf Ophrys or Twayblade.* *Lin. spec.* 1341. *Reich.* 4. 24. *Wither. arr. ed.* 3. 35. *Engl. bot.* 47. *Relb. cant. suppl. alt. n.* 1074. *Fl. dan. t.* 877.
O. lilifolia Loeselii. *Huds. angl.* 390.
O. diphyllis bulbosa. *Loes. pruss.* 180. t. 58.
Bulb roundish, scape naked three-cornered, lip of the nectary ovate.
 9. *Ophrys paludosa.* *Marsh Ophrys or Twayblade.* *Lin. spec.* 1341. *fst.* 813. *Reich.* 4. 24. *fl. suec. n.* 813. *Huds. angl.* 389. *Lightf. scot.* 525. *Engl. bot.* 72. *Relb. cant. n.* 656. *Rose. t.* 2. f. 3. *Pollich pal. n.* 856. *Aët. pal.* 2. 460. *Pallas, it.* 3. 265. *Kniph. cent.* 9.
Malaxis paludosa. *Wither. arr. ed.* 3. 39.
Orchis minima bulbosa. *Raii suppl.* 587.
Or. bifolia minor palustris. *Pluk. phyt. t.* 247. f. 2?
Bifolium palustre. *Park. theat.* 505. *Raii syn.* 385.
Bulb roundish, scape almost naked five-cornered, leaves rugged at the top, lip of the nectary entire.
 10. *Ophrys monophyllos.* *One-leaved Ophrys.* *Lin. spec.* 1342. *fst.* 813. *Reich.* 4. 24.
O. monoph. bulbosa. *Loes. pruss.* 180. t. 57.
Monorchis ophioglossoides. *Mentz. pug. t.* 5. f. 1, 2.
Pseudo-orchis monophyllos. *Clus. hist.* 1. 269.
Epipactis. *Hall. belv. n.* 1293. t. 36.
Bulb round, scape naked, leaf ovate, lip of the nectary entire.
 11. *Ophrys alata.* *Lin. syst.* 813. *suppl.* 404. *Thunb. prodr. cap.* 2.
Bulbs round, stem leafy, leaves lanceolate, lip trifid, the middle segment very short.]
 12. *Ophrys muscifera.* *Fly Ophrys.* *Huds. angl.* 391. *Wither. arr. ed.* 3. 37. *Relb. cant. n.* 659. *Engl. bot.* 64.
O. myodes. *Lin. syst.* 813. *Jacqu. misc.* 2. 373.
O. insectifera. *Mill. dict. n.* 6.
O. inf. myodes. *Lin. spec.* 1343. *Reich.* 4. 27. *Gunn. norv.* 2. t. 5. f. 1.
Orchis musciflora. *Hall. belv. n.* 1265. t. 24.
Orc. muscaria. *Scop. carn. n.* 1114.
Orc. myodes. *Ger. emac.* 213. 6. — minor. *Park. theat.* 1352. — & major 1351. 10 & 12. — galea & alis herbicidis. *Baub. hist.* 2. 767. *Raii hist.* 1219. *syn.* 379. *Petiv. brit. t.* 68. f. 10.
Orc. muscae corpus referens minor, galea & alis herbicidis. *Baub. pin.* 83. *Vaill. par.* 147. t. 31. f. 17, 18. *Kniph. cent.* 3. n. 68.

- Orchis myodes prima, floribus muscam exprimens.* *Lob. ic.* 1. 181. 1.
Orch. Serapias tertius. *Dod. pempt.* 238. 3.
Testiculus muscarius 3. luteus. *Tabern.* 662.
β. Orchis muscam referens major. *Baub. pin.* 83. *Mor. hist. f.* 12. t. 14. f. 12.
γ. O. muscam referens lutea. *Baub. pin.* 83. *Mor. hist. f.* 12. t. 13. f. 14. & t. 14. f. 14.
δ. O. muscam coeruleam majorem representans. *Breyn. Mor. hist.* 3. 494. f. 12. t. 13. f. 11.
ε. O. myodes lutea lusitanica. *Breyn. cent.* 75. *Mor.* 495. f. 15.
ζ. O. myodes fusca lusitanica. *Breyn. cent.* 41.
Bulbs roundish, stem leafy, lip of the nectary convex, with three divisions, the middle segment cloven.
 13. *Ophrys apifera.* *Bee Ophrys.* *Huds. angl.* 391. *Wither. arr. ed.* 3. 38. *Relb. cant. n.* 660. *Sibth. oxon. n.* 36. *Curt. lond.* 1. 66. *magaz.* 383. *Shaw. nat. misc. Berg. phyt. t.* 65.
O. adrachnites. *Mill. dict. n.* 7.
O. insectifera 1. *Lin. spec.* 1343. *Reich.* 4. 27.
Orchis fucum referens major, foliolis superioribus candidis & purpurascens. *Baub. pin.* 83. *Vaill. par.* 146. t. 30. f. 9. *Mor. hist. f.* 12. t. 14. f. 8.
Or. fuciflora. *Hall. belv. n.* 1266. t. 24. f. 2. — galea & alis purpurascens. *Baub. hist.* 2. 767. 1. *Raii hist.* 1220. *syn.* 379. *Petiv. brit. t.* 69. f. 2.
Or. serapias secundus major. *Dod. pempt.* 238. 1.
Or. sexta & Satyrrium alterum. *Trag.* 783.
Or. f. testiculus vulpinus, 2 sphegodes. *Ger. 166.* 13. *emac.* 212. 3.
Or. spheg. f. fucum referens. *Park. theat.* 1351. 5.
Or. spheg. *Lob. obs.* 91. 2. *ic.* 1. 180. 1.
Or. f. Testiculus minor violaceis floribus. *Cordi.*
Testiculi species 2. *Matth.* 880. 2.
Testiculus figura & colore apem referens. *Cesalp.*
Triorchis foemina. *Fuchs.* 560.
Satyrrium quantum. *Brumf.*
Bulbs roundish, stem leafy, lip of the nectary three-lobed, the lobes bent in underneath, shorter than the petals.
 14. *Ophrys aranifera.* *Spider Ophrys.* *Huds. angl.* 392. *Wither. arr. ed.* 3. 39. *Engl. bot.* 65. *Relb. cant. n.* 661. *Sibth. oxon. n.* 37.
O. fucifera. *Curt. lond. n.* 68.
O. insectifera 2. *Lin. spec.* 1343. *Reich.* 4. 27.
O. sphegodes. *Mill. dict. n.* 8.
Orchis f. Testiculus sphegodes hirsuto flore. *Baub. hist.* 2. 767. *Raii hist.* 1221. *syn.* 380. *Petiv. brit. t.* 69. f. 3.
Or. fucum referens, colore rubiginoso. *Baub. pin.* 83. *Vaill. par.* 146. t. 31. f. 15, 16.
Or. sphegodes altera. *Park. theat.* 1350. 4. fig.
Or. andrachnitis. *Lob. ic.* 1. 179. 2.
Testiculus vulpinus major sphegodes. *Ger. emac.* 212. 3.
Bulbs roundish, stem leafy, lip of the nectary roundish entire emarginate convex longer than the petals.
 15. *Ophrys Monorchis.* *Yellow or Musk Ophrys.* *Lin. spec.* 1342. *fst.* 814. *Reich.* 4. 25. *fl. suec. n.* 810. *Huds. angl.* 390. *Wither. arr. ed.* 3. 36. *Engl. bot.* 71. *Relb. cant. n.* 657. *Pollich pal. n.* 857. *Fl. dan. t.* 102.
Herminium. *Lin. lapp. n.* 317. *suec. ed.* 1. 740. *aët. upf.* 1740. p. 29.
Orchis monorchis. *Crantz. austr.* 478. *Scop. carn. n.* 1116. *Hall. belv. n.* 1262. t. 22. 3. *Gmel. fib.* 1. 18. t. 4. f. 1.
Or. odorata moschata f. monorchis. *Baub. pin.* 84. *Raii hist.* 1217. *syn.* 378.
Or. pusilla odorata. *Park. theat.* 1354.
Or. parva autumnalis lutea. *Baub. hist.* 2. 768. 3.
Or. trifolia flor. spicatis herbaceis. *Segu. ver.* 2. 13. t. 16.
Or. coleo unico f. Monorchis flosculis pallide viridibus. *Loes. pruss.* 184. t. 61.
Monorchis. *Mich. gen.* 30. t. 26. *Rupp. gen.* 421. t. 2.
Bulb globular, scape naked, lip of the nectary trifid cross-shaped.
 [16. *Ophrys alpina.* *Alpine Ophrys.* *Lin. spec.* 1342. *fst.* 814. *Reich.* 4. 25. *mant.* 469. *fl. suec. n.* 817. *Fl. dan. t.* 452. *Jacqu. vind.* 295. t. 9. *Villars dauph.* 2. 48.

- Orchis alpina. Scop. carn. n. 1117. Hall. belv. n. 1263.
t. 22. f. 1. Allion. pedem. n. 1837.
- Or. graminea. Crantz. austr. 480.
- Chamaeorchis alpina folio gramineo. Baub. pin. 81.
prodr. 29. 4. Raii hist. 1216.—flore viridi. Park.
Bulbs ovate, scape naked, leaves awl-shaped, lip of the
nectary undivided blunt one-toothed on each side.
17. Ophrys camtschatea. Siberian Ophrys.
Lin. spec. 1343. Reich. 4. 26.
Neottia nectarii labio bifido lineari. Lin. amoen. 2.
361. t. 4. f. 24.
Scape filiform sheathed, raceme loose, lip of the nectary
linear bifid.]
18. Ophrys anthropophora. Man Ophrys.
Lin. spec. 1343. syst. 814. Reich. 4. 26. mant. 489.
Huds. angl. 390. Wither. arr. ed. 3. 37. Engl.
bot. 29. Curt. lond. n. 70. Relb. cant. n. 658.
Fl. dan. t. 103. Villars dauph. 2. 49. Ger.
prov. 131. 3.
Neottia bulbis subrotundis, nectarii labio quadrifido.
Act. upf. 1740. p. 32.
Orchis. Hall. belv. n. 1264. t. 23. Allion. pedem.
n. 1835.
Or. flore nudi hominis effigiem repræsentans, foemina.
Baub. pin. 82. Vaill. par. 147. t. 31. f. 19, 20.
Mor. hist. f. 12. t. 12. f. 2. ord. 2.
Or. anthropophora oreades. Col. ecphr. 1. 320. 1.
Raii hist. 1217. syn. 379.—foemina. Park. theat.
1348. Petiv. brit. t. 68. f. 8.
Bulbs roundish, stem leafy, lip of the nectary linear
three-parted, the middle segment elongated bifid.
- [19. Ophrys crucigera.
Lin. syst. 814. Jacqu. collect.
Bulbs roundish, stem leafy, lip of the nectary undivided
marked with a convex cross.
20. Ophrys volucris.
Lin. syst. 814. suppl. 403. Thunb. prodr. cap. 2.
Bulbs roundish, leaves oblong sheathing the stem, lip cut
out ovate.
21. Ophrys bracteata.
Lin. syst. 814. suppl. 403.
Bulbs roundish, spike mixed with longer bractes, lip
three-lobed.
22. Ophrys atrata.
Lin. syst. 814. Reich. 4. 28. mant. 121. Thunb.
prodr. cap. 2.
Leaves linear-setaceous, lip cordate spatulate.
23. Ophrys catholica.
Lin. spec. 1344. Reich. 2. 28. amoen. 6. afr. 94.
Orchidi affinis, flore luteo. Buxb. cent. 3. 12. t. 21.
Bulbs fibrous, flowers three-petalled, helmet ventricose
large, lip cross-shaped, stem leafy.
24. Ophrys circumflexa.
Lin. spec. 1344. Reich. 4. 28. amoen. 6. afr. 95.
Orchis barba carens, flore luteo viridi. Buxb. cent. 3.
8. t. 13.
Bulbs undivided, flowers three-petalled, wings emarginate,
lip trifid, the lateral segments bent round.
25. Ophrys caffra.
Lin. spec. 1344. Reich. 4. 28. amoen. 6. afr. 96.
Thunb. prodr. cap. 2.
Stem three-leaved, lip bifid.
26. Ophrys bivalvata.
Lin. syst. 814. suppl. 403.
Flowers in bundles, lip lanceolate.
27. Ophrys alaris.
Lin. syst. 814. suppl. 404.
Lip of the nectary entire waved.
28. Ophrys patens.
Lin. syst. 814. suppl. 404.
Leaves awl-shaped, lip of the nectary very short capillary.
29. Ophrys nervosa.
Lin. syst. 814. Thunb. jap. 27.
Stem naked angular, leaves ovate nerved, lip of the nectary
entire reflex.
30. Ophrys triphylla.
Thunb. prodr. cap. 2.
Stem three-leaved, lip triangular toothed at the base.
31. Ophrys inversa.
Thunb. prodr. cap. 2.
Leaves ensiform, lip bifid entire.

32. Ophrys bicolor.
Thunb. prodr. cap. 2.
Leaves linear-ensiform, lip cut out bifid.
33. Ophrys squamata.
Forst. flor. austral. n. 310.
Bulbs bundled, scape elongated leafless spiked, root-leaves
imbricate oblong acute keeled, lip of the nectary trifid
bearded bent down.
34. Ophrys unifolia.
Forst. flor. austral. n. 311.
Bulb ovate, scape round sheathed, leaf round fistular re-
flex, perforated in the middle to let the scape pass.

DESCRIPTIONS, &c.

These plants are of the same natural genus with the Orchis, and all the older botanical writers confounded them. Linneus distinguished this natural order into genera from the nectarium, as he calls it; which in Orchis forms a horn or spur at the back of the flower, whereas the lip of it in this is a petal hanging down with a ridge or keel running along the back.

Some modern writers have very unadvisedly cancelled the whole class Gynandria, and removed this natural order into the class Diandria.]

1. The root is composed of many strong fibres, from which arise two oval veined leaves, three inches long, and two broad, joined at their base; between these springs up a naked stalk about eight inches high, terminated by a loose spike of herbaceous flowers, resembling gnats, composed of five petals; with a long bifid lip to the nectarium, a crest or standard above, and two wings on the side. Capsule angular, opening in six parts, and filled with small seeds like dust.

[Root affixed laterally to the stem, consisting of a thick bundle of fleshy fibres, more numerous and intricate than those of O. ovata. Stem from twelve to fifteen inches high, thickest at the base, firm and remaining long after the seeds are shed; without leaves, but clothed with numerous embracing dry scales. Spike four or five inches long, cylindrical; flowers at the base rather scattered, upwards crowded. Bractes shorter than the germ, acutely lanceolate. Petals closely converging, oval; lip of the nectarium long, at first linear, but divided at the base into blunt divaricated lobes. Stamens inserted in two cavities in the upper lip of the nectarium; anthers yellow. Capsule on a triangular fruit-stalk, having a prominent rib at each angle, and one on each side, with intermediate furrows. The whole plant is brown, and closely connected in habit with Orobanchæ, Lathræa and Monotropa.]

Native of several parts of Europe, as Sweden, Denmark, Britain, Germany, France, Austria, Switzerland, Italy, in woods and shady places. With us about Charlton, Gravesend, Maidstone, and Roehill in Kent; Selborne in Hampshire by Mr. White; Madingly-wood in Cambridgeshire; Aldborough in Suffolk by Ray; Heydon in Norfolk. Near Ingleton, and in Offley park. Buckham wood in Cumberland. Near Kendal in Westmoreland. Not uncommon about Newton Cartmel; found there by Mr. Hall, who observes, that the woods in the part of Lancashire where he lives, are cut down every fifteen years; that for six or eight years after they are cut, this plant is not to be found, but as soon as the grasses are chiefly destroyed by the shade, it again makes its appearance, and in some places is pretty plentiful. Mr. Blackstone observed it in White-Heath-wood by Harefield. It is also found in some woods in Scotland, but not common. It flowers in may and june. The names of Nidus avis, Bird's-nest, and Nid d'oiseau, are derived from the matting and twisting of the fibrous roots.

2. The root consists of thick white succulent obtuse fibres, branched like coral. Stem six or eight inches high, without any other leaves except sheathing stipules. Flowers in a thin spike, eight or ten in number, verging a little to one side of the stalk, and subtended each by an oval-lanceolate greenish bracte. Upper petals green, oval-lanceolate, converging in form of

a semicylindric helmet; lateral petals patent, whitish, streaked with a green line; lip oval-lanceolate, white streaked with two green lines, forming an acute angle. Stamens four, two in each cell^a. On account of the difference of structure in the stamens from the other Orchideæ, Scopoli has made this a distinct genus under its old name of *Corollorhiza*. Mr. Woodward remarks, that a specimen in his possession has more of real leafy appearance, than either the description of Haller or Lightfoot express, the lower sheath terminating in a lanceolate leaf about half an inch long and two lines wide, erect and somewhat converging; on the stem are two others about half as long.

Native of the northern parts of Europe; also of Switzerland, Carniola, and the South of France. In Britain it is found sparingly in woods of fir in the north of Scotland. Mr. Lightfoot observed it only in a moist hanging wood, near the head of Little-Loch-Broom, on the western coast of Ross-shire. It flowers in august and september. Scopoli found it in flower on the second of october. Gerarde calls it Little Lungwort.

3. Bulbs one to three or sometimes four, varying from oblong and half an inch in length, to cylindrical and an inch and half long, rough or villose, pointed, and furnished with a few fibres. Stem from six to nine inches high, the lower part smooth, the upper downy. Root-leaves four or more, forming a tuft, ovate-lanceolate, smooth, entire at the margins, bright green, half an inch in breadth, dotted when magnified, and faintly ribbed. By the side of these, and not from amongst them, arises the stem, clothed with three or four lanceolate, acuminate, embracing leaves, downy, and membranous, at the edge. Spike from two to four inches long, twisted in a spiral form, with numerous (fifteen or more) flowers, growing from one side, and following its spiral direction. Bractes longer than the germ, ovate-lanceolate, acuminate, villose. Corolla greenish white, fragrant; the three outer petals converging, glued together, the two inner patent, lanceolate, lip of the nectarium at first narrow, widened at the base, roundish and ferrate^b.

The flower is thus more minutely described by Dr. Stokes. Petals five, spear-shaped, nearly equal, upright, approaching, greenish white, smooth within, downy without, the three upper glued together, and appearing as one, the middlemost the largest. Nectary oblong-ovate, at the base somewhat heart-shaped, and marked with a blunt tooth on each side, nearly doubled to, and involving the parts of fructification, slightly keeled underneath, at the end bluntish and finely scolloped, somewhat fleshy, glossy, glutinous, green with a whitish edge, and towards the point frosted. Stamen one placed on the upper side of the style. Filament none, except a short tooth projecting from the inner edge of the style. Anther of two cells and four valves, ovate, upright, growing to the inner edge of the posterior tooth of the style. Style somewhat club-shaped, hooked, projecting from the point of the germ, concave above where it receives the mass of pollen, which sometimes remains in it even after the flower is past: margin upright, with five teeth beneath obliquely truncate. Stigma flat, somewhat ovate, green, glutinous, cloven at the point.

Native of several parts of Europe, Denmark, England, France, Germany, Austria, Switzerland, Italy: flowering from august to october. With us it is found on Hanwell-heath near Isleworth and on Enfield-chase in Middlesex; Barn Elms in Surry; Dartford in Kent; on the Hill of Health, between Cambridge and Madingly, and by Hinton and Teversham moors in Cambridgeshire; on the south side of Shotover-hill in Oxfordshire; on the Fern in Little Marlow, Buckinghamshire; Warckton in Northamptonshire; closes near Buddon-wood; Leicestershire; East Leke in Nottinghamshire; near Leeds in Yorkshire; in the limestone pastures about Newton Cartmel; and not uncommon in the northern counties. On the road from Truro to Redruth in Cornwall. Under the rocks at Pinney-cliffs near Lyme. It grows in pas-

^a Lightfoot.^b Woodw. Mss.

tures both dry and moist, not only in a calcareous soil, but in dry sand, barren clay, dry elevated pastures, rocky sunny exposures, good soil, boggy commons, &c. and is not so much rare as overlooked.

Mr. Curtis remarks, that it grows more readily in a garden than most of its tribe; and that the protuberant germs, placed regularly one above another, somewhat resemble plaited hair, whence perhaps its name of *Ladies Traces*. If so, it should be *Ladies Tresses*.

Johnson in Gerarde remarks that the top of the stalk, whereon the flowers do grow, is commonly as it were twisted or writhen about; which circumstance Linneus has adopted for a specific character. I observe that *writbed* is erroneously spelt *wreathed* by some modern writers.

4. The root consists of very many thick fibres. Root-leaves linear, long: stem-leaves sheathing very short. Spike dense, oblong. Flowers closely recurved, drooping. Corollas small, with the upper petals confluent; the lower lip oblong, acute, entire. —Native of Virginia and Canada^c.

5. Root perennial, consisting like the *Nidus avis*, of numerous thick fleshy bundled fibres, and renewed every year in the same manner as the bulbs of the Orchides. Stem from twelve to eighteen inches, and even two feet in height, below the leaves much thicker than above, and naked; above the leaves downy; the lower part of the stem immediately above the root is clothed with a membranaceous spathe of two or three leaves; about one third of the height of the stem (Haller, and after him Lightfoot, says one half, but it is never so much) are placed two very broad ovate leaves, one embracing the other at the base, marked with about seven nerves, and much resembling the leaves of the broad Plantain; above these are two or three very short ovate, acuminate stipules. Flowers numerous, in a loose spike, four inches long or more, yellowish green. Bractes not half so long as the germ, and shaped like the stipules. All the five petals are convergent, forming an hood, the three outer lanceolate, the two inner linear, and somewhat tinged with purple: lip of the nectarium as long as the germ, nearly linear, the margins revolute, semibifid, the segments slightly divaricated, and sometimes having a short pointed intermediate lobe, but this is often wanting. Stamens not perceptible: anthers yellow, connected at the summit, covered by an oval appendage to the upper lip of the nectarium, not elastic as in the Orchis^d.

The flowers have a fragrant musky scent, and are on pedicels longer than the germs or bractes^e. Mr. Curtis has figured the flower in detail, in a magnified state, to show, on comparison how different it is from that of the Orchis. This and the fruit are thus very particularly described by Dr. Stokes.—Calyx, leaves three, apparently extensions of the blunt angles of the germ, which in the ripe capsule appear in the form of narrow valves. Petals three, the upper linear, greenish, tinged with purplish brown at the edge, the lowermost thrice as long, all apparently extensions of the sides of the germ, which in the ripe capsule appear in the form of broad valves. Nectary none. Stamen one. Anther sessile, inserted by its point into the point of the stigma, cloven, evidently one, and not two, as in Orchis, appearing like a tongue between the stigma and the upper segment of the corolla, soon falling off. Case of the stamen on the under side of the upper segment of the corolla, fleshy, folded into two cells, which inclose the two lobes of the anther in its earlier state, and when those are ripe and bursting from their inclosures have disengaged themselves, closing again, and pressing upon the anther, remain after it has fallen off, and turning brown, might easily be mistaken for its anther. Capsule not twisted, just before shedding its seed inversely ovate, many times larger than the germ; six-cornered, three of the corners prominent but blunt, the three alternate ones keeled, one-celled, six-valved, three of the valves linear, forming the blunt corners, and three placed alternately, lanceolate oblong, thrice as broad, forming

^c Linn. spec.^d Woodw. Mss.^e Withering. the

the acute corners of the capsule, opening widely at the futures but connected above and below, letting out while yet green the seeds at the future; in this state nearly globular, yellowish green, resembling in figure an antique helmet with a vizor. Seeds very numerous, adhering to the inside of the broader valves, in two lines along the back of the keeled angle; oblong, tapering each way, white, membranaceous; reticulated, each containing a single globular kernel rather smaller than the diameter of the case which contains it, opaque and of a greenish white.

Native of most parts of Europe, in woods and moist thickets; sometimes in meadows and on heaths. With us it is too common to specify particular places. It flowers in may and june. The old English name *Tway-blade* is from its two leaves.

β. It varies sometimes with three leaves.

6. Root fibrous, but the fibres not bundled. Stem from six to nine inches high. Leaves two, above the middle of the stem, between heart-shaped and triangular, broad, terminating in a small projecting point. Flowers few, in a short spike; bractes minute, ovate-lanceolate, as long as the pedicel of the germ: petals patent, green, the three outer ovate-lanceolate, the two inner linear-lanceolate: lip of the nectarium linear, green, purplish at the base, divided beyond the middle in two awl-shaped segments, above which are two small teeth^b.

Lightfoot remarks, that the whole plant is of a tender and delicate texture; the leaves smooth, about half an inch wide at the base; the flowers in a thin spike, ten or twelve in number, green often turning red in decay.

Native of the northern parts of Europe in moist woods; with us on moist mountainous heaths, especially in boggy ground in Yorkshire, Lancashire, and Westmoreland: as on Ingleborough, between Sheffield and Chatworth, Almondborough, and Kighley in Yorkshire; Kendal and Longsledale in Westmoreland. In marshy places by the sides of rivulets, on the highland mountains of Scotland in many places. It flowers in june and july.

7. Scape naked, three-sided. Leaves radical nerved. Flowers red, but three of the petals narrow, linear, green.—Native of Virginia and Canada, in swamps^c. It has been confounded with the next species.

Introduced in 1758, by Peter Collinson, Esq. It flowers in june^k.

8. Bulb ovate, solid, green, covered with nerved membranes, and furnished with fibres below: the bulbs of the preceding years united by creeping fibres, adhere to the flowering bulb by membranes, which are either empty, or contain the remains of dead scapes. Leaves two, lanceolate, linear-lanceolate, or sometimes subovate, commonly half the length of the scape, marked with lines, and keeled below. At the base of the scape are two or three leaflets, sheathing the leaves. Scape three-sided, four or even five-sided, from three or five to eight inches in height. Flowers herbaceous, from three or five to eleven. Petals three broad, two narrower, all with reflex margins: lip of the nectary large, ovate, compressed, with a broad smooth line through the middle from the base to the tip, which disappears as the flowers wither. Stipules at the base of the flowers very short. Capsule erect, ovate, angular, many-seeded^l.

According to Hudson, the stem is six inches high, upright, with from three to five angles, smooth. Root-leaves very entire, bare. Flowers yellowish green, from four to six or seven: petals, the three outer linear, bent back, green; the two inner on the sides filiform, somewhat purplish: lip very entire, somewhat purplish. Capsule upright, oblong, angular. Seeds numerous, small.

Root, says Linneus, a bulb, ascending, with a branch. Leaves lanceolate, two, nearly as long as the scape, which is naked, and three-sided at top. Petals narrow, bent back. Lip of the nectary ovate, large in comparison with the rest. Flowers from five to eight, not more.

Native of Denmark, Sweden, Prussia and England. With us on Hinton, Teversham and Fulbourn moors near Cambridge, found by Mr. Relhan. Mr. Woodward saw a specimen in 1785 from Mr. Sole; which was found on Hinton moor; and I have specimens found by Mr. Halfhide Apothecary in Cambridge, on the moors near that place, above half a century ago. A single specimen found by Mr. Pitchford in St. Faith's-Newton bogs near Norwich, was given to Mr. Lightfoot, but none has been found since in Norfolk or Suffolk^m.

9. Bulb ovate, curved inwards, radicate at bottom. Scape five-cornered, for the most part naked. Root-leaves three or four, spatulate, alternate, rugged at the top, especially on the inner surface, on the outer shorter. Flowers in a raceme, very many, yellowish green: the two side petals ovate-oblong, from reflex erect, the two inner lateral ones linear, recurved, the single upper one straight, forming the arch for the stamens: lip of the nectary lanceolate-ovate, reflex; entire. The bulbs cohere downwards as it were in a chain, separated by a branchlet. It differs from *O. Loefelii* in having more flowers, with the lip of the corolla narrow: from *O. monophyllos* by the leaves not being ovate rugged at the tip, and the pedicels not capillaceousⁿ.

To this excellent description of Linneus, says Mr. Woodward, little can be added.—Stem three or four inches high: leaves two or three radical, and one near the base of the stem about half an inch in length. Spike an inch and half or two inches long: flowers scattered: bractes lanceolate, acute, shorter than the pedicel of the germ. Plukenet's figure, referred to by Hudson, cannot be this plant.

The nectary, which forms the essential character, being different in this plant from that of *Ophrys*, it is placed by some authors in a new genus named *Malaxis*; the nectary of which is one-leafed, heart-shaped, concave, inclosing the stamens and pistil.

Native of Russia, Sweden, Germany and Britain in bogs. Found by Parkinson between Hatfield and St. Albans, and in Romney marsh: by Mr. Dent and Mr. Dale in company on Gamlingay bogs, where it grows in great plenty among the *Sphagnum*; by Mr. Dubois at Hursthill Tunbridge-wells; in Hallinghall-wood near Loughborough, Buddon-wood, and Stocking-wood near Leicester, by Dr. Pulteney: Cawston-heath and Felthorpe-heath in Norfolk, by Mr. Pitchford, Mr. Bryant and Mr. Crowe. Between Rusland Chapel and Thwaite Moss in Furness Fells, by Mr. Jackson. It flowers in june and july.

10. Bulb round, surrounded with many dry jagged leaves; from this a transverse root, as in *Allium umbelliferum*, is continued along the ground, covered also with many leafy sheaths, and the vestiges of other stems, and putting forth round fibres. Culm eighteen inches high, firm, quite simple. Leaf single, formed by the evolution of the sheath, resembling that of *Ophioglossum*, embracing the stem, ovate-lanceolate, almost an inch wide, and three times as long. Stipules very small, sharply lanceolate. Spike half a foot long, containing as far as eighty flowers, not very close. Pedicels erect, longer than the germ. Flowers the smallest of any of the *Orchideæ*. Germ ovate, short. Uppermost petal ovate, shortly acuminate, much wider than the others, which are lanceolate; lip almost similar, wider than the rest, and less acute: the whole flower is green^o. Haller says, that this is the only one of the *Orchideæ*, a tribe on which he has taken great pains, which he had not an opportunity of seeing in a growing state.

Native of Prussia and Switzerland.

11. This is a small species, found at the Cape of Good Hope by Thunberg^p.

12. Fly *Ophrys*, or Fly *Orchis*, as it is commonly called, has the bulbs roundish. Stem from nine to fifteen inches high. Leaves three or four, sheathing the stem at the base, lanceolate, pale green, smooth, shining, marked with numerous longitudinal nerves, the intermediate space covered with a thin somewhat

^b Woodw. Mss. ^c Linn. ^d Hort. kew. ^e Relhan.

^m Withering. ⁿ Linn. spec. ^o Haller. ^p Linn. suppl.

pellucid puckered skin, giving them a silvery hue. Upper part of the stem naked, yellowish green, nearly round, smooth. Bractes linear-lanceolate, much longer than the germ, pale yellowish green. Flowers in a long thinly scattered spike; sometimes fifteen in number, but seldom more than four or five: the three outer petals linear, with reflexed margins, the upper one forming right angles with the others; the two inner thread-shaped, spreading, resembling the antennæ of an insect, deep reddish brown, fringed with short hairs, fixed to the upper lip of the nectarium, which is hooded, covering the stamens; lower lip three-lobed, side lobes linear, entire, middle somewhat ovate, bifid with reflexed margins, covered with a velvety down reddish brown, and with a blueish spot on the centre, which is naked. The whole extremely resembles a fly, to which this blue spot, as Dr. Withering observes, contributes much. The stamens are very short and loose, the anthers yellow^a.

According to Haller, the stem is eighteen inches high; the leaves scarcely an inch in breadth; the spike remarkably thin of flowers, seldom more than eight; the stipule (or bracte) ovate-lanceolate, equal to the germ or longer; the germ sessile, long and slender; the stameneous column without any beak; the anthers are evolved or come out of their case very readily.

Mr. Relhan remarks the slenderness of the stem, which is a character that strikes at first sight, adding that it is round, and smooth or even; bractes longer than the germs; flowers from four to eight, distant, which is another obvious character; lip of the nectary wide, hanging down, longer than the germ, dark purple, reflex at the sides, the segments rounded; the three outer petals spreading, green, the two inner filiform, dark purple.

Linneus has not considered this as specifically distinct from the Bee Ophrys: but it is now generally agreed that they are different, as Haller, Jacquin, and our English botanists have decided them to be. Jacquin has given a full and exact description of the Fly Ophrys in his Miscellanea.

Native of Sweden, Norway, Switzerland, Austria, Carniola, France, Italy. I found it in flower at Vevay, on the banks of the lake of Geneva, may 24th 1779. In England it is not uncommon; as in Boston church-yard, and about Wrotham and Northfleet in Kent; Harefield in Middlesex; Croydon in Surrey; Hinton, Teversham, Fulbourn, Linton, the Devil's-ditch and Chippenham in Cambridgeshire; Bath-hills near Bungay, and Earsham-wood in Suffolk; Ray observed it in Essex, as well as the last two counties; St. Vincent's rocks near Bristol; Plumpton-woods near Ulverston; Rushton in Northamptonshire; Asply in Nottinghamshire; Barrowfield-wood, and Brigsteer-moss in Westmoreland; generally in calcareous pastures. It flowers in may and june.

Some varieties of the Fly Ophrys are mentioned as growing in foreign countries: and Mr. Ray has a larger sort found by Mr. Dale in a pasture near Pestlingford in Suffolk, and by Dr. Eales near Welwyn in Hertfordshire, at Greenhithe and by North Gray, by James Sherard, M.D. From the figure of John Bauhin, to which Ray refers, it will probably prove, says Dr. Withering, to be a different species.

13. Bee Ophrys has the stem about a foot high, leafy, round except between the fructifications, where it is compressed. Leaves alternate, lanceolate, sheathing, pubescent, nerved. Bractes longer than the germs, lanceolate. The three outer petals large, spreading, purple, with the keel and two nerves green; the two inner petals very small, hairy, reflex, green; lower lip of the nectary large, wide, but shorter than the petals, dusky purple mixed with yellow, three-lobed, the side lobes smaller, hairy, reflex, triangular, acuminate; the middle one very large, pubescent, three-lobed, bent down, the middle segment longer, acuminate; upper lip narrowed above with a point, longer than the lower lip, of a green colour. Filaments long: anthers very large. Germ longer than the petals, but shorter than the bracte, large, deeply grooved.

^a Woodw. Mss.

The above description, which I made with great care from a living plant, is asserted by Haller^r to belong to the Ophrys musciflora, and to contain nothing common to O. fuciflora. Let the skilful compare and judge.

According to Mr. Woodward, the stem is shorter than the foregoing, the leaves broader and shorter; the spike of fewer flowers; the bractes broader and shorter, but still longer than the germ; the three outer petals lanceolate, patent and even reflected, as long as the germ, purple with the keel and two nerves green, the tips green and folded; the two inner petals patent, linear, purplish on the inside, green without; upper lip of the nectarium lengthened into a deep-green proboscis, under which are the filaments and yellow anthers; lower lip of the nectarium large and broad, hairy, mottled brownish purple and yellow, divided into three lobes, the two upper near the top, short lanceolate, at first bent upwards, afterwards reflected, the middle one very large, three-lobed, the side ones short, angular, the middle one long, tapering to a point which is greenish yellow, and reflected.

Dr. Stokes describes the lower lip of the nectary as rusty brown, very much resembling a small humble-bee, inversely ovate, the side-lobes bent down, woolly, the edges bent in, the upper angles loose and upright, resembling the wings of the bee. Stamens yellow, inserted into the upper edge of the stigma, bursting, when the flower is expanded, from the membranaceous cases of the upper lip, and bending down on the surface of the stigma, continuing fixed to its edge. Anthers club-shaped, compound, resembling those of Orchis. Germ not wreathed (writhed). It agrees much more nearly to Orchis in its structure, and confirms the propriety of Haller's generic characters.

According to Mr. Curtis, the stalk is from half a foot to a foot high; the leaves ovate-lanceolate, underneath silvery, with linear fibres, frequently imperfect and of a brown colour; bractes large, sheathing, green, and of equal length with the flowers, which are from three to six. Style long, upright, at the tip bending downwards, and again upwards. Filaments arising from the bottom of the style out of a nectariferous scale, hanging down, frequently adhering to the stigma, furnished at bottom with a small transparent gland or globule. Stigma covered with a viscid substance like honey, to which some small particles of the anthers frequently adhere. Capsule about an inch in length, brown. Seeds oblong, at each end membranous, transparent, reticulated, affixed lengthwise to the inside of the keel of each valve.

Native of several parts of Europe. In England this singularly beautiful plant is not uncommon on a calcareous soil near woods, and in meadows. Near London it is become so rare, as scarcely to be found with any certainty, owing to the rapacity of florists and dealers, who as Mr. Curtis observes very justly, root up all they find, without leaving a single specimen to cheer the heart of the student in his botanic excursions. Mr. Alchorne has frequently gathered it near Charlton-church; and Chiffelhurst in Kent. It grows also on Trunhill-downs in the same county. Mr. Blackstone found it about Harefield. In Cambridgeshire it is abundant about Madingley-wood, Hinton, Teversham, Fulbourn, Burrough-green, Chippenham and Linton. In Bedfordshire at Bolnhurst. In Buckinghamshire at Bradenham. In Northamptonshire at Blatherwick and Asply. In Oxfordshire at Pently Hangings. About Earsham in Suffolk and Mulbarton. On St. Vincent's rocks near Bristol. Carisbrook Castle in the isle of Wight. Great Comberton towards Woller's-hill; and Tedestone near Whitbourne in Worcestershire.

It flowers in june and july, and the seed is ripe at the end of august. The root appears to possess the same virtues with those of the Orchis whence Salep is made, but being much smaller is not worth cultivating on that account^r.

14. Stem six inches high, more or less according to its place of growth, round, smooth, covered below with leaves embracing it. Leaves next the root an

^r Bibliotheca Botanica, 2. 707.

^s Curtis.

inch and half long, almost an inch broad, ovate-lanceolate, somewhat blunt, marked with impressed lines, smooth, spreading on the ground; those of the stalk few, narrower and more pointed. Flowers from three to six, in a thin spike. Petals pale green, the three outer largest and the length of the lip, of these the two opposite ovate-lanceolate, obtuse, bent somewhat inwardly, the uppermost narrowed, with the edges rolled back, the two innermost shorter, lanceolate, upright or bent a little back, generally somewhat truncated at the tip: the lip nearly orbicular, below concave, above convex, the sides bent down, at first of a bright purple brown colour, soon changing to a yellowish hue, marked in the middle with a spot considerably resembling the Hebrew letter π , differing however in its form in different flowers, covered thickly with short hairs, especially at the sides, where it for the most part projects, the spots excepted, which are smooth and glossy. Filaments whitish. Anthers club-shaped, yellowish; the cases in which they are contained open through their whole length, their edges membranaceous, and near the top, so transparent, that the colour of the anthers is seen through them. Stigma concave, purplish, marked on each side with a greenish gland^c.

Mr. Woodward distinguishes it from *O. apifera* with which Linneus and foreign botanists in general have confounded it. The stem is not near so high, the leaves are shorter, but otherwise similar, the bractes narrower, the flowers smaller, the three outer petals bluntly ovate-lanceolate, greenish, shorter than the lip; which is somewhat heart-shaped, but not lobed.

It is surprising that Linneus, who allows that these three plants are constant in their differences, should not distinguish them, when the lip of the nectarium in one is four-lobed, in another five-lobed, and in the third only slightly emarginate; not to mention the comparative length of the petals and lip in the two last, which are most alike; a specific character strictly just and admissible.

It is a strange assertion of Haller, that in an advanced state the projection of the lip being bent back, and the lip then appearing heart-shaped, *Ophrys apifera* becomes the same with *O. aranifera*. It is sufficient on this to observe, that *O. aranifera* is the earliest of the three, appearing in May; whereas the Fly appears in June, and the Bee usually in July^a.—Our *aranifera* however is not the *arachnites* of foreign authors, or *Orchis araneum referens* of Casp. Bauhin, which is not a native of Britain, but of Switzerland, Italy and other parts of the continent. Dr. Smith found it abundant in all the grass-plats of the Villa Borghese near Rome, with a stem twelve or fourteen inches high; the lip of the nectary is more expanded, membranous and undulated in the margin. It is well figured in Besler's *Hortus Eystettensis*, and an accurate figure and description of it is given by Haller. It flowered in Mr. Curtis's garden at Brompton, June 1st, 1794.

Our plant is commonly known in this country by the name of Bee Orchis with green wings, the petals being altogether of an herbaceous colour, whereas in the *apifera* three of them are pale purple; but they differ not only in colour, but very materially in shape, as observed above: this flowers also in mild seasons as early as March. The nectary, which at first is of a bright and very rich brown colour, soon changes to a faded yellow green; when the flowering is over, the petals incline forward, and close over the nectary^x.

The flower is not so beautiful as that of the two preceding species: it is fancied by some to resemble a bee, by others a spider; from the breadth of the lip, and its being marked with different shades of brown it derives its resemblance to the latter^y. Others have discovered a likeness to a small bird in the flower^z.

Native of England, in chalky pastures, as about Northfleet, Bocton church-yard and other places in Kent; Leatherhead in Surrey; near Wheatley, be-

tween Witney and Burford, Caversham Warren, and Stansfield in Oxfordshire; about Branham near Tadcaster; about Bury in Suffolk, found by Sir Thomas Gery Cullum; several places in Cambridgeshire; as Shelford, Abington, Hildersham, Bartlow. At Hildersham I have frequently found it in very great abundance, but the exterminators are very diligent wherever they can find it.

15. Bulb single, round or somewhat oblong, with a few thick fibres from the crown. Stem about six inches high, round and smooth. Root-leaves two or three, sheathing the stem, lanceolate, acute, smooth, of a shining yellowish green, marked with parallel veins: on the stem one or two sessile awl-shaped leaves. Spike an inch or an inch and half long, of numerous flowers. Bractes lanceolate, acuminate, at the lower part of the spike equal to or somewhat longer, on the upper part somewhat shorter than the germ; which is oval, sessile, the upper part tapering to a sort of fruit-stalk, whence hangs the flower obliquely nodding; the three outer petals ovate-lanceolate, somewhat converging; the two inner broad at the base, with a linear-lanceolate termination: lip of the nectarium deeply trifid, cruciform; segments lanceolate. The flowers are greenish yellow, with a faint musky smell. Anthers ferruginous^a.

Native of many parts of Europe; Sweden, Denmark, Lapland, England, Germany, Switzerland, Austria, Prussia, Italy, &c. With us near Enfield in Middlesex; chalk-pits near Gogmagog hills in Cambridgeshire; Marham near Swaffham, and near Snettisham in Norfolk. It flowers in July.

16. The root consists of two roundish bulbs, (and not of one rooting at bottom, as in *paludosa*, *monophyllos*, and *Monorchis*), rooting at top. Root-leaves generally four, filiform, awl-shaped, an inch long. Stem naked, the length of the leaves. The spike consists of four or five alternate flowers. Petals five, converging: beard ovate-oblong, entire, scarcely longer than the petals. Two sheaths invest the base of the plant, and inclose the leaves with the scape at the bottom^b.

Native of the mountains of Lapland, Denmark, Switzerland, Dauphiné, Piedmont, Carniola, Austria, &c.

17. Native of Siberia.

18. Stem about a foot high, firm, smooth, round at the base, somewhat angular upwards. Root-leaves four or five, sheathing the stem at the base, lanceolate but varying in breadth, spreading: above these one or two more, closely embracing the stem. Flowers numerous, in a long loose spike. Bractes membranaceous, lanceolate, awned, half as long as the germ. Petals converging; the three outer ovate-lanceolate, greenish with purple lines and margins; the two inner linear: lip of the nectarium long, dependent, yellow, divided into three lobes, the two outer half as long as the middle one, linear and slender; the middle lobe divided again half way into two acute somewhat divaricated segments^c.

It varies in size, and in the colour of its flowers, from yellow green to bright ferruginous. The root, and indeed the whole plant, emits a strong odour^d. The flowers vary in number from ten to fifty. Germs oblong, sessile^e, round, green, twisted. Petals closing so as to form a hood. A little below the stigma, which is deeply hollowed out, are two pellucid shining glands, very conspicuous. The filaments are very short^f. The lip of the nectary is so divided as to bear a coarse resemblance to the human arms and legs, whence old authors named it the Man Orchis.

Native of the southern parts of Europe, and England. With us principally in dry pastures and old chalk-pits; in such situations it is one of the most common of the tribe in Kent, as near Northfleet, Greenhithe, between Gravesend and Cliffe, Dartford, Bocton church-yard, and in the way to Branley, Trunhill, &c. In Surry about Croydon and Leatherhead. Near Linton in Cambridgeshire. Kimbolton

^c Curtis.

^a Woodw. Mfs.

^x Curtis.

^y Withering.

^z Curtis.

^a Woodw. Mfs.

^b Linn.

^c Woodw. Mfs.

^d Curtis.

^e Relham.

^f Curtis.

in Huntingdonshire. Dalington near Sudbury in Suffolk. Ashwelthorpe near Norwich. It flowers in June.

19. Dr. Smith suspects this to be a variety of *O. apifera*, perhaps inaccurately drawn^z.

20. Stem a foot high. Stem-leaves embracing, ovate, oblong, acuminate, nerved. Spike oblong, many-flowered, the flowers distant. First petal between the following, lanceolate, erect: second and third upper, outer, obovate, erect: fourth and fifth ovate, concave, reflex, much shorter than the former: lip triangular, sagittate; the less above the stamens, before the first petal; the largest obcordate, subpedicelled.—Native of the Cape of Good Hope.

21. Stem a span high. Root-leaves ovate, nerved: stem-leaves ovate-oblong, several. Spike many-flowered, close, mixed with bractes longer than the flower, ovate, spreading: upper petal roundish, arched: lip shorter, three-lobed.—Native also of the Cape^h.

22. Stem simple, a hand high. Leaves scattered, half embracing, numerous, wider towards the base, towards the top long-awl-shaped or linear. Spike terminating. Flowers sessile, remote; under each a bristle-shaped bract the length of the flower. Petals ovate or lanceolate, obtuse. Arch of the stamens of the same length with the petals, terminated by two erect linear parallel horns. The whole plant in drying becomes black.—Native of the Capeⁱ.

23. Scape a foot high. Leaves three, alternate, embracing, lanceolate; the root-leaves shorter. Raceme four or five-flowered. Bract the length of the corolla: helmet one-leaved; the two lateral petals lanceolate, spreading: lip small, lanceolate, bent in under the helmet with the lateral segments spreading very much, widening at the base with a lobe on each side.

24. Bulb roundish. Leaves lanceolate. Spike five-flowered or thereabouts, with ventricose bractes. Helmet very much arched, hemispherical, mucronate at top; the two wings spreading, two-lobed, the upper lobe larger: lip of the nectary erect, trifid, the middle segment acute, the lateral ones membranaceous, linear.

25. Scape a foot high, even, leafy. Leaves three or four, alternate, lanceolate. Flowers in a raceme, three or four, yellow.—These are all natives of the Cape of Good Hope^k.

26. Stem a span or a foot high. Leaves alternate, many (about sixteen) over the whole stem, lanceolate-subulate, sheathing with a wider base. Spike corymbed, without a distinct peduncle. Germ streaked. The three upper petals nearly equal, ovate, uppermost arched, side ones spreading, the two lower side ones inserted into the pistil, thickish, oblong, blunt, smaller than the former petals: lip thickish, resembling the lower side-petals, lanceolate.

27. Stem a span high and more. Stem-leaves three, the first obsolete, the second oval-lanceolate, the third spathe-form. Spike few-flowered, with ovate, acute bractes. The first petal lanceolate, concave, the second and third very wide, roundish, the length of the first, the fourth and fifth semicordate, acuminate, of the same length: lip from the pistil itself, smaller, ovate-lanceolate, waved.

28. Stem hardly a hand high, longitudinally imbricated with leaves. Root-leaves short, linear. Stem-leaves sheathing, awl-shaped, acuminate. Flowers two to four, rather large. First petal cordate, acute; second and third minute, oblong, under the first; fourth and fifth semicordate, sub lanceolate, the length of the first, spreading: lip subcapillary, linear, very short.

All these are also natives of the Cape of Good Hope^l.

29. Leaves subradical, alternate, with a grooved, many-angled sheath, acute, waved, concave, grooved, streaked, entire, smooth, erect, a hand in length, two inches wide, three, four or five in number. Scape surrounded with leaves at the base, with acute angles, smooth, erect, longer than the leaves. Flowers at the

top of the scape elongated, in a spike, alternate, drooping, purple. Spike sharply angular, erect, smooth, about a span in length. Perianth three-leaved, the two upper segments lateral, and one lower horizontal; they are equal, linear, and bent back on the edges and at the tip. Corolla three-petalled: uppermost petal ovate, jointed and reflex in the middle, having two calluses at the base, grooved, emarginate, forming a hood or helmet, twice as wide as the rest; the two lower lateral, bent down at the base, then bent back, linear, like the leaflets of the calyx, and of the same length: two calluses at the base of the uppermost petal between the petal and the style. Anthers two, sessile, under the top of the stigma. Style semicylindrical, curved towards the upper petal, a line in length, white. Stigma blunt. Capsule cylindric-filiform, twisted, erect, drooping at top, smooth, purple, half an inch long. Under each flower a very short, ovate, purple bract.

Native of Japan near Osacca and Jedo; flowering in May and June. Its name in Japanese is Gin Ran^m.

30, 31, 32. Natives of the Cape of Good Hopeⁿ.

33. Native of New Caledonia.

34. Native of New Zealand^o.

PROPAGATION AND CULTURE.

1. This plant refuses culture, but may be transplanted from the places where it grows naturally into a shady part of the garden, where, if the roots are not disturbed, it will continue many years, and flower, but not increase. The best time to remove the roots is in July or August, when the leaves are decaying; for it will be difficult to find the roots after the leaves are gone.

[2. This may be treated in the same manner.

3. Is seldom cultivated in gardens, but not being nice in its soil or situation, grows more readily in a garden than most of the *Orchis* tribe^p. Johnson however says he could not get them to grow in a garden, and that none of the *Satyrions* love to be pent up in such strait bounds^q.

5. Common Twayblade growing naturally in woods and thickets, will prosper very well in any shady part of a garden, especially in a moist soil.

7, 8, 9. Require to be planted in bog earth, in a moist shady border, or in pots with bog moss and earth, set in pans of water.]

12, 13, 14, 15, 18. All these may be preserved in gardens, though not propagated there. The best time to remove the roots from the places where they naturally grow, is just before the stalks fall, for at that time they may be easily discovered, and are beginning to rest, so that the bulb will be fully formed for flowering the following year, and will not shrink: but when they are removed at the time when they are in action, the bulb designed for flowering the following year, not being fully ripened, will shrink, and frequently perish.

When they are removed into a garden, the soil should be adapted to the sorts. Such as grow in moist pastures should be planted in shady moist borders; those which are inhabitants of woods may be planted under trees; but such as grow upon chalk-hills should have a bed of chalk prepared for them in an open situation; and when they are fixed in their several places, they should not be disturbed: for provided they are kept clean from weeds, the less the ground is disturbed, the better the plants will thrive, and the longer they will continue.

[These plants were cultivated with great success by the late Peter Collinson, Esq. whose memory is revered by every botanist, in his garden at Mill-hill. His method was to place them in a soil and situation as natural to them as possible, and to suffer the herbage to grow round them^r. They are commonly taken up with a large ball of earth and the grass, &c. in which they grow, when they are coming in flower, or at least when they are pushing up their flowering-stem in spring, so that the species may be distinguished:

^z Tour, 2. 295.

^h Linn. suppl.

ⁱ Linn. mant.

^k Linn. amoen.

^l Linn. spec.

^m Thunberg.

ⁿ Thunb. cap.

^o Forster.

^p Curtis.

^q Ger. emac. 219.

^r Curtis, lond.

in this state they seldom continue in a garden more than one year, or at most two years, so that by this means vast quantities of these beautiful flowers are destroyed annually.

Mr. Curtis remarks, that he has not yet heard of these plants being propagated by seed; and that it is to be wished some intelligent gardener would exert himself in making some experiments to raise them in this way.—They produce abundance of seed, and there can be no doubt of their increasing by seed in their natural state of growth.

14. With a little attention and management this plant will grow and flower more freely than many of the tribe. Mr. Curtis has found the following method successful: take up the roots carefully when in flower, bare them no more than is necessary to remove the roots of other plants; fill a large-sized garden-pot with three parts choice loam moderately stiff, and one part chalk mixed well together, and passed through a sieve somewhat finer than a common cinder-sieve; in this mixture place your roots at about the depth of two inches, and three inches apart, water them occasionally during summer, if the weather prove dry; at the approach of winter place the pot in a frame under a glass, to keep it from wet and frost, which combined destroy the beauty of the foliage, if not the plant itself; in the autumn, before any of the others make their appearance, this species emerges^s.

OPOBALSAMUM. See *Amyris*.

OPOPANAX. See *Pastinaca*.

OPSANTHA. See *Gentiana Amarella*.

OPULUS (quod viti fert opem). See *Viburnum*.

OPUNTIA. See *Cactus*.

ORACHE. See *Atriplex*.]

ORANGE. See *Citrus*.

ORCHARD. In planting an Orchard, great attention should be paid to the nature of the soil; and such sorts of fruits only should be chosen, as are best adapted to the ground designed for planting, otherwise there can be little hopes of their succeeding; and it is for want of rightly observing this method, that we see in many countries Orchards planted, which never arrive to any tolerable degree of perfection, the trees starving; and their bodies either covered with Moss, or the bark cracked and divided, both which are evident signs of the weakness of the trees; whereas, if instead of Apples the Orchard had been planted with Pears, Cherries, or any other sort of fruit better adapted to the soil, the trees might have grown very well, and produced great quantities of fruit.

As to the position of the Orchard, (if you are at full liberty to chuse) a rising ground, open to the south-east, is to be preferred; but I would by no means advise planting upon the side of a hill, where the declivity is very great; for in such places the great rains commonly wash down the better part of the ground, whereby the trees would be deprived of proper nourishment; but where the rise is gentle, it is of great advantage to the trees, by admitting the sun and air between them, better than it can upon an entire level; which is an exceeding benefit to the fruit, by dissipating fogs and drying up the damps, which, when detained amongst the trees, mix with the air and render it rancid: if it be defended from the west, north, and east winds, it will also render the situation still more advantageous, for it is chiefly from those quarters that fruit-trees receive the greatest injury; therefore, if the place be not naturally defended from these by rising hills, which is always to be preferred, then you should plant large growing timber-trees at some distance from the Orchard, to answer this purpose.

You should also have a great regard to the distance of planting the trees, which is what few people have rightly considered; for if you plant them too close, they will be liable to blights; the air being hereby pent in amongst them, will also cause the fruit to be ill tasted, having a great quantity of damp vapours from the perspiration of the trees, and the exhalations from the earth mixed with it, which will be imbibed by the fruit, and render their juices crude and unwholesome.

Wherefore I cannot but recommend the method which has been lately practised by some particular gentlemen with very good success, and that is, to plant the trees fourscore feet asunder, but not in regular rows. The ground between the trees they plough and sow with Wheat and other crops, in the same manner as if it were clear from trees; and they observe their crops to be full as good as those quite exposed, except just under each tree, until they are grown large, and afford a great shade; and by thus ploughing and tilling the ground, the trees are rendered more vigorous and healthy, scarcely ever having any Moss, or other marks of poverty, and will abide much longer and produce better fruit.

If the ground in which you intend to plant an Orchard has been pasture for some years, then you should plough in the green sward the spring before you plant the trees; and if you will permit it to lie a summer fallow, it will greatly mend it, provided you stir it two or three times, to rot the sward of Grass, and prevent weeds growing thereon.

At Michaelmas you should plough it pretty deep, in order to make it loose for the roots of the trees, which should be planted thereon in october, provided the soil is dry; but if it be moist, the beginning of march will be a better season. The distance, if designed for a close Orchard, must not be less than forty feet, but the trees planted twice that distance will succeed better.

When you have finished planting the trees, you should provide some stakes to support them, otherwise the wind will blow them out of the ground; which will do them much injury, especially after they have been planted some time; for the ground in the autumn being warm, and for the most part moist, the trees will very soon push out a great number of young fibres; which, if broken off by their being displaced, will greatly retard the growth of the trees.

In the spring following, if the season should prove dry, you should cut a quantity of green sward, which must be laid upon the surface of the ground about their roots, turning the grass downward, which will prevent the sun and wind from drying the ground, whereby a great expense of watering will be saved; and after the first year they will be out of danger, provided they have taken well.

Whenever you plough the ground betwixt these trees, you must be careful not to go too deep amongst their roots, lest you should cut them off, which would greatly damage the trees; but if you do it cautiously, the stirring the surface of the ground will be of great benefit to them; though you should observe, never to sow too near the trees, nor suffer any great rooting weeds to grow about them, which would exhaust the goodness of the soil, and starve them.

If after the turf which was laid round the trees be rotted, you dig it in gently about the roots, it will greatly encourage them.

There are some persons who plant many sorts of fruit together in the same Orchard, mixing the trees alternately; but this is a method which should always be avoided; for hereby there will be a great difference in the growth of the trees, which will not only render them unsightly, but also the fruit upon the lower trees ill tasted, by the tall ones overshadowing them; so that if you are determined to plant several sorts of fruit on the same spot, you should observe to place the largest growing trees backward, and so proceed to those of less growth, continuing the same method quite through the whole plantation; whereby it will appear at a distance in a regular slope, and the sun and air will more equally pass throughout the whole Orchard, that every tree may have an equal benefit therefrom; but this can only be practised upon good ground, in which most sorts of fruit-trees will thrive.

The soil of your Orchard should also be mended once in two or three years with dung, or other manure, which will also be absolutely necessary for the crops sown between; so that where persons are not inclinable to help their Orchards, where the expense of manure is pretty great, yet, as there is a crop expected from

from the ground besides the fruit, they will the more readily be at the charge upon that account.

In making choice of trees for an Orchard, you should always observe to procure them from a soil nearly a-kin to that where they are to be planted, or rather poorer; for if you have them from a very rich soil, and that wherein you plant them is but indifferent, they will not thrive well, especially for four or five years after planting; so that it is a very wrong practice to make the nursery where young trees are raised very rich, when the trees are designed for a middling or poor soil. The trees should be also young and thriving, for whatever some persons may advise to the contrary, yet it has always been observed, that though large trees may grow and produce fruit after being removed, they never make so good trees, nor are so long lived, as those which are planted while young.

These trees, after they are planted out, will require no other pruning, but only to cut out dead branches, or such as cross each other, which render their heads confused and unsightly: the pruning them too often, or shortening their branches, is very injurious; especially to Cherries and stone-fruit, which will gum prodigiously, and decay in such places where they are cut; and the Apples and Pears which are not of so nice a nature, will produce a greater quantity of lateral branches, which will fill the heads of the trees with weak shoots, whenever their branches are thus shortened; and many times the fruit is hereby cut off, which, on many sorts of fruit-trees, is first produced at the extremity of their shoots.

It may, perhaps, seem strange to some persons, that I should recommend the allowing so much distance to the trees in an Orchard, because a small piece of ground will admit of very few trees when planted in this method; but if they will please to observe, when the trees are grown up, they will produce a great deal more fruit, than twice the number when planted close, and will be vastly better tasted; the trees when placed at a large distance, being never so much in danger of blighting, as in close plantations, as has been observed in Herefordshire, the great county for Orchards, where they find, that when Orchards are so planted or situated, that the air is pent up amongst the trees, the vapours which arise from the damp of the ground, and the perspiration of the trees, collect the heat of the sun, and reflect it in streams so as to cause what they call a fire-blast, which is the most hurtful to their fruits; and this is most frequent where the Orchards are open to the south sun. But as Orchards should never be planted, unless where large quantities of fruit are desired, so it will be the same thing to allow twice or three times the quantity of ground; since there may be a crop of grain of any sort upon the same place (as was before said,) so that there is no loss of ground; and for a family only it is hardly worth while to plant an Orchard, since a kitchen-garden well planted with espaliers, will afford more fruit than can be eaten while good, especially if the kitchen-garden be proportioned to the largeness of the family; and if cyder be required, there may be a large avenue of Apple-trees extended cross a neighbouring field, which will render it pleasant; and produce a great quantity of fruit; or there may be some single rows of trees planted to surround fields, &c. which will fully answer the same purpose, and be less liable to the fire-blasts before mentioned.

[Orchards in general are small inclosures adjoining to a house, planted without much regard to soil or aspect, merely for the convenience of situation in protecting the fruit. But in the cyder-counties, and particularly in Herefordshire, they are dispersed over all parts of the country, in various degrees of elevation, and in aspects that look to every point of the compass: the south-east however, with a screen to the north, seems to be the favourite aspect. This has reason on its side; where however fruit-plantations are considerable, it may be prudent to have them in different aspects; and Mr. Marshall observes that in the year 1783 Orchard-fruit was cut off in every aspect except the north-west. This probably was owing to the

bloffoms being kept back till frost and blight were past, but there can be little doubt that on ground gently inclining to the south or south-east, and well defended to the north and east, there will be in general a greater probability of a crop, and the fruit will be better flavoured. The richest soil is commonly in vallies, and they are the most sheltered from storms; but they are also more subject to spring frosts, insects and blights.

The best Orchards of Apples are on a strong clayey soil, which is congenial to most varieties of this fruit; some of them however affect a light sandy loam, as the Stire, Hagloe Crab, and Golden Pippin; and it is a fact well ascertained, that cuttings from the same tree, and grafted upon similar stocks, will produce Cyder of a different quality, when planted in different soils. It seems to be admitted that the liquor produced from trees in clay is of a stronger body, and will keep better than that which is made from trees on a sandy soil.

Pears are less difficult in their soil than Apples, and are not so liable to be injured by frost and blight. They are generally supposed to flourish most in a calcareous soil; the Squash however draws the finest Perry from deep strong land.

Stocks for grafting upon are raised by sowing either in november or february, the must or residue of Apples or Crabs after the cyder or vinegar has been squeezed out. It is sown on a bed of highly cultivated mould, in a garden, and is kept clean by hand. If new varieties or the improvement of old ones be the object, the seed-bed ought to be made as rich as possible; but if the preservation of varieties be all that is wanted, a common loamy soil is sufficient.

This method of sowing the must is a bad one, because the largest and best kernels are bruised in the press, and thus the stocks are mostly raised from the smaller ones. It would surely be better to pick a few of the best Apples from the tree, or rather to let them remain till they are so ripe as to drop off themselves, and to take out the most sound and healthy kernels.

Indeed stocks raised from apple-kernels are much inferior to such as are raised from the Crab. The tree will bear fruit three or four years sooner, but the Crab stock will endure twenty or thirty years longer, and is not so liable to moss and canker.

At the end of two years the seedlings are planted out in the nursery in rows, three feet distant, and from fifteen to eighteen inches, or even two feet asunder in the rows; care being had not to cramp the roots, but to bed them evenly in the mould. The plants should be sorted, according to their strength, the tap-roots taken off, and the longer side rootlets shortened. Whilst they remain in the nursery, which they generally do till they are finally planted out in the Orchard, they are trimmed twice a year. It is a good method to retransplant them two years before they are to be transferred to the Orchard, into fresh unmanured ground, double dug, and set in a quincunx order, four feet apart every way. For raising or improving varieties the soil should be deep and good; and the plants should be moved every second, third or fourth year. But all this trouble is seldom or ever taken.

While the plants are small, the intervals may be cropped with such kitchen-garden produce as will not overshadow them or exhaust the ground.

In trimming or pruning, if there be two leaders, the weaker should be taken off: if the leader be irrecoverably lost, cut the plant down to within a hand's breadth of the soil, and train a fresh stem. Take the undermost boughs off by degrees, always preserving sufficient heads to draw up the sap: not trimming them up to naked twigs, as is the common practice, thereby drawing them up tall and feeble.

The length of stem to which stocks are usually trained is six feet, or sometimes near seven; if they were still higher they would be more out of the reach of stock, and be much less injurious to whatever grows under it. The usual size at which stocks of the common height are planted out, is four to six inches girt at three feet high; a size which they will reach, with proper management, in seven or eight years.

In

In planting the Orchard, the proper distance ought to be proportionable to the natural growth or spread of the trees. In old Orchards the trees are only eight or even six yards asunder, the more prevailing distance now seems to be ten yards, twelve yards or half a chain might perhaps be still better. In the grass grounds of Gloucestershire, and the arable fields of Herefordshire, twenty yards is a common distance, some have intervals of twenty-five yards: a chain's length, or twenty-two yards, might be taken as a good medium distance. In this case, each acre would have ten, in that forty trees.

In grounds, the trees should be in lines, for the convenience of ploughing. In close Orchards they should be set in the quincunx manner.

The time of planting is october and november, or february, march and april. Where the soil is dry and light, autumn is preferable; but in a cold wet situation, and tenacious soil, the spring months are best.

The leader should now be shortened, and the smaller side-boughs taken off; leaving a proper choice of the larger side-boughs entire, and untouched, to draw up the sap, and to furnish wood proper for grafting.

The common method of planting is to dig a hole wide enough to receive the roots, which being placed within it, the mould is returned upon them in the order in which it came out, carefully replacing the sods on the surface, that no grazing ground may be lost.

A better method is this: the ground being set out with stakes driven in the centres of the intended holes, describe a circle five or six feet in diameter round each stake. If the ground be in grass, remove the sward in shallow spits, placing it on one side of the hole. Place the best of the loose mould by itself on another side, and the dead earth in a third heap. Where the subsoil is cold and retentive, the holes should not be made much deeper than the cultivated soil. In a dry light soil, the holes should be made deeper, both to obtain a degree of coolness and moisture, and to establish the plants firmly in the ground. In soils of a middle quality, the hole should be of such a depth, that when the sods are thrown to the bottom of it, the plant will stand at the same depth in the Orchard as it did in the nursery. The holes ought to be made previous to the day of planting. If the ground and weather be dry, the holes should have two or three pailfuls of water thrown into each the evening before.

In planting, the sods should be thrown to the bottom of the hole, chopt with the spade, and covered with some of the finest of the mould; if, with this, the bottom be not raised high enough for the plant, return some of the worst mould before the sods are put in. Upon the fine mould spread the lowest tier of roots, drawing them out horizontally, with all their fibres, pressing them evenly into the soil, and covering them, by hand, with some of the finest of the mould: one person steadying the plant, another adjusting and bedding the roots, and a third supplying the mould; which being raised high enough to receive another tier of roots, they are to be spread and bedded like the former; thus proceeding till the roots are all bedded freely, yet firmly, among the best of the soil. When they are covered some depth, press the earth in well with the foot, and raise the remainder into a hillock round the stem, to afford coolness, moisture and stability to the plant. It is a common fault to plant fruit-trees too deep in the ground. Provided they withstand the violence of the wind, they can scarcely be planted too near the surface.

Young trees are frequently planted in hop-grounds, and therefore want no protection; the land not being converted either into arable or pasture, till the trees are out of the reach of cattle. But when they are planted in pasture land or open fields, tall thorns fastened by withes are commonly placed round them; this however is a slender guard, and the thorns are apt to chafe the stem of the tree. The most effectual, but the most expensive guard, is composed of four posts put down in a square, with rails mortised into them; to be effectual, the posts should be put at such a distance and height, and the rails so close, that cattle cannot reach the tree; the posts also should be set slanting

outwards, that the area of the fence be widest at top: this fence occupies much land. Others set only three posts, in a triangle, connected by rails as before. In both cases care should be taken that the lower rails are near enough to prevent sheep from creeping through, for they, especially when snow is on the ground, will bark the young trees.

The plantation will require copious watering the first summer, if the season should prove dry. The surface over the roots should be kept free from grass and weeds, and in a loose pulverized state, to induce the roots to spread horizontally on every side.

In Herefordshire, the soil of Orchards is generally kept under tillage; in Gloucestershire, in grass. Either practice has its disadvantages. Fruit trees, when fully grown, especially if they are of a spreading growth, and are suffered to form drooping branches, are very injurious to arable crops, at least in our moist climate: their roots, their drip, and their shadows are destructive, not to corn only, but to clover and turneps; they also impede a free circulation of air, and are in the way of plough-teams. Tillage however is favourable to the growth of young trees. Whereas in grass grounds their progress is comparatively slow, for want of earth being stirred about their roots, and by being injured by grazing stock. Hence we may conclude, that where circumstances will allow, it is best to plant fruit-trees upon a newly broken up sward, to keep the soil under a state of arable management, until the trees be well grown; then to lay it down to grass, and let it so remain until the trees be removed and their roots decayed; when it will again require a course of arable management.

After Orchard trees are planted and fenced they have seldom any more care bestowed upon them. Boughs are suffered to hang dangling to the ground, their heads are so loaded with wood as to be impervious to sun and air, and they are left to be exhausted by moss and mistletoe.

By a redundancy of wood the roots are exhausted unprofitably, the bearing wood is robbed of part of its sustenance, and the natural life of the tree unnecessarily shortened; whilst the superfluous wood endangers the tree, by giving the winds an additional power over it, and is injurious to the bearing wood, by retaining the damps, and preventing a due circulation of air.

The outer surface only is able to mature fruit properly; every inner and underling branch ought therefore to be removed. It is common to see fruit-trees with two or three tiers of boughs pressing hard upon one another, with their twigs so intimately interwoven, that a small bird can scarcely creep in among them. Trees thus neglected, acquire, from want of due ventilation, a stunted habit; and the fruit becomes of a crude inferior quality.

Mistletoe is a great enemy to Apple Orchards, and is frequently permitted to be very injurious to them. The ordinary method of clearing trees from it, is to pull it out with hooks, in frosty weather, when being brittle, it readily breaks off from the branches. Sheep are as fond of it as they are of Ivy. A labourer could clean fifty or sixty trees in one day; and yet the Herefordshire Orchards are generally suffered to be exhausted by this parasite.

They are also very often almost entirely subdued by Moss, which kills many trees, and injures others so much, that they are only an encumbrance to the ground and a disgrace to the country. This evil may easily be checked, and in a great measure avoided. In Kent, there are men who make it their business to clean Orchard trees from Moss, at a certain price by the tree or by the whole. Draining the land, if too retentive of moisture, will sometimes prevent or cure Moss: or digging round the trees in winter, and bringing fresh mould, or the scouring of ponds and roads, or the rubbish of old walls, well prepared and pulverized, and laid round the trees. Whatever contributes to the health of the tree, will cure or in some degree mitigate these and other diseases.

When fruit-trees are hide-bound, they are scored,
5 X by

by cutting the bark with the point of a knife, from the top to the bottom of the stem.

Spring Frosts are an enemy against which it is very difficult to guard Orchard trees. Dry Frosts are observed to have no other effects than keeping the blossoms back. But Wet Frosts, after rain or a foggy air, and before the trees have had time to dry, are very injurious, even to the buds. This cannot be avoided; much however may depend upon the strength of the blossoms; and the assistance that art can give in this case is, to keep the trees in a healthy, vigorous state, to enable them to throw out strong buds and blossoms; and by keeping them thin of wood, to give them an opportunity of drying quickly, before the frosts set in.

Blights are very frequently fatal to the vernal blossoms, and the consequent crop of fruit. Were it not for this malady, which commonly invades Orchards in May, many persons think that there would be a crop of fruit every year as regularly as there is a crop of corn. Perhaps if trees in the full vigour of their life were to be kept in perfect order, and not suffered to overbear themselves, this constant fertility might be looked for, if they were not attacked by natural evils; and perhaps these natural evils might be in some degree mitigated. But when trees are badly planted on an unpropitious soil, are ill grafted on an infirm stock, have little care bestowed on them, to protect them from cattle, and to keep them clean from Moss and Mistletoe, are suffered to run to unprofitable wood, and when they have a hit, as it is called, or bear a large crop of fruit, it is beaten down with poles or sticks, by which the buds that are forming for the succeeding year are mostly bruised or beaten off; is it any wonder, that with all this ill management, neglect and bad usage, that the crop of fruit should often fail, or that spring frosts and blights should have their full effect upon trees so weakened and injured? it seems rather surprising, that instead of bearing once in two or three years, they should ever bear at all.

The term Blight is vague, and no definite idea seems affixed to the term. Whether insects be the cause or the effect of it, does not seem to be yet settled. It is asserted however, that if a mat or a piece of white paper be thrown over a tree at night, and examined in the morning, if there has been a blight, there will be little black spots, like the point of a pin. They seem lifeless, but if the sun shine, by twelve o'clock they will be in motion. By next morning they will be gone from the mat, and then, and not till then, they go into the leaves of the trees, where they form nests, and do the mischief. In two or three days after the blight has infected an Orchard, the leaves of the trees will be curled. If the inside be examined with a powerful microscope, a thousand small insects will be seen: these will seize upon the half-formed embryo, and destroy it in the midst of its feeding leaves. If the blossom be not out, or the fruit formed, when these vermin arrive, they do no mischief, but if the young fruit be just formed, and not of sufficient strength to repel their attack, it is so much the food they want, that it falls an immediate sacrifice to their depredations. The critical period at which the fruit is subject to the mortality of the blight lasts only a few days: and therefore by having Orchards in different aspects, there will be a great probability that one or other of them may escape it. All the assistance that art can render the trees against this evil is to keep them in a state of health and vigour.

Smaller insects are hurtful to the leaves, blossoms, and nascent fruit. Larger insects devour the fruit in a state of maturity. Apples, particularly Cyder fruit, are of a texture firm enough to resist their attacks: but Pears are devoured in great quantities some years by wasps. If a price were set in the spring upon the female wasp that comes out singly in May, it might be a means of destroying many nests by anticipation*.

In Devonshire Orchards are situated chiefly in valleys, and dips or hollows near houses, not spread over

the arable land and pasture grounds, as in Herefordshire and Gloucestershire. Some of them lie bleakly exposed to the north; others are in the current of the south-west wind. But those which succeed best are neither exposed to the north east, nor to the sea winds from the west and south-west.

The richest deepest soils appear to have been chosen for Orchard grounds: the shallower soils are probably unfit for fruit-trees; but where situation will admit, such as are encumbered with large stones, with good soil intervening, are singularly eligible.

Nursery plants are singularly trained with stems not more than three or four feet high.

The same ground is kept in a state of Orchard for a long continuance. As the old trees go off, young ones are planted in the intervals, without any apprehension of miscarriage.

A statute rod, namely five yards and a half, is the common distance between the trees. Some are not more than four yards apart, and a few are at six yards.

The most approved mode of planting is to remove the soil down to the rock, which seldom lies very deep, and to cover this eight or ten inches thick with a compost of fresh earth and sea sand; upon this they lay the inverted turf, and upon the turf the young tree is set, and its roots bedded in the best of the mould; finally covering them with the common earth raised in making the pit.

The usual guard is brambles, brushwood or furze left till they rot at the foot of the tree.

During the winter months a Devonshire Orchard appears as if hung with hoar frost, owing to the white moss, which hangs like ribbands from the boughs. Mistletoe is not known there.

The use of the land is in a great measure thrown away. Horses are suffered to run through it in winter, and calves are kept in it early in spring; but grown cattle and sheep are at all times prohibited from entering; and whilst the fruit is upon the trees, swine and even small pigs are kept out; for in a bearing year the boughs bend to the very ground.

Previous to the gathering season, the weeds, which are three or four feet high, are cut down with the scythe, and thrown to the roots of the trees, that the fruit may be found†.

In Kent, particularly about Maidstone, are many small inclosures, from one to ten acres, and somewhat more, planted with fruit of different kinds, for which the rocky soil of the neighbourhood seems particularly adapted. The best method known there for raising Orchards of Apples and Cherries, and plantations of Filberts is to plant them among Hops. The constant culture of the land for the Hops, with the warmth and shelter they afford the young trees, causes them to grow with great luxuriance. It is a very common practice to plant Hops, Apples, Cherries and Filberts all together. Eight hundred Hop-hills, two hundred Filberts, and forty Apple and Cherry trees to an acre. The Hops stand about twelve, and the Filberts about thirty years, by which time the Apple and Cherry trees require the whole land. Sometimes Apple and Cherry trees are planted in alternate rows, with two rows of Filberts between each row.

The method of planting Apple and Cherry trees, is to dig holes about two feet square, and two spits deep, taking out the rock, and turning down the surface soil, on which the young tree is placed, and the remainder of the earth is trodden down close about the roots. The trees are supported by stakes, until they get sufficient strength not to be hurt by gales of wind. A composition of lime and night soil is with a brush painted on their stems, which not only protects them from cattle, but is said to promote the growth of them exceedingly.

The soil preferred for Cherries is a deep loam upon the rock. If grown by themselves they are planted from twenty to thirty feet distant, and are put somewhat deeper in the earth than Apples: in other respects

* Marshall's rur. econ. of Gloucestershire, &c. and Clark's survey of Herefordshire.

† Marshall's rur. econ. of the West of England.

the management is the the same *. Cherries seem to affect a calcareous soil, if we may judge from the size and flourishing state of the Black Cherry in the Chiltern part of Buckinghamshire, on the almost bare chalk rock.

In some parts of Ireland it is a common practice, in planting Orchards for Apples, for making Cyder; to set cuttings three or four feet long half way in the ground, of such sorts as grow rough and knotty in the wood. They call them *pitchers*: they rarely fail, and yield well and soon †.

On Pruning Orchards.

If pruning be judiciously done, fruit trees will come into bearing sooner, and continue in vigour for nearly double their common age. No branch should ever be shortened, unless for the figure of the tree, and then it should be taken off close at the separation. The more the range of branches shoot circularly, a little inclining upwards, the more equally will the sap be distributed, and the better will the tree bear. The ranges of branches should not be too near each other, that the fruit and leaves should all have their full share of sun; and where it suits, the middle of the tree should be so free from wood, that no branch crosses another, but all the extremities point outwards.

October or november, or as soon as the fruit is off, is the proper season for pruning. Few men cut true enough with a bill, it is therefore best to take off superfluous branches with a saw, and afterwards to smooth the place with a knife; for it is essential that every branch which is to come off should be cut perfectly close and smooth. The wounds must then be smeared over with a medicated tar. The bark cannot grow over a stump, because there is no power to draw the sap that way; for which reason always cut a little within the wood. Every branch should be taken off that comes near to the ground, that has received any material injury, where the leaves are much curled, or that has a tendency to cross the tree or run inwards. Then a little attention may be given to the beauty of the head, leaving all the branches as nearly equidistant as possible. If then there be any remaining blotches, open or score them with a knife; and where the bark is ragged from any laceration, pare it gently down till you come to the live wood: touching over each with the medicated tar. This being done, the moss should be rubbed clean off, and the trees scored. In this last operation care should be taken not to cut through the inner or white rind, which joins the bark to the wood. When trees are much thinned, they are subject to throw out great quantity of young shoots in the spring; these should be rubbed off, and not cut, for cutting increases the number.

The medicated tar is composed of half an ounce of corrosive sublimate, reduced to fine powder, by beating with a wooden hammer, and then put into a three-pint earthen pipkin, with about a glass full of gin or other spirit, stirred well together, and the sublimate thus dissolved. The pipkin must then be filled by degrees with vegetable or common tar, and constantly stirred till the mixture is intimately blended. This quantity will be sufficient for two hundred trees. Being of a very poisonous nature, it should not be suffered to lie about the house. The sublimate dissolves better, when united with the same quantity of spirit of hartshorn, or of sal ammoniac.—This mixture being apt to run, consistency may be given it by mixing pounded chalk or whiting.

Hints on Planting Orchard Trees, &c.

If possible, choose the trees the year before they are to be planted, and see that they are properly pruned in the nursery, by taking off close all rambling and unsightly branches, leaving only three or four good leading shoots; by this forecast the trees will not require pruning for some time, and it will greatly accelerate their growth that they have no wounds to heal the year they are transplanted. Be sure the trees are

* Boys's survey of Kent.

† Young's Irish tour, 1. 536.

young, and plant no galled, fretted or cankered plants.

When the trees are taken up, keep the roots as long as is convenient, which will give them a disposition to run horizontally, from which, the roots being more under the influence of the sun, the sap is richer, and produces the sweetest fairest fruit.

An Orchard should be screened on the east, north and west sides, and open to the south. The natural growth of the different fruits should be attended to in the disposition of the trees. One row of the tallest strongest growers should be planted on the three cold sides, and that row should be planted twice as thick as any other; then one row more of the next free-growers, parallel to the last rows; and so on gradually declining in size till you come to the centre. The intention here is to raise shelter; and it would be advisable, on the outside of these outer rows, to run a shaw or belt of underwood, more than a pole wide, of four or six rows of the freest growing trees which the country produces; the wood of which will more than pay the expense. Half the trees should be cut down in about fourteen years, to become stools, and the other half at a proper distance of time; so that the belt, for the whole duration of the Orchard, shall be of young wood, and feathering down to the bottom. Nothing can be better for this purpose than the sweet Chestnut, where the soil suits it. The Hawthorn likewise, properly trained, has a wonderful good effect in blunting or absorbing the baneful quality attendant upon the blighting air. Before the ground is laid out, be careful to secure the little risings or inflections, to catch the sun and exclude the cold. Firs may be happily introduced at a distance for shelter: all together might be so disposed as at the same time to protect the fruit, and embellish the appearance of the country.

Such an Orchard may often bear a crop when the neighbourhood in general fails; and every one knows the value of a good crop in a failing year.

The plantations, belt and larger trees will keep off the blighting winds; and the Orchard being open in the middle and to the south, the stagnant vapours which stint the fruits in the spring will be dissipated, and each tree will enjoy the influence of the sun and air. Besides, the ground being open in the middle, the herbage will be the more valuable.

In new plantations avoid planting too deep, or too thick. Sunshine will bring sweet fruits: shade and plunging the roots beyond the influence of genial warmth will produce crude acid juices.

When the top of a tree separates by the weight of the branches, an iron bolt may be introduced, by boring a hole through the upper part of the cleft with an half inch auger; first cutting the bark, and some of the wood with a chisel, so as the head at one end, the nut and screw at the other, may be hid under the bark. By using the medicated tar, the bark will soon grow over the iron.

The Orchardist's tools are two pruning-knives, a saw, two chisels, a mallet, a spoke-shave, and a painter's brush. With the chisels and spoke-shave work upwards, or the bark will shiver: the saw must be coarse set, all the other tools sharp and smooth.

The blade-bone of a doe is better than the iron of the spoke-shave to rub off the rotten bark, moss, &c. †

Mr. Marshall recommends a young Orchard to be under the plough, as remarked above: whereas, according to Mr. Bucknall, if an Orchard be cultivated by the plough, little good can be expected; for the injuries which young trees receive from implements of husbandry bruising them before they have got full possession of the soil, generally damage them essentially, if they do not destroy them: and if by care they should surmount these evils, the crops of corn being regularly carried off the land, the ground is so much impoverished, that the trees are soon stunted, and run to moss.

† The above observations on pruning, planting, &c. are from the Orchardist, by Tho. Skip Dyot Bucknall, Esq. extracted from the Transactions of the Society of Arts.

There is not any culture we are acquainted with, equal to Hops, for raising an Orchard; and when the proper time comes for grubbing up the Hops, the trees may be secured, and the land turned to grazing. It would be better not to take up the Hops all at once, and to crop the vacant land for two or three years with Potatoes. Thus the trees would continue in better health, by taking away the shelter gradually. Let the agriculture be what it may, the land should never be ploughed or dug deep directly over the roots of a young-planted fruit-tree; for as the roots collect the best sap from their extreme points, if those points be broken off from the upper side of the roots, the tree is compelled to subsist on nurture drawn from the under strata, and consequently the sap will be of a worse quality.

Where hogs and poultry are constantly running over the ground, the trees seldom fail of a crop, which is the best proof that manure is necessary. Any manure will suit an Orchard; but the sweepings of cow-houses, hog-yards, slaughter-houses, dog-kennels, emptying of drains, &c. are more disposed to facilitate the growth and promote the health of fruit-trees, than manure from the stable. Watering, in dry weather, tends much to keep trees in health, and to secure their bearing, by swelling the buds for the next year's crop; for when the buds are strong at first coming out, they are not so liable to blight.

Those sorts of fruit which are known to thrive best in the neighbourhood should in general be preferred: and care should be taken not to suffer trees to bear much fruit whilst young.

Where trees are much overrun with moss, a strong man, with a good birch broom, in a wet day, would do great execution. On young trees, the best method of destroying moss is to rub all the branches, spring and autumn, with a hard scrubbing-brush and soap-suds, as a groom does a horse's legs.

Canker, in great measure arises from animalcules, and where the only object is to remove this disease, hog's-lard is preferable to tar; but where wet is to be guarded against, tar is better.

The best soil for an Orchard is certainly a fine deep loam; but if it is a strong clay, chalk, or a cold sharp gravel, plant the trees above ground, raising over them a little mound of good fresh mould as large as an extensive ant-hill, sowing the top with white Dutch Clover.

It is recommended that the rows of trees should not stand north and south, but a point of the compass towards the east; as the sun will then shine up the rows soon after ten o'clock, which in the spring will serve to dissipate the vapours collected in the night, and thus prevent the fruit from being stunted in the early stages of its growth*.

On Root-Pruning.

When a tree has stood so long that the leading roots have entered into the under strata, they are apt to draw a crude fluid, which the organs of more delicate fruit-trees cannot convert into such balsamic juices as to produce fine fruit. To prevent this evil, as soon as a valuable tree begins to show a sickly pinkeyness upon the leaves or the fruit inclining to ripeness, before it has acquired its full growth; at the same time the bark becoming dry, hard, and disposed to crack; let the ground be opened for three or four feet, and with a chisel cut close every root the least tending downwards. Should there be any mouldy appearance or rottenness among the roots, take them off, and wash the others clean. If the ground be too wet, throw a few stones or brickbats under the stem of the tree.

As the roots invariably collect the sap from the extreme points, this cutting compels the horizontal roots to work and exert themselves; and if there be any energy left, they will soon throw out fresh fibres, and thus collect a more congenial sap for the support of the tree. At the same time cover the ground thinly over with manure, as far as the roots may be supposed to extend, rub the stem and branches with soap-suds, and water the ground in very dry weather.

* Orchardist, by Dyot Bucknall, Esq. p. 51, &c.

There is not a more powerful agent for producing canker than these descending roots. Canker indeed may arise from an improper soil, a vitiated sap, the generation of vapour, animalcules, and the want of a free circulation of the fluids: the last is often caused by injudiciously shortening the leading branches. The medication before recommended will stop the progress of the evil on the parts to which it is applied; but the canker may again break out on the other parts of the same tree; and that arises from the roots striking into a cold congenial subsoil †.

For a fuller account of some particulars relative to Orchards, here omitted, see NURSERY, PLANTING, PRUNING, and the articles under which Orchard trees are particularly treated of, as PYRUS and PRUNUS.

ORCHIASTRUM. See *Ophrys*.

ORCHIDI AFFINIS. See *Arethusa* and *Ophrys*.

ORCHIDION. See *Arethusa*.

ORCHIOIDES. See *Satyrium*.]

ORCHIS (of Pliny. *Opχis* of Theophrastus and Dioscorides. So named from the form of the roots in many of the species.)

Lin. gen. n. 1009. Reich. n. 1094. Schreb. n. 1367.

Tournef. t. 247. Juss. 65. Limodorum. Tournef. t. 250.

Class. 20. 1. Gynandria Diandria.

Nat. order of *Orchideæ*.

GENERIC CHARACTER.

CAL. *Spathes* wandering. *Spadix* simple.

Perianth none.

COR. *Petals* five: three outer, two inner, converging upwards into a helmet.

Nectary one-leaved, fastened to the receptacle by the lower side between the division of the petals: *upper lip* erect, very short: *lower lip* large, spreading, wide: *tube* behind horn-shaped, nodding.

STAM. *Filaments* two, very slender, very short, placed on the pistil. *Antthers* obovate, erect, covered with a bilocular folding of the upper lip of the nectary.

PIST. *Germ* oblong, twisted, inferior. *Style* fastened to the upper lip of the nectary, very short. *Stigma* compressed, blunt.

PER. *Capsule* oblong, one-celled, three-keeled, three-valved, opening three ways under the keels, cohering at the top and base.

SEEDS numerous, very small, like sawdust.

ESSENTIAL CHARACTER.

Nectary a horn or spur behind the flower.

SPECIES.

Helmet of the corolla spurred.

[1. *Orchis carnea*. Great-flowered Cape Orchis.

Ait. hort. kew. 3. 294.

Bulbs undivided, helmet of the corolla two-spurred, bristles erect.

2. *Orchis bicornis*. Yellow-flowered Cape Orchis.

Lin. spec. 1330. Reich. 4. 4. amoen. 6. afr. 90.

Buxb. cent. 3. 6. t. 6.

Bulbs undivided, helmet of the corolla two-spurred, lip five-parted, bristles reflex.

3. *Orchis biflora*. Two-flowered Orchis.

Lin. spec. 1330. Reich. 4. 4. amoen. 6. afr. 92.

O. flexuosa. Lin. syst. 807. suppl. 398.

Bulbs undivided, helmet of the corolla one-spurred, wings spreading, lip lanceolate acuminate.

4. *Orchis cornuta*. Horned Orchis.

Lin. spec. 1330. Reich. 4. 4. amoen. 6. afr. 91.

Bulbs undivided, helmet of the corolla one-spurred, wings spreading, lip very small subovate.

5. *Orchis spathulata*. Spatulate Orchis.

Lin. syst. 807. suppl. 398.

Bulbs undivided, helmet of the corolla spurred.

6. *Orchis tripetaloides*. Three-petalled Orchis.

Lin. syst. 807. suppl. 398.

Leaves lanceolate, helmet of the corolla arched blunt spurred, nectary lanceolate very small.

7. *Orchis sagittalis*.

Lin. syst. 807. suppl. 399.

Helmet of the corolla spurred two-eared, lip lanceolate.

† Orchardist, appendix.

8. *Orchis barbata*. Bearded Orchis.
Lin. syst. 807. *suppl.* 399.
Helmet of the corolla erect spurred, nectary subtrifid ciliate.
9. *Orchis draconis*. Dragon Orchis.
Lin. syst. 807. *suppl.* 400.
Bulbs undivided, helmet of the corolla spurred, nectary linear ovate at the tip.
10. *Orchis tenella*. Delicate Orchis.
Lin. syst. 807. *suppl.* 400.
Helmet of the corolla spurred conical at the base, nectary linear.
11. *Orchis monorrhiza*. One-bulbed Orchis.
Swartz prodr. 118.
O. setacea? *Jacqu. amer.* 220.
Satyrium 1. *Brown. jam.* 324.
Bulb solitary undivided, lip of the nectary three-parted, the lateral parts bristle-shaped, horn linear compressed the length of the germ.
- ** *Bulbs undivided.*
11. *Orchis faneta*. Palestine Orchis.
Lin. spec. 1330. *Reich.* 4. 4.
Bulbs undivided? lip of the nectary lanceolate five-toothed, horned curved in, petals converging.
12. *Orchis fufannæ*.
Lin. spec. 1330. *Reich.* 4. 4.
O. amboinensis, flor. albis fimbriatis. *Herm. par.* t. 209. *Raii suppl.* 588.
Flos fufannæ. *Rumph. amb.* 5. 286. t. 287. f. 2.
Bulbs undivided, wings of the nectary wider ciliate.
13. *Orchis radiata*.
Thunb. in Linn. trans. 2. 326.
O. fufannæ. *Thunb. jap.* 25.
Bulbs undivided, wings of the nectary wider ciliate.
14. *Orchis ciliaris*. Fringe-lipped Orchis.
Lin. spec. 1331. *Reich.* 4. 5. *act. upf.* 1741. p. 6.
Gron. virg. 136. *Mor. hist.* 3. 499. 15. *Raii suppl.* 588. 24.
Bulbs undivided, lip of the nectary lanceolate ciliate, horn very long.
15. *Orchis habenaria*.
Lin. spec. 1331. *Reich.* 4. 5. *amoen.* 5. 408. *Swartz obs.* 319. t. 9. *Brown. jam.* 324. 2. (*Satyrium*).
Bulb solitary undivided, lip of the nectary three-parted, lateral ones bristle-shaped, horn filiform much longer than the germ.]
16. *Orchis bifolia*. Butterfly Orchis.
Lin. spec. 1331. *syst.* 808. *Reich.* 4. 5. *act. upf.* 1740. p. 5. *fl. suec. n.* 793. *mat. med.* 195. *mant.* 485. *Huds. angl.* 382. *Wither. arr. ed.* 3. 21. *Engl. bot.* 22. *Curt. lond. n.* 71. *Lightf. scot.* 512. *Relb. cant. n.* 643. *Sibth. oxon. n.* 23. *Hall. belv. n.* 1285. t. 35. *Scop. carn. n.* 1102. *Fl. dan.* t. 235. *Gum. norv. n.* 32. *Leers herb. n.* 687. *Pollich pal. n.* 841. *Villars dauph. 2.* 24. *Allion. pedem. n.* 1820. *Blackw. t.* 588. *Ludw. est.* t. 95. *Kniph. cent. 6. n.* 65. *Retz. obs.* 1. 30.
O. alba bifolia minor, calcari oblongo. *Baub. pin.* 83. *Vaill. par.* 151. t. 30. f. 7. *Segu. ver. t.* 15. f. 10. *Mor. hist. f.* 12. t. 12. f. 18. *Raii syn.* 380. *Pétiv. brit. t.* 68. f. 11.
O. alba calc. obl. *Baub. hist.* 2. 771. *Raii hist.* 1221.
O. major sphegodes, f. Testiculus vulpinus primus. *Park. theat.* 1351. 7.
O. ornithophora. *Ger.* 165. 9. — *Hermaphroditica.* *Ejusd.* 162. 1. *emac.* 211. 1.
Testiculus psychodes. *Ger. emac.* 211. 2.
T. vulpinus primus. *Lob. obs.* 88. 2. *ic.* 1. 178. 1.
Testiculi species 5. *Cam. epit.* 625.
Satyrium flore albo. *Riv. t.* 12.
Orchis Serapias primus. *Dod. pempt.* 237. 2.
β. O. bifolia altera. *Baub. pin.* 82. *Park. theat.* 1350. f. 3.
Bulbs undivided, lip of the nectary lanceolate quite entire, horn very long, petals spreading.
- [17. *Orchis ornithis*. Bird Orchis.
Lin. syst. 808. *Jacqu. austr.* 2. t. 138.
Bulbs undivided, lip of the nectary roundish, horn twice the length of the germ, the three outer petals converging, the others spreading very much.

18. *Orchis flexuosa*. Winding-stalked Orchis.
Lin. spec. 1331. *syst.* 808. 17. *Reich.* 4. 6. *amoen.* 5. *af.* 89.
Bulbs undivided, lip of the nectary imbricate, two petals concealed filiform, scape flexuose.
19. *Orchis cucullata*. Cowled Orchis.
Lin. spec. 1332. *Reich.* 4. 6. *Pallas it.* 3. 265. *Gmel. fib.* 1. 16. t. 3. f. 2.
Bulbs undivided, lip of the nectary trifid, petals confluent, stem naked.
20. *Orchis globosa*. Round-spiked Orchis.
Lin. spec. 1332. *syst.* 808. *Reich.* 4. 6. *mant.* 484. *Jacqu. vind.* 292. *austr.* t. 265. *Scop. carn. n.* 1106. *Hall. belv. n.* 1272. t. 27. *Allion. pedem. n.* 1821. *Villars dauph. 2.* 26.
O. Halleri. *Crantz. austr.* 488.
O. flore globofo. *Baub. pin.* 81. *Raii hist.* 1216.
Cynorchis capitulo globofo. *Park. theat.* 1345. n. 13.
Bulbs undivided, lip of the nectary resupinate trifid, middle emarginate, horn short, petals awl-shaped at the tip.]
21. *Orchis pyramidalis*. Pyramidal Orchis.
Lin. spec. 1332. *syst.* 808. *Reich.* 4. 6. *mant.* 484. *fl. suec. n.* 798. *Huds. angl.* 382. *Wither. arr. ed.* 3. 23. *Engl. bot.* 110. *Lightf. scot.* 513. *Relb. cant. n.* 644. *Sibth. oxon. n.* 24. *Jacqu. vind.* 292. *austr.* t. 266. *Hall. belv. n.* 1286. t. 35. 1. *Scop. carn. n.* 1105. *Villars dauph. 2.* 25. *Allion. pedem. n.* 1822.
O. purpurea, spica congesta pyramidalis. *Raii hist.* 1215. *syn.* 377. t. 18. *Segu. ver. t.* 15. f. 11. *Pétiv. brit. t.* 68. f. 4.
O. flore conglomerato. *Riv. t.* 14.
Cynorchis militaris montana, spica rubente conglomerata. *Baub. pin.* 81. *prodr.* 28.
Orchis batavica 6. *Clus. hist.* 1. 269. 1.
O. parvo flore rubro f. phoeniceo. *Baub. hist.* 2. 764. 1.
Cynorchis militaris spica rubente conglomerata. *Park. theat.* 1345. 9.
Tragorchis minor batavica. *Ger. emac.* 210. 4.
Bulbs undivided, lip of the nectary two-horned trifid equal quite entire, horn long, petals sublanceolate.
- [22. *Orchis corsophora*. Lizard Orchis.
Lin. spec. 1332. *syst.* 808. *Reich.* 4. 7. *mant.* 485. *act. upf.* 1740. p. 8. *Huds. angl.* 383. *Hall. belv. n.* 1284. t. 34. *Scop. carn. n.* 1107. *Pollich pal. n.* 842. *Fl. dan. t.* 224. *Villars dauph. 2.* 26. *Allion. pedem. n.* 1823. *Jacqu. austr.* 2. 14. t. 122.
O. flore parvo viridi purpureo. *Riv. hex. t.* 20.
O. odore hirci minor. *Baub. pin.* 82. *Vaill. par.* 149. t. 31. f. 30, 31, 32.
Tragorchis minor flore fuliginoso. *Raii hist.* 1213.
T. foemina. *Ger.* 161. *emac.* 210. 3.
T. minor & verior. *Park. theat.* 1349. 3.—*gemmae.* *Lob. ic.* 177.
β. O. odore hirci minor, spica purpurascens. *Baub. pin.* 82.
Bulbs undivided, lip of the nectary trifid reflex crenate, horn short, petals converging.
23. *Orchis cubitalis*.
Lin. spec. 1333. *Reich.* 4. 8. *fl. zeyl. n.* 320.
Bulbs undivided, lip of the nectary trifid filiform, middle ovate, horn shorter than the germs.]
24. *Orchis morio*. Female or Meadow Orchis.
Lin. spec. 1333. *syst.* 808. *Reich.* 4. 8. *mant.* 485. *act. upf.* 1740. p. 8. *mat. med.* 195. *fl. suec. n.* 694. *Huds. angl.* 383. *Wither. arr. ed.* 3. 23. *Curt. lond.* 3. 59. *Lightf. scot.* 514. *Relb. cant. n.* 645. *Sibth. oxon. n.* 25. *Retz. obs.* 1. 30. *Lour. cochinch.* 523. *Hall. belv. n.* 1282. t. 33. *Scop. carn. n.* 1110. *Crantz. austr.* 449. *Pollich pal. n.* 843. *Fl. dan. t.* 253. *Villars dauph. 2.* 27. *Ger. prov.* 127. n. 4. *Allion. pedem. n.* 1825. *Riv. hex. t.* 19.
O. morio femina. *Baub. pin.* 82. *Vaill. par. t.* 31. f. 13, 14. *Segu. ver. t.* 15. f. 7. *Park. theat.* 1347. 4. *Raii hist.* 1214. *syn.* 377. *Mor. hist. f.* 12. t. 12. f. 5.
O. minor purpurea & aliorum colorum cum alis virentibus. *Baub. hist.* 2. 761. 3.

- Cynosorchis morio femina. Ger. 158. 6. emac. 208. 2.
Lob. obs. 88. 1. *ic.* 1. 176. 2.
 Triorchis serapias mas. *Fuchf. hist.* 559.
 Tr. mas. *Lonic.* 1. 202. 1.
 Testiculus morionis femina. *Dod. pempt.* 236. 2.
Bulbs undivided, lip of the nectary quadrifid crenulate, horn blunt ascending, petals blunt converging.
 25. Orchis mascula. Male or early spotted Orchis.
Lin. spec. 1333. *syft.* 809. *Reich.* 4. 9. *mant.* 485.
fl. suec. n. 795. *Huds. angl.* 383. *Wither. arr.*
ed. 3. 24. *Curt. lond.* 2. 62. 121. *Lightf. scot.*
 515. *Relb. cant.* n. 646. *Sibth. oxon.* n. 26.
Woodv. med. bot. 246. t. 90. *Retz. obs.* 1. 30.
Hall. belv. n. 1283. t. 33. *Scop. carn.* n. 1111.
Crantz. austr. 500. *Jacqu. misc.* 2. 375. *Pollich*
pal. n. 844. *Fl. dan.* t. 457. *Villars dauph.*
 2. 28. *Allion. pedem.* n. 1826.
 O. morio mas foliis maculatis. *Baub. pin.* 81. *Rudb.*
elys. 2. 192. f. 3. *Vaill. par.* 151. t. 31. f. 12.
Park. theat. 1346. 1. *Raii hist.* 1214. *syn.* 376.
Mor. hist. f. 12. t. 12. f. 3.
 O. major tota purpurea, maculoso folio. *Baub. hist.*
 2. 763. 1.
 O. mas angustifolia. *Fuchf. hist.* 555.
 O. mas minor. *Lonic.* 1. 201. 1.
 Cynosorchis morio mas. Ger. 158. 5. emac. 208. 1.
Lob. obs. 87. 3. *ic.* 1. 176. 1.
 Palmata major. *Riv. hex.* t. 10. *Segu. ver.* t. 15.
 f. 6.
 Testiculus 4. *Matth.* 882. *Cam. epit.* 624.
 T. morionis mas. *Dod. pempt.* 236. 1.
 Satyrium mas. *Blackw.* t. 53.
Bulbs undivided, lip of the nectary four-lobed crenulate, horn blunt, dorsal petals bent back.
 [26. Orchis ustulata. Dwarf Orchis.
Lin. spec. 1333. *syft.* 809. *Reich.* 4. 9. *mant.* 485.
act. ups. 1741. p. 11. *fl. suec.* n. 797. *Huds. angl.*
 384. *Wither. arr. ed.* 3. 25. *Engl. bot.* 18.
Relb. cant. n. 647. *Sibth. oxon.* n. 27. *Hall.*
belv. n. 1273. t. 28. *Scop. carn.* n. 1108. *Pollich*
pal. n. 845. *Fl. dan.* t. 103. *Villars dauph.*
 2. 31. *Ger. prov.* 128. n. 5. *Allion. pedem.*
 n. 1827.
 O. amoena. *Crantz. austr.* 490.
 O. militaris pratensis humilior. *Tournef. inst.* 432.
Vaill. par. 149. t. 31. f. 35, 36. *Segu. ver.* t. 15. f. 4.
 O. mil. minor, & minima. *Riv. hex.* t. 17.
 O. pannonica 4. *Clus. hist.* 1. 268. 1. *Raii hist.* 1215.
syn. 377.
 O. parvis floribus multis punctis notatis. *Baub. hist.*
 2. 765. 2.
 O. pannonica. *Du Bry.*
 O. minor flore incarnato. *Best. eyf.*
 Cynosorchis militaris pratensis humilior. *Baub. pin.* 81.
Mor. hist. f. 12. t. 12. f. 20.
 C. milit. pannon. *Park. theat.* 1345. 11.
 C. minor pannon. *Ger. emac.* 207.
Bulbs undivided, lip of the nectary quadrifid rugged with dots, horn blunt very short, petals distinct.]
 27. Orchis militaris. Man Orchis.
Lin. spec. 1333. *syft.* 809. *Reich.* 4. 10. *act. ups.*
 1740. p. 11. *fl. suec.* n. 798. *Huds. angl.* 384.
Wither. arr. ed. 3. 25. *Engl. bot.* 16. *Sibth.*
oxon. n. 28. *Hall. belv.* n. 1277. t. 28. *Scop.*
carn. n. 1112. *Gunn. norv.* n. 694. *Pollich pal.*
 n. 446. *Crantz. austr.* 501. *Gmel. fib.* 1. 14.
Villars dauph. 2. 34. *Allion. pedem.* n. 1834.
 O. Rivini. *Gouan. illustr.* 74.
 O. moravica. *Jacqu. collect.* 1. 61. *Lin. syft.* 809.
 O. galea & alis fere cinereis. *Baub. hist.* 2. 757.
Raii hist. 1218. *syn.* 378.
 O. mascula. *Riv. hex.* t. 15.
 O. mas latifolia. *Fuchf. hist.* 554.
 Cynosorchis latifolia hiant cucullo major. *Baub. pin.*
 80.
 C. latifolia minor. *Park. theat.* 1344. 4.
 C. major altera. *Ger. emac.* 205. 2.
 β. Orchis magna, latis foliis, galea fusca vel nigricante.
Baub. hist. 2. 759. *Raii syn.* 378. t. 19. f. 2.
Pollich, n. 846. δ. *Hall. belv.* n. 1276. t. 31.
 O. fusca. *Jacqu. austr.* 4. 4. t. 307. *Curt. lond.*
 n. 68. *Lin. syft.* 809.

- O. militaris. *Crantz. austr.* 501. b.
 γ. O. latifolia hiant cucullo minor. *Vaill. par.* t. 31.
 f. 22, 23, 24. *Villars dauph.* 2. 33. n. 11. *Hall.*
belv. n. 1275.
 Cynosorchis lat. hiant cuc. min. *Baub. pin.* 81.
 δ. O. milit. major. *Tournef. inst.* 438. t. 247. *Vaill.*
par. 148. t. 31. f. 21, 27, 28. *Segu. ver.* 2.
 122. t. 11. f. 2. *Riv. hex.* t. 16. *Pollich,*
 n. 846. β.
 O. mil. purpurea. *Huds. angl.* 384. β.
 Cynosorchis mil. major. *Baub. pin.* 81.
 ε. O. flore fimiam referens. *Baub. pin.* 82. *Pollich,*
 n. 846. ε.
 O. zoophora circopithecum exprimens oreades. *Col.*
ecphr. 1. 320. *Raii hist.* 1219. *Villars dauph.*
 2. 32. 10.
Bulbs undivided, lip of the nectary five-cleft rugged with dots, horn blunt, petals confluent.
 [28. Orchis papilionacea.
Lin. spec. 1331. *Reich.* 4. 11. *Scop. carn.* n. 1103.
 O. papilionem expansum referens. *Baub. pin.* 83 ?
 β. O. rubra. *Jacqu. collect.* 1. 60. *ic. rar.* t. 163.
Lin. syft. 809.
Bulbs undivided, lip of the nectary undivided crenate emarginate widened, horn awl-shaped, petals converging.
 29. Orchis pallens.
Lin. syft. 809. *mant.* 292. *Reich.* 4. 11. *Jacqu.*
austr. 1. t. 45. *Hall. belv.* n. 1281. t. 30. *Villars*
dauph. 2. 30.
 O. bulbosa flor. flavescentibus. *Segu. ver.* t. 8. f. 3.
 O. foetida sylvatica præcox flore albo barba luteola.
Rupp. jen. 2. 297.
Bulbs undivided, lip of the nectary trifid quite entire, horn blunt of a middling length, petals spreading.
 30. Orchis hispidula. Hairy Orchis.
Lin. syft. 809. *suppl.* 401.
 O. hispida. *Thunb. prodr. cap.* 4.
Bulbs undivided, stem leafless, leaf round hispid, lip five-parted, segments linear.
 31. Orchis speciosa. Handsome Orchis.
Lin. syft. 809. *suppl.* 401. *Thunb. prodr. cap.* 4.
Bulbs undivided, stem leafy, leaves wide ovate, lip three-parted, segments flexuose.
 32. Orchis plantaginea. Plantain-leaved Orchis.
Roxb. corom. 2. 32. t. 37.
Bulb single undivided, stem leafy, leaves broad-oval, lip three-parted, horn twice the length of the germ.]
 *** *Bulbs palmate.*
 33. Orchis latifolia. Broad-leaved or Marsh Orchis.
Lin. spec. 1334. *syft.* 810. *Reich.* 4. 12. *mant.* 486.
act. ups. 1740. p. 15. *fl. suec.* n. 801. *hort. cliff.*
 429. *Huds. angl.* 385. *Wither. arr. ed.* 3. 26.
Curt. lond. 5. 63. 250. *Lightf. scot.* 516. *Relb.*
cant. n. 648. *Sibth. oxon.* n. 29. *Hall. belv.*
 n. 1279. t. 32. 2. *Gmel. fib.* 1. 24. *Crantz.*
austr. 493. *Pollich pal.* n. 847. *Fl. dan.* t. 266.
Villars dauph. 2. 35. *Ger. prov.* 128. n. 7. *Allion.*
pedem. n. 1839. *Mill. illustr.* *Kniph. cent.* 7.
 n. 65. *Knorr. del. hort.* 2. t. O. 4. f. 1. *Riv.*
hex. t. 19. *Lour. cochinch.* 523.
 O. comosa. *Scop. carn.* n. 1120 ?
 O. palmata pratensis latifolia, longis calcaribus. *Baub.*
pin. 85. *Vaill. par.* t. 31. f. 1—5. *Raii syn.* 380.
 O. palmata non maculata. *Baub. hist.* 2. 744. 1. *Raii*
hist. 1223.
 O. palma Christi mas. *Ger.* 169. 1. *emac.* 220. 1.
 O. palmata major mas, f. Palma Christi mas. *Park.*
theat. 1356. 1.
 Satyrium femina. *Blackw.* t. 405.
 S. basilicum mas. *Dod. pempt.* 240. 1.
 Palma Christi & Serapias mas lævi folio. *Lob. obs.*
 90. 3. *ic.* 1. 188. 1.
 β. O. palm. palustris latifolia. *Baub. pin.* 86.
 γ. O. palm. montana altera. *Baub. pin.* 86.
 δ. O. palm. pal. maculata. *Baub. pin.* 86.
Bulbs subpalmate straight, horn of the nectary conical, lip three-lobed, the lateral lobes bent back, bractes longer than the flower.
 [34. Orchis incarnata.
Lin. spec. 1335. *syft.* 810. *Reich.* 4. 12. *fl. suec.*
 n. 802.

- n. 802. Hall. belv. n. 1280. Villars dauph. 2. 36. Allion. pedem. n. 1841.
O. palmata lutea, floris labio maculato. Segu. ver. 3. 349. t. 8. f. 5.
Bulbs palmate, horn of the nectary conical, lip obscurely three-lobed ferrate, dorsal petals reflex.
35. *Orchis sambucina*. Elder-scented Orchis.
 Lin. spec. 1334. syst. 810. Reich. 4. 13. fl. suec. n. 803. Hall. belv. n. 1280. β. Gunn. norv. n. 426. Pollich pal. n. 848. Jacqu. austr. 2. t. 108. Villars dauph. 2. 36. Allion. pedem. n. 1840.
O. palmata lutea, labio floris maculato. Segu. ver. 249. t. 8. f. 5.
O. palm. sambuci odore. Baub. pin. 86. Rudb. elyf. 2. 213. f. 9.
O. pannonica 8. Clus. hist. 1. 269. Ger. emac. 221. 3. Raii hist. 1224.
Bulbs subpalmate erect, horn of the nectary conical, lip ovate subtrilobate, bractes the length of the flowers.]
36. *Orchis maculata*. Spotted Orchis.
 Lin. spec. 1335. syst. 810. Reich. 4. 13. mant. 487. act. upf. 1740. p. 14. fl. suec. n. 800. Hudf. angl. 385. Wither. arr. ed. 3. 27. Lightf. scot. 517. Relb. cant. n. 649. Sibth. oxon. n. 30. Hall. belv. n. 1278. t. 32. 1. Scop. carn. n. 1119. Gmel. fib. 1. 23. Crantz. austr. 492. Pollich pal. n. 349. Villars dauph. 2. 37. Allion. pedem. n. 1842. Fl. dan. t. 933. Riv. hex. t. 8. & 11. Regn. bot.
O. palmata pratensis maculata. Baub. pin. 85. Mor. hist. f. 12. t. 14. f. 5. row. 3.
O. palm. montana macul. Baub. pin. 86. Vaill. par. t. 31. f. 9, 10.
O. palm. speciosiore thyrsi, folio maculato. Baub. hist. 2. 775. 2. Raii hist. 1223. syn. 381.
O. palm. fœmina f. Palma Christi fœmina, maculato folio. Park. theat. 1357. 3.
Palma Christi fœmina. Gnr. 169. 2. emac. 220. 2.
O. fœmina altera. Trag. 781.
Satyrion basilicum femina. Dod. pempt. 240. 2.
Palma Christi, Serapias fœmina pratensis. Lob. obs. 90. 4. & 91. 1. ic. 1. 188. 2. & 189. 1.
Bulbs palmate spreading, horn of the nectary shorter than the germ, lip flat, dorsal petals erect.
- [37. *Orchis odoratissima*. Sweet-scented Orchis.
 Lin. spec. 1335. syst. 810. Reich. 4. 14. mant. 487. Gunn. norv. n. 696. Leers herb. n. 693. Jacqu. austr. 3. t. 264. Hall. belv. n. 1274. t. 29. Villars dauph. 2. 38. Allion. pedem. n. 1844.
O. conopseæ varietas. Jacqu. vind. 293.
O. palmata angustifolia minor odoratissima. Baub. pin. 86. prodr. 30. ic. Raii hist. 1225. Park. theat. 1357. 7. Segu. ver. 3. 250. t. 8. f. 6.
Bulbs palmate, horn of the nectary recurved shorter, lip three-lobed, leaves linear.]
38. *Orchis conopsea*. Long-spurred Orchis.
 Lin. spec. 1335. syst. 810. Reich. 4. 14. mant. 487. act. upf. 1740. p. 13. fl. suec. n. 799. hort. cliff. 429. Hudf. angl. 385. Wither. arr. ed. 3. 28. Engl. bot. 10. Lightf. scot. 518. Relb. cant. n. 650. Sibth. oxon. n. 31. Hall. belv. n. 1287. t. 29. Gmel. fib. 2. 22. Crantz. austr. 507. Scop. carn. n. 1121. Pollich pal. n. 850. Fl. dan. t. 224. Villars dauph. 2. 39. Allion. pedem. n. 1843.
O. angustifolia non maculata. Riv. hex. t. 11.
O. palmata minor calcaribus oblongis. Baub. pin. 85. Vaill. par. t. 30. f. 8. 8. Rudb. elyf. 2. 212. f. 5. Mor. hist. f. 12. t. 14. f. 14.
O. palm. rubella cum longis calc. rubellis. Baub. hist. 2. 778. 1. Raii hist. 1224. syn. 381.
O. palm. minor flore rubro. Park. theat. 1358. 5.
Serapias minor nitente flore. Ger. 171. 2. emac. 222. 2. Lob. obs. 91. 2. ic. 1. 189. 2.
Satyrion basilicum mas. Fuchs. hist. 712.
 β. *O. palm. angust. minor*. Baub. pin. 85.
 γ. *O. palm. pratensis maxima*. Baub. pin. 85. Pollich.
Bulbs palmate, horn of the nectary bristle-shaped longer than the germs, lip trifid, two of the petals spreading very much.

- [39. *Orchis flava*. Yellow Orchis.
 Lin. spec. 1336. Reich. 4. 15. Gron. virg. 137. Mor. hist. 3. 499.
Bulbs palmate, horn of the nectary filiform the length of the germ, lip trifid quite entire.
 **** *Bulbs in bundles*.
40. *Orchis fuscescens*.
 Lin. spec. 1336. Reich. 4. 15. Gmel. fib. 1. 20. t. 4. f. 2.
Horn of the nectary the length of the germ, lip ovate toothed at the base.
41. *Orchis strateumatica*.
 Lin. spec. 1336. Reich. 4. 15. fl. zeyl. n. 319.
Lip of the nectary two-lobed quite entire, horn the length of the germ.
42. *Orchis hyperborea*.
 Lin. syst. 810. Reich. 4. 15. mant. 121. Retz. obs. 4. t. 3.
Horn of the nectary the length of the germ, lip linear quite entire truncate.]
43. *Orchis abortiva*. Purple Bird's-nest, or Bird's-nest Orchis.
 Lin. spec. 1336. syst. 811. Reich. 4. 16. act. upf. 1740. p. 17. Hudf. angl. 386. Wither. arr. ed. 3. 29. Gunn. norv. n. 695. Leers herb. n. 695. Jacqu. austr. 2. t. 193. Sauv. monsp. 23. Villars dauph. 2. 40.
Serapias abortiva. Scop. carn. n. 1130.
Epipactis. Hall. belv. n. 1288. t. 36.
O. abortiva violacea. Baub. pin. 86.
Limodorum austriacum. Clus. pann. 242. hist. 270. Raii syn. 383.
Orobanche & Nido avis affine Pseudolimodorum austriacum violaceum. Baub. hist. 2. 782.
Nidus avis purpurea. Park. theat. 1361. 2.
Nidus avis flore & caule violaceo purpureo colore. Ger. emac. 228.
Bulbs filiform, lip of the nectary ovate quite entire, stem leafless.
- [44. *Orchis fimbriata*. Fringed Orchis.
 Ait. hort. kew. 3. 297.
Horn of the nectary longer than the germs, lip three-parted ciliary, petals spreading, leaves oblong.
 ***** *Bulbs yet unknown*.
45. *Orchis psychodes*.
 Lin. spec. 1336. Reich. 4. 16. Gron. virg. 184. 137. Raii suppl. 582.
Horn of the nectary bristle-shaped the length of the germ, lip three-parted ciliary.
46. *Orchis spectabilis*.
 Lin. spec. 1337. Reich. 4. 17. Gron. virg. 109. 136.
Horn of the nectary the length of the germ, lip oval emarginate, stem leafless, leaves oval.
47. *Orchis filicornis*.
 Lin. syst. 811. suppl. 400.
Nectary bifid, horn capillary.
48. *Orchis tipuloides*.
 Lin. syst. 811. suppl. 401.
Lip of the nectary three-parted linear almost equal, horn filiform very long.
49. *Orchis japonica*.
 Lin. syst. 811. Thunb. jap. 26.
Horn of the nectary recurved, lip awl-shaped entire.
50. *Orchis falcata*.
 Lin. syst. 811. Thunb. jap. 26.
Horn filiform very long, leaves ensiform-channelled sickle-shaped.

DESCRIPTIONS, &c.

1. Leaves roundish, grooved underneath. Spike compact. Bractes roundish, acute, erect. Flowers inodorous, white within, flesh-coloured without. The two uppermost petals and the lowest narrower than the others, all keeled on the outside, the keel running down into the germ, whence the germ is five-ribbed below. The column of the fructification is the length of the helmet. Found at the Cape of Good Hope by Mr. Francis Maffon. It was introduced in 1787, and flowers in september.

2. Leaves ovate-oblong, marked with lines underneath. Spike loose. Bractes ovate-lanceolate, reflex. Flowers

Flowers very fragrant, smelling like cloves, yellowish green. The three lower petals narrower and shorter. Column of fructification shorter than the helmet^y.

Root-leaves two, cordate, opposite, stem-leaves three or four, alternate, cowl'd. Bractes the length of the spike. Helmet of the corolla one-leafed, arched, acuminate, larger: the two lateral petals a little wider: lip linear, with equal segments: body of the style oblong, curved inwards; with two rounded lobes under the tip^z. This species is remarkable for its double spur, arising from the helmet instead of the lip^a.

Native of the Cape of Good Hope. Introduced in 1787, by Mr. Francis Masson. It flowers in september^b, and is extremely sweet.

3. Root-leaves ovate, small. Scape filiform, with three or four leafy sheaths. Upper petal of the corolla short, acuminate: spur ascending, the length of the petal: the two inner petals linear, with two teeth at the tip, having a lobe underneath concealed beneath the upper one, and of the same length, embracing the genitals: lateral petals two, lanceolate, longer than the others^c.

Orchis flexuosa of the supplement is said to be the same with this. The scape is described as half a foot high, filiform, bent above the stem-leaf. Root-leaves ovate, acute, petioled. Stem-leaves small, sheathing at the base, lanceolate, three or four. Flowers from three to five in a raceme, remote, pedicelled. Upper petal lanceolate, rising, with a spur the length of the flower: second and third inner, short, linear, with two teeth at the tip; fourth and fifth lanceolate, a little longer than the first: lip awl-shaped, with a tooth on each side at the base. Native of the Cape of Good Hope.

4. Leaves on the stem many, alternate, large, lanceolate, sheathing at the base. Spike loose. Bractes lanceolate, longer than the flower. Helmet arched, oblong, blunt: horn blunt, short, lying on the germ: petals two, lateral, exterior; oblong, spreading; two interior, oblong, shorter than the helmet, fleshy at the tip, thickish, almost converging beneath the helmet. Native of the Cape of Good Hope^d.

5. Root-leaves very many, linear, shorter by half than the stem. Scape a span high, sheathed: leaves acute, scariose, wider. Flowers generally two, alternate. Germ oblong, peduncled, inferior. Helmet of the corolla pedicelled, very shortly spurred, cordate: the two lateral petals ovate, acuminate: lip cordate, on a filiform pedicel, twice the length of the flower. Native of the Cape of Good Hope^e.

6. Stem a foot high, even. Root-leaves several, a hand in length: stem-leaves alternate, about eight, an inch long, embracing. Spike many-flowered. Flowers alternate, distinct: first petal roundish, very much arched, with a very long conical horn behind; second and third oblong, very short, annexed to the genitals; fourth and fifth roundish, spreading, larger than the others; hence from the first, fourth and fifth, a sort of three-petalled flower is formed: lip very small, lanceolate, blunt. Found at the Cape of Good Hope by Thunberg^f.

7. Root-leaves four or five, shorter by half than the stem, lanceolate, bluntish. Stem a span high, covered entirely with leafy, membranaceous, acute sheaths. Spike short. First petal concave, with a sagittate point, and two sharp earlets turned back, and a short horn behind: second and third opposite to the genitals, very acuminate, wide at the base, not shorter than the uppermost: fourth and fifth, elliptic, the same length with the rest^g.

8. Bulbs oblong, undivided, very hairy. Scape a foot high, leafless, the thickness of a sparrow's quill. Leaves very many, bristle-shaped or linear, some almost the length of the scape, others shorter. Uppermost petal ovate, with an erect spur behind. The nearest lateral petals on each side, ovate-oblong, the size of the uppermost, spreading: the two nearest

interior petals very short, by the side of the genitals. Lip lanceolate, branchingly ciliate: cilia blunt, the length of the flower. Germ recurved.

9. Scape a foot and half high, the thickness of a goose quill, wholly sheathed with leaves. Root-leaves lanceolate, an inch wide, shorter by half than the scape: stem-leaves sheathing, netted-veined, acute. Spike with few flowers, somewhat remote. Bractes broad-lanceolate, netted-veined, the length of the germ. Upper petal obovate, larger, somewhat arched, with a very long spur behind: lateral petals on each side two, lanceolate: lip linear with an ovate tip, the length of the petals.

10. Stem the length of the thumb or of Ophrys Monorchis. Leaves both on the root and stem linear. Spike oblong, with from five to eight flowers. First petal ovate, horned behind with a conical base: second and third converging under the first, and similar to it: fourth and fifth lateral, spreading: lip linear.

All these were found at the Cape of Good Hope by Sparrmann^h.

11. Height from eighteen to twenty-two inches. Stem simple, upright. Leaves oblongⁱ. Native of Jamaica and Hispaniola^k.

Swartz thinks it may possibly be the same with the *Setacea* of Jacquin, which he describes as two feet high and erect, with lanceolate acute entire alternate leaves, the flowers in a spike and white. It is a native of Martinico, in moist meadows, and flowers there in november^l.

11. Stem a foot high, for the most part naked, but having one or two sharp leaflets at top. Raceme loose. Bractes lanceolate, the length of the germ. Petals acuminate, three, uniting to form an oblong helmet, but distinct at the tip: lip wide-lanceolate, divided into five sharp teeth, the intermediate ones gradually longer. Native of Palestine^m.

12. This is a very elegant species. Lower leaves short, acuminate, embracing; upper longer, green, round, smooth. Stem a long span or a foot high, slender. Flowers white: helmet entire, wide, roundish, with two fringed, spreading wings, and a long narrow lip: spur slender, very longⁿ. Native of Amboina.

13. Stem round, striated, sheathed with leaves, erect, a span high. Leaves alternate, sheathing, ensiform, channelled, from erect spreading, striated, smooth, nearly equal to the stem, the upper ones smaller, about five in number. Flowers alternate, about three, flowering successively. Bractes lanceolate, acuminate, smooth, shorter than the capsule. Perianth three-leaved, equal, smooth, spreading, green: leaflets ovate, acuminate, concave, striated. Corolla three-petalled, snow-white: the two upper petals equal, forming a helmet with the erect segment of the calyx, ovate, concave, with the outer margin flat; they are longer than the calyx: lower petal clawed, horned, plano-convex, three-parted: lateral segments dilated, ciliate, clawed, the middle segment lanceolate, entire, scarcely a line wide. Horn of the nectary cylindrical, in front, hanging down, greenish white, twice as long as the capsule. Anthers two, sessile under the top of the stigma. Style very short, thick. Stigma concave. Capsule subtrigonal, six-striated, smooth, scarcely twisted, half an inch long. Native of Japan: flowering in august and september^o.

14. Stem tall, firm, having at the lower part two or three oblong, wide, liliaceous, embracing leaves, and some smaller leaves above. Spike not very long, composed of clustered flowers. Helmet small and acute: lip hanging down forward, long, narrow, cut on both sides into very narrow little jags, and as it were fringed: spur stretched out backward and very long: colour yellow^p.

It grows to two feet in height and more, with a straight, striated stem. The uppermost leaves are scarcely an inch in length and sharp. Flowers pedicelled. Spur slender, an inch or more in length, recurved, hanging down. It was sent by Banister from

^y Hort. kew.

^z Linn. amoen.

^a Linn. spec.

^b Hort. kew.

^c Linn. amoen.

^d Idem.

^e Linn. suppl.

^f Idem.

^g Idem.

^h Linn. suppl.

ⁱ Browne.

^k Swartz.

^l Jacq. amer.

^m Linn. spec.

ⁿ Herm. in Raii hist.

^o Thunb. jap.

^p Raii hist.

Virginia⁹. Petiver informed Ray that it is of Maryland origin. Linneus sets it down as a native of Virginia and Canada.

15. Bulb single, middle-sized, oblong, tomentose, with long, filiform, simple fibres above the bulb. Stem erect, leafy, from one to two feet high, simple, angular, smooth. Leaves sessile, alternate, sheathing at the base, ovate-lanceolate, acute, smooth and shining, three-nerved, netted-veined: sheaths closely surrounding the stem and smooth. Flowers in spikes, alternate, scattered, at a little distance, white. Among the flowers the stem is acute-angled. Spathes (bractes) under the flowers wide, keeled, three-nerved, smooth, green. Corollas five-petalled. Three petals exterior: the upper or middle one, which is the helmet, arched, erect, three-keeled, greenish white, smooth; two lateral somewhat turned back, ovate-lanceolate, keeled, green: two interior lateral, cloven at the base: the upper segments inclosed within the arched petal, of the same length; the lower segments filiform, much longer than the upper ones, spreading, white. Nectary behind under the helmet, arched; triangular in the middle, divided into cells at the sides, and in front divided into two long horns, between which a funnel-form passage opens into the horn of the germ. Filaments capillary, from the lateral cells of the nectary communicating by canals with the tips of the horns, and there glued to them. Anthers in the cells, filled with yellow globular pollen. Germ inferior, elongated, three-sided, gibbous, hexangular. Style none. Stigma stretched out between the horns, behind the opening, convex, shining, moistened. Lip of the nectary three-parted, inserted before the stigma and the horn of the germ: the middle segment lanceolate, acute, plano-convex; the lateral ones filiform, three times the length of the other, bent down: horn four or five times as long as the germ, roundish-compressed a little at the base, lanceolate at the end, and ancipital, glued to the stem after flowering. Capsule large, three-winged, six-grooved, opening in the middle into six parts, cohering at the top. Seeds bristly. The flowers are very singular, and together with *Orchis monorrhiza* might perhaps constitute a separate genus.

Native of Jamaica in low meadows at the foot of the mountains¹.

16. Bulbs ovate, tapering to a point at the base, white within and without; thick fleshy fibres come out above them from the base of the stem². One of these bulbs is always wrinkled and withered, whilst the other is plump and delicate. The first is the parent of the actual stem; the second is an offset, from the centre of which the stem of the succeeding year is destined to arise. Such is the mode of increase not only in this species, but in the other bulbed Orchises; and such are the means that nature uses not only to disseminate plants, but to enable them to change their place and thus to draw in fresh nutriment; for the second root is always about half an inch from the centre of the first, insomuch that in twenty years the plant will have marched ten inches from the place of its birth. The process is the same in the handed Orchises, or those species which have the bulbs divided and lengthened out like the fingers, and even in fibrous roots, for some of the fibres are continually rotting and perishing, whilst other young and tender ones are protruding, lengthening, increasing and preparing for the vegetation of the succeeding year. This mode of increase is particularly necessary in a family of plants that rises with great difficulty, and very seldom by seed³. We have no proof of the *Orchis* growing by seed, but we cannot account for the great increase of some of the species any other way. But to proceed with the description: stem a foot or eighteen inches high, smooth, six-angled, three ribs running down from each leaf. Leaves usually two, (sometimes three) springing from the root, ovate, blunt, tapering at the base, five or six inches long, and from two to three inches wide, smooth, pale green above,

silvery beneath, marked with numerous parallel veins or nerves. On the stem are three or four lanceolate, sessile leaves, the lowest of which are longest. Flowers numerous in a long loose spike. Bractes lanceolate, acute, resembling the stem-leaves, much longer than the germ (of the same length according to Curtis, or a little longer as Pollich affirms; not longer than the germ, according to Scopoli.) Petals yellowish-white, or rather white with a tinge of green; the three exterior large, the middle one heart-shaped, obtuse, covering the hood, the two outer lanceolate, longer but narrower, patent and somewhat reflected, forming obtuse angles with the middle one: the two interior petals linear-lanceolate, small, converging over the hood, incurvated, so that their tips nearly touch; though the bases are distant: hood very open. Stamens bright yellow: anthers straw-coloured. Cases distant. Lower lip of the nectarium linear, narrow, entire, nearly as long as the germ, somewhat convex on the upper, and concave on the lower surface, whitish upwards, green towards the end: horn almost as long again as the germ, slender, whitish upwards, the rest green, somewhat compressed, and broadest towards the end⁴. It is transparent, and shows the nectareous liquor with which it is often filled.—Retzius remarks, that there is no stameneous column properly so called, but a very large arched stigma, the cloven sides of which inclose the male parts: the stamens are entirely free, that is, not fastened to any thing, but concealed within the lateral cleft of the pistil, with the filament longer than the anther, furnished with a lateral pelta viscid towards the base.—Capsules ovate, triangular, yellowish, brown when ripe, smooth; having three longitudinal ligaments, which are loosened when the seeds are ripe; the seeds are then cast out through the longitudinal clefts; they are very minute and abundant⁵.

This species has obtained the name of *bifolia*, on account of its radical leaves being usually two; three however are frequently met with: they are commonly said to be opposite, but they are not so strictly opposite as in *Ophrys ovata*. The English name of *Butterfly Orchis* is scarcely warranted by the appearance of the flower⁶: but some species of the order bearing a resemblance to bees and flies, the rest must needs be referred to some other animals. The smaller variety is named in Johnson's edition of Gerard's herbal *Gnat Satyrion*. The flowers may be allowed to bear a general coarse resemblance to an insect; at least they approach it more nearly than those of *Ophrys anthropophora* and *Orchis militaris* do to the human figure.

Orchis conopsea having a very long spur or horn and spreading petals, as well as this species, Haller distinguishes it by the remoteness of the cells or cases in which the stamens are lodged.—It is obviously distinguished, says Mr. Curtis, by the colour of the corolla, the great length of the spur, (an inch long, widening at top and ancipital) the delicious fragrance of its flowers, diffused chiefly in the morning and evening, and vying with that of the Honeyfuckle; but above all by the unusual structure of its flowers: below the stigma, which is remarkably well defined in this species, there is a circular opening between the cavities containing the stamens, just above the stigma is a very conspicuous ridge, the cases containing the stamens are placed widely distant (as remarked above from Haller) and soon change to a brownish hue, the stamens are very loosely placed within them and drawn out with the slightest touch, the anthers are club-shaped and divided as in most others, the gland at the base of the filament is of a circular form, with a cavity on its inner side, and a kind of joint-like projection on its outer part.

The roots of this species being large, it appears to be as well calculated for making salep as any other.

This *Orchis* if not so common as some, is much more so than others, being found generally in woods, pastures and heaths, especially in soils somewhat stiff and moist. In dry pastures it is often so small as to be noticed for a variety⁷. It varies not only in size, but

⁹ Mor. hist.

¹ Swartz.

² Woodw. Mfs. and Pollich.

³ Villars.

⁴ Woodw. Mfs.

⁵ Pollich.

⁶ Curtis.

⁷ Idem.

in the shape and number of the leaves, the number of flowers, the length of the spur, and the time of flowering, which is later in the small one: but there does not appear sufficient reason, as Dr. Withering observes, for considering these varieties as really distinct; neither the height of the plant, the more or less ovate or lanceolate form of the leaves, nor yet the season of flowering or stations, affording any permanent distinctions.

Butterfly Orchis occurs in Norwood, Surrey; in Charlton-wood, and on Pens-common near Beckenham, Kent; Madingley-wood, Whitwell, Linton-wood, Balydon-hill, Kingston-wood, Gamlingay-wood, Cambridgeshire; Shotover-hill and Tar-wood, Oxfordshire; Short-wood near Pucklechurch, Gloucestershire; Envil in Staffordshire; woods and shady lanes in Leicestershire, common. It flowers in may and june.

17. Stem a foot and half high, leafy, round, upright, striated above the leaves. Lower leaves linear, sharpish, unspotted, the upper more inclined to lanceolate, springing from a sheath rendering the stem angular under the back of the leaf, four in number at most. Bractes lanceolate, acuminate, pale green, about the length of the flowers, the upper ones gradually shorter. The flowers have the same scent with *O. odoratissima*, only weaker. Germ twisted green. Corolla white.

Native of the mountains of Austria: flowering in august. The two outer petals, spread out like the wings of a bird in the act of flying: whence the name ^a.

18. Root-leaves ovate. Scape a foot high. Leaves alternate, remote, sheathing, lanceolate, small. Flowers small, remote. Corolla resembling the papilionaceous, with the banner and wings whitish flesh-colour, wing-petals two, filiform, under the banner, and of the same length, keel or lip, very pale yellow with black dots, wider, imbricate-waved.—Native of the Cape of Good Hope ^b.

19. Root-leaves two, ovate.—Native of Siberia ^c.

20. Bulbs oblong, conical. Scape firm, a foot or eighteen inches high, leafy. Leaves lanceolate. Spike short, very much crowded. Bractes the length of the germ. Flowers frequently turned upside down, so that the lip turns to the base of the spike, and the helmet or hood recedes from it. The latter is formed of the three outer petals, bent round the stameneous column, ovate with an awn half the length of the petal, the end of which is wider and almost club-shaped. The two inner petals cover the stameneous scape, are wide, lanceolate, with a shorter awn. Lip short, three-parted, with the lateral segments quadrangular, the middle one wider, emarginate, with a spinule from the incision. The whole corolla bright purple with deeper spots on the lip. Spur a third part of the length of the germ ^d.

According to Jacquin's description, it is from six inches to a foot in height, upright and elegant; leaves oblong; spike roundish; corolla purple flesh-colour, nectary dotted with red, horn blunt, half the length of the germ, lip trifid with blunt segments, the lateral ones quite entire, the middle segment trifid, the petals run out into a bristle widening at the top and blunt.

Villars observes, that the leaves are of an ash-coloured green, and more approximating to the stem than in the other sorts, spike very close and pyramidal, of a grayish red, each outer petal terminates in a thread in form of an antenna at the extremity, nectary short, the lower lip divided into three parts, the middle one wider and a little emarginate, flowers oblique not reversed.

Scopoli thus distinguishes it from *pyramidalis*, with which it has been confounded: spike blunt, oval, dense, and in a manner umbelled; leaves blunt, with the nerve ending in a point; petals tailed; breast of the beard neither eared nor spotted, with acuminate segments; spur not long. He says that it was first observed by Dalechampius.

Native of Germany, Austria, Carniola, Switzerland, the South of France and Italy.

^a Jacquin.

^b Linn. amoen.

^c Linn. spec.

^d Haller.

21. Bulbs ovate. Stem from eight to fifteen inches high, round or slightly angular, smooth and firm, almost covered with leaves. Lower leaves sheathing the stem, lanceolate, very acute, pale green marked with numerous parallel veins and irregularly reticulated with cross ones; middle ones embracing the stem; upper sessile, closely converging, lanceolate but more obtuse than the lower, shining within and semitransparent, nearly covering the whole stem. Flowers numerous, (eighty) crowded in a short blunt cone, forming a most elegant termination to the stem, deep flesh-colour or pale purple. Bractes membranaceous, lanceolate, very acute, green with a tinge of purple, as long as the germ. Petals ovate-lanceolate, the middle of the exterior and the two interior converging, the exterior lateral ones spreading: hood of the nectarium very short, scarcely perceptible; cases of the anthers small. Stamens short, yellow; anthers green. Lip of the nectarium broad, with two oval gibbous prominencies at the top, and at bottom deeply divided into three nearly equal somewhat rounded lobes: spur awl-shaped, somewhat curved, longer than the germ: the spurs are all turned to the inside of the cone, so that the lips of the nectaria form a regularly imbricated outer surface to the cone ^e.

Dr. Stokes remarks the silky glossiness of the leaves, which are linear-lanceolate: and Dr. Smith, that the bulging protuberances on the lip of the nectary give the distinguishing character of the species.

According to Linneus, the stem is a palm high and jointed; leaves five or six, lanceolate, pointed, membranaceous; bractes lanceolate, coloured, as long as the germ; flowers purple, with ovate-lanceolate petals, three approaching, the two lateral ones spreading and bent back; lip two-horned, trifid, equal, quite entire; spur very long.

Scopoli says that the scape is a foot high, the helmet has spreading wings, the lateral segments of the beard crenulate, the spur scarcely longer than the germ, the pollen brownish, and that it differs from *conopsea*, in the roots, the shortness of the spike, and the pectoral auricles. These two longitudinal parallel concave rounded auricles on each side the base of the trifid lip are indeed the character that distinguish this species from all the rest, as observed above.

Ray remarks the same circumstance, as also that the corolla is sometimes white, which is the case with many other species that grow in a calcareous soil, as this does.

Mr. Woodward observes that Haller's figure being taken when the flowering was far advanced, the pyramidal form of the spike is lost; the figure in the third edition of Ray's synopsis represents it well.

Native of many parts of Europe, as Sweden; Belgium, Switzerland, Austria, Carniola, France, Italy, and Britain. With us about Harefield in Middlesex, Dartford in Kent, Stocking-wood in Leicestershire, Chesterton, Hinton, Devil's-ditch near Newmarket and Linton in Cambridgeshire, Whichwood-forest, between Woodstock and Enston, and on Caversham warren in Oxfordshire: also in Scotland. It flowers later than the other Orchises.

22. Bulbs orbicular, small, accompanied with strong fibres. Stem erect, a foot high, round, jointed, smooth, leafy. Leaves seven or eight, all sheathing, the lowest four inches long, the others gradually less, bright green, very smooth, five or six of them spreading, the others rolled round the scape. Spike close, from above an inch to two inches in length. Bractes lanceolate, the length of the germ. Helmet or hood three lines long, the five petals of which it is composed so closely joined as to seem three, acuminate, pale red; lower lip trifid, above two lines wide, reflex, the middle segment sharpish, quite entire, a line in width, the lateral ones crenulate, all green tinged with dusky purple; aperture white or reddish; horn blunt, the length of the germ ^f: or shorter, according to Linneus.

The flowers smell like a goat according to some, and like a bug, according to others. Haller says, that

^e Woodw. Mss.

^f Pollich.

whilst it is withering it stinks abominably. Native of Denmark, Germany, the southern parts of Europe, and the Levant, in pastures, flowering in June. Ray found it in flower on the 26th of May near Geneva, in the pastures on the other side the Rhone.

This species is inserted in Mr. Hudson's catalogue, with a note that he never found it. *Orchis barbata foetida* minor flore albo, *syn.* 376. is not this species, but probably a variety only of *Satyrion hircinum*. Clusius mentions, that he found an *Orchis* near London, with a spike of purple flowers which was extremely fetid, but Ray says he is ignorant what it could be, and that he never could find any thing of the sort.

23. Root fleshy, seeming to be obscurely testiculated, with capillary fibres at the base of the stem. Stem a foot and half high. Leaves towards the root four or five, alternate, sheathing, lanceolate; the rest of the stem without leaves, having about ten acuminate sheathing bractes. Spike very narrow, naked, almost a span long, with lanceolate bractes between the flowers, of the same length with them. Horn filiform, shorter than the germ. Upper lip equal, converging; lower three-parted, the middle segment ovate, the lateral ones filiform.—Native of the island of Ceylon^z.

24. Bulbs roundish, the size of hazel nut or of a nutmeg, one fixed to the base of the stem, and the other connected to the base by a fibre half an inch long, and the thickness of packthread, in the same manner as in *O. bifolia*; above them are largish spreading fibres. Stalk from six or seven inches to a foot or more in height, upright and leafy. Leaves embracing, lanceolate, marked with lines, glaucous, shining on the upper side, underneath silvery; the bottom ones for the most part turning back and variously contorted. Flowers few, from six to eight, seldom more than twelve, purple, sitting loosely on the stalk. Bracte almost the length of the germ, purplish and incumbent. Petals closing so as to form a helmet or hood; the two outermost strikingly marked with green parallel lines: lip broad, purple, whitish in the middle and dotted, having three lobes, of which the two side ones turn downward, the middle one is shortest with a notch in it; all are finely serrate: spur nearly the length of the germ, slightly notched at top, and tending upward. Anthers green, club-shaped, splitting into two lamellæ^h.

Mr. Woodward says the leaves are not spotted: according to Mr. Stackhouse, they are sometimes spotted in the spring, the spots growing paler as the flowers advance.

According to Mr. Woodward, it differs from the *mascula* in being a lower plant, and the spike consisting of fewer flowers, the petals all blunt and converging, the three outer forming the hood and covering the lower ones, and always striated with green veins, whatever may be the colour of the flower; the interior petals are also much smaller, the lip of the nectarium three-lobed nearly equal, the two outer lobes crenate, reflected and striated with purple veins, the middle one notched and dotted upwards; horn broad and blunt, shorter than the germ. Anthers yellow. Flowers dark or pale purple, flesh-coloured or white.

There is no species more variable in this respect, but in all the varieties it retains more or less strongly, the green lines, which, as Ray observed long since, obviously distinguish this from all our other *Orchides*ⁱ.

Retzius remarks, that it differs not only in the colour but the form of the flower; the lip of the nectary being inflex or flat, four-cleft, undivided, or slightly emarginate: the horn or spur also is blunt and gibbous, cylindric, compressed or subcompressed.

Mr. Curtis remarks that he has not heard of any one who has raised this or any other *Orchis* from seed, and that he cannot boast of having done it himself; yet that frequent observation almost confirms him in the opinion that they must be propagated from seed, for if this be not admitted, how shall we account for

so many young plants being found together as are frequently observed? This entirely agrees with my own conjecture made above under *O. bifolia*, before I had seen what Mr. Curtis has advanced on the subject.

This has been said to be the true sort which produces the oriental Salep, but it is clear that more species than one are used for it, because some of the roots imported in that drug are undivided, as in this, and others are palmated. Some of the other species have larger roots than this, and the quality of all appears to be the same.

O. morio grows in meadows that are moderately dry, such as the Cowslip is usually found in, and sometimes it is so abundant as to empurple the spot it grows on^k. I have found great quantities of it on the balks and headlands of corn fields. It flowers in May and June.

25. Bulbs large, oval, both fixed to the base of the stem, which is about a foot high, round, smooth, upright, solid, above naked and purplish, below clothed with surrounding leaves; these are lanceolate, alternate, broadish, the lower ones sheathing at the base, spreading upwards, bright green and shining above, glaucous beneath, marked longitudinally with parallel veins, and usually spotted with large brown or dark purple spots: the upper leaves closely sheath the stem and are pale green. Flowers in a loose spike, numerous. Bractes lanceolate, membranaceous, longer than the germ, (the length of the germ as Haller, shorter than the germ as Curtis and Relhan, of the same length or a little shorter, as Pollich affirms; according to Jacquin, the lowest are twice the length of the germ, and the rest are of an equal length with it,) pale purple, a little twisted at the top. Flowers darker or paler purple, rarely white: covers of the stamens dark purple: petals lanceolate, acute, of the three upper the two outer are erect and reflected back to back, the middle one spreads and lies over the two lower ones, which are closely convergent, of a paler colour, and form an arched hood to the stamens: lip of the nectarium broad, dotted at the upper part, three-lobed, the outer ones roundish, crenate, the middle longer and notched at the end: horn as long as the germ, or longer, *Hall.* shorter, *Relb.* broadest and somewhat compressed at the point: mouth white. Anthers greenish, elastic like the rest of the species^l. As the plant advances towards maturity, the filaments in many of the *Orchides* hang out of their cases towards the stigma, and when they are drawn out, at the base of each is a small transparent globule, and at the top a club-shaped substance, most commonly yellow and granulated, which must be considered as the anther; in the microscope it appears to be composed of cubic or irregularly quadrangular corpuscles, united by fine elastic threads.

According to Linneus, this is very closely united to *morio*, but the stem is as tall again, the flowers more numerous, the two petals on the back bent backwards, and not at all approaching to form a helmet or hood; the middle lobe of the lip is smallest.—Mr. Curtis remarks, that the spotted leaves and early bloom will in general be sufficient to distinguish this species. If so, Pollich must have been mistaken, for he says that it flowers in June, and that his specimen had no spots on the leaves.

Haller observes, that the bulbs have a goatish smell and that it differs from *morio* in having the outer petals sharper and longer, the cowl or hood loose or wandering, the lip longer, with its middle segment produced farther beyond the lateral ones, without any green lines; the stem also is loftier, the leaves wider and spotted.

Retzius remarks, that this species is no less variable than the preceding; the lip of the nectary being entire, emarginate and more or less four-lobed; the horn conical or cylindrical.

The spikes of these flowers, says Lightfoot, are the *Long-Purples* or *dead men's fingers*, which helped to compose Ophelia's garland:

^z Linn. zeyl.^h Curtis.ⁱ Idem.^k Curtis.^l Woodw. Mss. and Curtis.

" There with fantastic garlands did she come,
 " Of crow-flowers, nettles, daisies and long purples,
 " That liberal shepherds give a grosser name,
 " But our cold maid's do *dead men's fingers* call them."
Hamlet, Act 4.

The latter name would agree better with *O. latifolia* or *maculata* which have palmated or handed roots, divided and spreading out like the fingers, whereas this species has two solid roundish bulbs. I do not find the name of *Long Purples* in any of our old English herbals.

It is native of most parts of Europe, and is common in most parts of England in woods and meadows, flowering in april and may.

The roots abound with a glutinous slime, of a sweetish taste, and a faint somewhat unpleasant smell. This mucilaginous or gelatinous quality of the Orchis root has recommended it as a demulcent, and it is generally used in the same complaints as the roots of *Althæa*, and gum arabic.

Salep, which is imported from the East, and was formerly held in great estimation, is now well known to be a preparation of Orchis roots, as was first suggested by Mr. Joseph Millar, in his *Botanicon officinale*, 1722. This is the species commonly regarded as the officinal one, and it has place in the *Materia Medica* of the Edinburgh Pharmacopœia; other species however are employed in making Salep, and it should seem that they have all the same quality.

Mr. Mault of Rochdale has given the method of curing the Orchis root as follows: the new root is to be washed in water, and the fine brown skin which covers it is to be separated by means of a small brush, or by dipping the root in hot water, and rubbing it with a coarse linnen cloth. When a sufficient number of roots have been thus cleaned, they are to be spread on a tin plate, and placed in an oven heated to the usual degree, where they are to remain six or ten minutes, in which time they will have lost their milky whiteness, and acquired a transparency like horn, without any diminution of bulk. Being arrived at this state, they are to be removed, in order to dry and harden in the air, which will require several days; or by using a very gentle heat they may be finished in a few hours. The properest time for gathering the roots is when the seed is formed, and the stalk is ready to fall, because the new bulb is then arrived at its full maturity, and may be distinguished from the old one by a white bud rising from the top of it, which is the germ of the stem for the succeeding year^m.

Salep, considered as an article of diet, is accounted extremely nutritious, as containing a great quantity of farinaceous matter in a small bulk, and hence it has been thought fit to constitute a part of the provisions of every ship's company to prevent a famine at sea. For it is observed by Dr. Percival, that this powder, and the dried gelatinous part of flesh, or portable soup, dissolved in boiling water, form a rich thick jelly, capable of supporting life for a considerable length of time. An ounce of each of these articles, with two quarts of boiling water will be sufficient subsistence for one man a day. Dr. Percival not only recommends the use of Salep in diarrhoea, dysentery, dysury, and calculous complaints, but he thinks that in the symptomatic fever, which arises from the absorption of pus, from ulcers in the lungs, from wounds, or from amputation, Salep used plentifully is an admirable demulcent, and well adapted to resist that dissolution of the crasis of the blood which is so evident in these cases. The supposed aphrodisiac qualities of this root, which have been noticed ever since the time of Dioscorides, seem to be founded on the fanciful doctrine of signaturesⁿ.

It is to be hoped, says Dr. Withering, that we shall no longer be supplied from foreign markets, with an article that our own country can supply us with in almost any quantity.

26. Bulbs oval. Stem from four to six or eight inches high, angular, almost hid by the upper leaves.

^m Philof. Transf. vol. 59. p. 2. Percival's Essays, 2. 39.
ⁿ Woodville.

Leaves four, five or six, bluntly lanceolate (more or less acute, *With.*) bright green above, whitish green beneath, shining, marked with numerous longitudinal veins or nerves. Flowers numerous (near forty) in a close short ovate spike. Bractes about two thirds of the length of the germ, membranaceous, faint purple with a dark keel, (rather shorter than the germ, *With.*—as long as the germ, *Relb.*). Petals all convergent, the three outer oval-lanceolate, acuminate, purple without, greenish white within; the two inner lanceolate, narrow: lip of the nectarium white with purple spots, very deeply divided into three lobes; the two outer patent, lanceolate, entire, or with one or two teeth, middle one longer, widening at the end, and divided again into two short lobes, with an intermediate point: horn very short, blunt and slightly curved, half as long as the germ: cases of the anthers greenish white, close. Stamens very short. Anthers pale yellowⁿ.

Dr. Withering remarks that the middle segment of the lower lip of the nectarium has not always the intermediate or projecting point, and that he has not found the roughness on it, mentioned by Linneus in the specific character.

The characters of the species, according to Scopoli are, that the flowers are small, becoming gradually so pale, that the lip and spur at length turn white; that the bracte is almost equal to the lip; that the stameneous machine is blunt, with white cells, and yellow stamens; and that the beard or lower lip is variegated with blood-red spots, one of which, next the throat, is larger than the rest.

Villars remarks, that this is one of the smallest species, the leaves narrow, glaucous or silvery, spike short, ovate, close, small, appearing blackish at the top, whence its name of *ustulata*, and bright red or whitish towards the base; this appearance is caused by the upper petals, which open last, being of a very deep colour on the outside, and of a bright red within, contrary to the usual case with flowers, which have commonly the colours lighter in the parts most exposed to the air: the spur or horn of the nectary so short that it might be taken at first sight for a *Satyrion*: the lower lip has five lobes rather than three or four, for the middle division subdivides into two shorter, which have a little blunt very short appendix at their point of separation; the two lateral ones are shorter and oblong; both are whitish, marked with salient rugged spots of a very bright and pleasant red; petals open, lanceolate, whitish within, and of a very deep almost black red on the outside.

This elegant little plant is distinguished at first sight by its small dotted flowers. It is in great quantity on many of our downs, and affects a dry calcareous soil. About Harefield in Middlesex; on Gogmagog-hills, Devil's-ditch, Chippenham, Cambridgeshire; Barneck-heath, near Stamford, and between Stamford and Duddington in Northamptonshire; on Wick cliffs, and on the Wiltshire downs, as on Salisbury-plain, particularly on the barrows near Stonehenge; on Burford-down and Caversham-warren in Oxfordshire. It flowers in may and june.

27. Bulbs somewhat oval. Stem about one foot high, round and smooth. Leaves about four, sheathing, acutely lanceolate, the three lower spreading, the upper one closely embracing, bright green with numerous parallel veins. Spike from one to two inches long, with numerous flowers. Bractes very short, membranaceous, oval but pointed, and terminated with an awn. Petals all convergent, three exterior large and broad, oval-lanceolate, acute, two interior, narrow, linear or somewhat awl-shaped, all greenish white with purple lines: lip of the nectarium purplish, or white with purple dots, long and narrow, divided into three segments, the two outer near the upper part, linear, half as long as the lip, the lower again slightly divided into three, the two outer broader, rounded, slightly ferrate, the middle one appearing like a spine: horn blunt, half as long as the germ: cases to the anthers distant: anthers yellow^p.

^p Woodw. Mfs.

^r Idem.

Meadows and pastures in a calcareous soil. Cawsham hills by the Thames side, not far from Reading, Berkshire, and near the old chalk-pit by the paper-mill at Harefield; Caversham-warren in Oxfordshire.

β. Bulbs oblong, large. Lower leaves ovate-oblong, a little blunt, from two to three inches broad, glossy, scored, in some specimens transversely wrinkled, of a lively green colour; the uppermost narrower and surrounding the stalk. Stalk a foot, two feet, and sometimes more in height, round, smooth, green below, purple above. Flowers numerous, closely imbricate, in a long ovate-cylindrical spike. Bractes very short, scarcely the length of the spur of the nectary, ovate-acuminate. Petals closing and forming a helmet: the three outermost ovate, pointed, faintly three-ribbed, concave, marked with spots of a brownish purple colour running together, the two innermost much narrower, oblong, a little dilated towards the top, paler, marked also with purple spots. Spur of the nectary somewhat flattened, slightly bifid, scarcely reaching to the middle of the germ: lip large, broad, rough, with prominent purple dots, which as Haller justly observes, are little tufts of short hairs, in flowers lately opened of a deeper purple colour, especially on the edges, divided into four segments, the two uppermost of which are nearly linear and diverging, the two lowermost thrice as broad, diverging, the tips somewhat truncated, irregularly and finely notched, with a short point for the most part between the two. Cases of the stamens purple. Filaments yellowish. Anthers somewhat club-shaped, whitish. Germ roundish, twisted, smooth, variegated with green and brown^a.

According to Dr. Withering the stem is from eight to twelve inches high; the spike about three inches long; the leaves ovate-lanceolate; the corolla varying much in colour, of a pale rose red, with sometimes a grayish cast on the lip, and of a deeper purplish hue on the upper petals.

Mr. Curtis who, with Ray, Haller, Jacquin, Vaillant and others, makes this a distinct species, observes, that in exposed aspects its usual height is about nine inches; in woods and coppices where it is more sheltered, and where the soil is richer, it will acquire the height of two feet or more: such specimens surpass every British Orchis; its flowers vary exceedingly in colour, some being of a light, others of a deep purple colour; now and then one wholly white occurs: the lip of the nectary varies also in breadth. Both root and flowers send forth a strong smell, somewhat like, but not so pleasant as *Anthoxanthum*. Dr. Smith remarks that all the varieties smell like new hay.

Orchis fusca is found on chalky banks, abounding in Milkwort and Juniper, near woods, and in the woods themselves, in many parts of Kent, especially about Rochester, near Northfleet, &c. It flowers early in May, and in forward seasons at the close of April, with early spotted Orchis, Cowslip and Harebell^b.

It does not appear to Dr. Withering that these can well be made distinct species. The colours are confessedly variable, and the lower lip may be described as three-cleft; considering the middle segment as notched, with a projecting point in the notch; or as five-cleft, when this little projecting point must be reckoned as one of the segments: the upper petals are confluent, and the lip dotted: the greater or less breadth of the middle segment of the nectary is the principal difference.

28. This has the stature of *O. militaris*, and almost the same flower; but the lip is very large, the full size of the thumb nail, wider than its length, retuse or emarginate, undivided, toothletted, purple as the flower is^c.

Scopoli says, that the scape is scarcely half a foot in height; spike few-flowered (two or three) red. Flowers marked with lines: petals converging: lip ovate, toothletted, blunt: spur converging, acute, shorter than the germ and lip. Bracte wide, red, longer than the germ and lip.

Native of Spain and Carniola.

β. *O. rubra*. This beautiful plant is a variety of

Linneus's papilionacea, with a smaller lip. Jacquin described his *rubra* from a bad drawing sent him from Rome, with the petals too much expanded. Dr. Smith, who makes this observation, found it flowering on the second of April, in the garden of the Villa Borghese near Rome.

29. Stature of *morio*, appearance of *sambucina*, but the bulbs not palmate. Flowers yellow: lip deeper yellow, unspotted, trifid, quite entire, middle shorter, emarginate: horn of a middling length, subemarginate, ascending^d.

Haller observes that it agrees in many circumstances with *incarnata*, which he makes the same with *sambucina*; that the root-leaves are two inches wide; the stem naked, and scarcely a long span in height; the spike is thin and few-flowered; bractes yellowish, shorter than the germ. Petals turned up and bent back: uppermost ovate, marked with three lines bending itself over the stameneous scape; the two lateral ones straightish, ovate-lanceolate, blunt, divided by three lines, pale yellow; inner petals yellow, wider and blunter than in *morio*, divided by one green line: lip yellow, trifid, convex, villose at the opening, the lateral segments smaller than in *morio*, the middle one shorter, wider, emarginate, but not toothed, as in *morio*: spur more slender, almost the length of the germ, bowed back upwards at the end: it has no spots.—The leaves are wider than in *morio*, the lines of the petals fewer, the fourth and fifth petal wider, with a longer spur, curved up, and the lip not ferrate. It smells like the urine of cats. Villars found it to be perfectly like that of the fresh flowers of Elder, inasmuch that he took it for the *sambucina*, till he inspected the roots.—He remarks that the bulbs are round and unequal, the leaves tender wide upright and pointed, the stem six or eight inches high, spike yellow oblong irregular, with the flowers insulated, nectary slender, cylindrical, the length of the germ, lower lip divided into three equal lobes, the extremity of which is suddenly rounded; upper petals open and reflected. This sort is nearly allied to *O. mascula*, but the flowers are more insulated, more rounded at the end, and have an ill smell, which that has not.

Native of Switzerland, Austria, Dauphiné, Italy.

30. The whole plant is hispid, the size of *O. Monorchis*. Root-leaves two, kidney-form, embracing. Scape half a foot high. Spike directed one way, with minute flowers. The three outer petals calyx-formed, ovate, villose: the two inner linear, smooth, double the length of the others: lip of the nectary divided into five linear segments: horn curved in, the length of the flower.

Native of the Cape of Good Hope, where it was found by Sparmann.

31. Raceme large, many-flowered. Flowers large, pure white. Found at the Cape by Thunberg.

32. Bulb generally single, ovate, villose, the size of a pigeon's egg; a few fungose villose fibres issue from the base of the scape, near its insertion into the top of the bulb. Leaves from four to eight, radical, pressing on the ground, smooth, deep shining green, somewhat fleshy, many-nerved, about four inches long, and three broad. Scape erect, about a foot and half high, including the flower-bearing part, about as thick as a goose quill, round, smooth, at every inch and half or two inches having a lanceolate leafy sheath. Spike four to six inches long, every where surrounded with flowers, which are solitary, white and fragrant. Bractes lanceolate, nerved, as long as the germ. The three exterior petals nearly equal; two interior small, obliquely oblong, erect. Upper lip of the nectary short, under three-parted; middle division long, narrow, pointed, recurvate. Horn nearly twice the length of the germ, perpendicular, or nearly so.

Native of Coromandel, in moist valleys among the hills; flowering in the rainy season^e.

Species with divided or palmated bulbs.

33. Bulbs broad and flat, divided into a few fingers, which sometimes run out into a long fibre, striking

^a Curtis.

dem.

^b Linn. spec.

^c Linn. mant.

^d Roxburgh.

downwards; several short thick fibres also shoot out laterally from the top of the bulbs. Stem about a foot (or eighteen inches) high, smooth, hollow, somewhat angular towards the top. Leaves five or six, alternate, sheathing the stem to the spike, acutely lanceolate, keeled and marked with parallel veins, pale green, rarely spotted, and when so, very obscurely. Bractes much longer than the flowers, resembling the uppermost leaves, acutely lanceolate, green, sometimes with a tinge of purple. Flowers very numerous (forty), in a close somewhat conical spike; for the most part rose or flesh-coloured with us, often purple, rarely white. Petals lanceolate, the two outer of the upper ones reflex; the middle one and the two inner converging; lower lip of the nectarium obscurely three-lobed, ferrate, middle lobe longest, narrow and somewhat pointed, marked with dots and lines, forming a regular figure, following the form of the lower lip. Spur shorter than the germ, regularly conical^x, blunt, incurved. Anthers roundish, club-shaped, yellowish green^y. Germ twisted.

There are some variations in the segments of the lip of the nectary, as observed by Retzius in *morio* and *mascula*; whence Dr. Stokes has noticed three varieties of this Orchis^z.

Linneus distinguishes this species from *maculata*, by its bractes longer than the flower, the want of spots on the leaves, and its hollow stem.—With us the leaves are seldom spotted; or if at all, obscurely; Villars says that they are frequently spotted in Dauphiné, but less than in *maculata*. According to him, the spur is longer than the germ, if it be observed during the time of flowering; for after that time the germ lengthens, and the nectary is then the shortest. This observation of Mons. Villars is well founded, and has not been sufficiently attended to.—He describes the lower lip as almost entire, wider than its length, divided into three lobes, of which the middle is the smallest, often toothed, of the same length with the lateral lobes, which are turned back.—He remarks that the old authors have abundance of figures and synonyms of this Orchis; that Haller has collected a hundred of them, which is not half the number.

Haller compares this species with *maculata* which it most resembles, but the leaves are wider; the stem soft, hollow, and lower, the bractes longer than the flowers, and giving the spike a peculiar and leafy appearance, flowers larger, the spots and lines on the lip not so regular.

Native of Europe in wet meadows and marshes, commonly with *Valeriana dioica*, *Menyanthes trifoliata*, and *Lychnis Flos Cuculi*: flowering towards the end of May. Loureiro found it also in Cochinchina.

34. This very much resembles the preceding; but the leaves are pale green and unspotted, not dark green and spotted; the stem is shorter by half; the bractes are scarcely longer than the flower or germ; the corolla is pale flesh-coloured, not red; the two dorsal petals are quite bent back, not merely spreading, nor are they spotted^a. Our *latifolia* has pale green leaves, rarely spotted, and the corolla is frequently pale flesh-colour. The *incarnata* however is probably no more than a variety of the *sambucina*, as Haller, Scopoli and Villars have insisted.

35. This is easily distinguished from *O. latifolia* by its having few flowers, the stem leafy only below the middle, the bractes by no means longer than the flowers, the leaves not at all ovate-lanceolate, but almost tongue-shaped, as in *O. maculata*, from which it is also very distinct in the fewness of its flowers, the want of notches in the lip, the greater length of the horn, the having no spots on the leaves, the roots less divaricated, and the whole habit. It is different from all the species in the structure of its fructification, the yellow colour of the flowers varying to purple, its situation in wet places on mountains, and in flowering very early with *Corona Imperialis*^b.

Scopoli cannot discover any mark in the long de-

^a Woodw. Mfs.

^y Curtis.

^z Wither. arr.

^x Linn. fucc.

^b Idem.

scription given by Linneus in the *Flora suecica* of the *sambucina*, by which it can be distinguished from his *latifolia*. We may conclude therefore that his *latifolia* is the same with the *sambucina* of Linneus, and probably his *comosa* is our *latifolia*.

Villars says that this species differs from *latifolia*.
1. In having the bractes shorter than the flowers.
2. The lower lip almost flat or very little convex, whereas the lateral lobes are turned back in the other.
3. The nectary blunter and shorter. 4. The lateral petals raised very much as if they were broken, instead of being carried forwards and a little open.

The stem is about half a foot high, thick and solid; the flowers red and purple in the *incarnata*, yellowish-white in this.

Native of several parts of Europe, but not of Britain. It has the smell of Elder flowers, whence the name.

36. Bulbs palmated, compressed, with the segments much divaricated. One of them, according to Linneus, floats in water, and nourishes the stem, the other sinks and bears the bud for the next year. But with us it does not grow in water, only sometimes in moist meadows. Stem solid, from seven or eight to eighteen inches high, the lower part round, the upper somewhat angular. Lower leaves embracing the stem, lowest constantly short, broad and blunt, the next considerably longer, bluntly lanceolate, above these more acutely lanceolate, upper ones very narrow and apparently sessile, but the margins are decurrent, whence the angular appearance of the stem; beneath they are silvery green, with parallel green nerves, above pale green, often partially covered with the same silvery skin, marked with numerous reddish brown spots, mostly oval and transverse, but sometimes irregular. Flowers numerous (forty) in a close conical spike. Bractes acutely lanceolate, much longer than the germ, (or, according to Dr. Stokes, the lower longer, the upper shorter than the flowers;) purplish, if the upper part of the stem be so, but green, if this be green. Corolla usually pale purple: petals acutely lanceolate, the three outer patent, sometimes spotted, the two inner converging: lip of the nectarium deeply trifid, outer segments angular and notched, middle one longest narrow and lanceolate, all marked with purple spots and lines: horn rather blunt, shorter than the germ: (or of the same length, *Relb.*) cases of the stamens dark purple, standing close: stamens very short: anthers green.—This is readily distinguished from the *latifolia* by the solid stem, the lower leaf always very blunt, the spike conical, which in the other is somewhat cylindrical, and in flowering later^c.

It varies with white flowers, and the leaves are sometimes not spotted^d.—Orchis *mascula* and *morio*, and sometimes *latifolia* having spotted leaves, confusion has hence arisen, by giving too much attention to the trivial name of this species^e.

Native of most parts of Europe in moist meadows and woods; sometimes in barren pastures, when the spike is only half the size, and has fewer flowers^f. It flowers in June and July.

37. This is not a variety of *O. conopsea*, though they agree in many circumstances. The stem is harder, the leaves are hard and stiff, pointing upwards, linear, four or five inches in length. Stem from a foot to eighteen inches in height. Bractes longer than the germ, with a long awn. Flowers pale or bright purple: the three outer petals spreading; the middle one almost straight, ovate, somewhat serrate; the side ones transverse, somewhat lanceolate: the two inner petals short, lanceolate, slightly ferrate, bent about the stameneous column, which they cover: lip small, shorter than the uppermost petal, almost equally and not deeply trifid, the middle segment wider, moderately acuminate; the lateral ones a little narrower; spur shorter than the germ, widish, mucronate: stameneous column short: anthers yellow. It has a singular, pleasant, strong smell.—The spur is only half the length of that in *O. conopsea*, but wider,

^c Woodw. Mfs.

^d Lightfoot.

^e Withering.

^f Ray.

the petals ferrate, the lip longer but not so wide, the middle segment more produced, and it is of a firmer habit^z.

The palmate bulbs are elongated in an irregular manner, the leaves are narrow, the spike of flowers is oblong, pale red mixed with white, the nectary of the same length with the germ, the lower lip three-lobed, the two side ones truncated, nearly equal, and as long as the middle one^h.

Native of France, Germany, Switzerland, Austria, Italy; Sweden also and Norway but rare.

38. Bulbs palmated, compressed. Stem twelve to eighteen inches high, smooth and firm, round below, angular upwards; lower leaves sheathing the stem, long, narrow, and acutely lanceolate, bright green, shining, keeled, with a strong midrib, on each side of which are two or three faint veins and one strongly marked. Lower stem-leaves embracing, upper sessile, lanceolate, acute, decreasing in size till they resemble the bractes. Flowers flesh-coloured or pale purple, (forty-two) in a loose spike, three inches long. Bractes lanceolate, acuminate, longer than the germ, herbaceous; the middle of the exterior, and the two interior petals oval-lanceolate, closely converging, their tips inflected and covering the stamens; the two exterior lanceolate, patent at right angles to the tip of the nectarium, which is short and broad, and divided into three roundish segments, the middle one rather broadest and longest. Spur awl-shaped, curved, full of juice, semitransparent, much longer than the germ. Stamens short, with two gibbous fleshy prominencies at their base: anthers greenish: opening of the stigma very apparent. Flowers smelling very sweetⁱ.

It has some resemblance to *O. pyramidalis*, from which it is distinguished by the root, the narrowness of the leaves, and the length of the spike, as it is sufficiently from every species of this division by the great length of the horn of the nectary. The flowers are sometimes white.

Native of many parts of Europe in meadows and pastures; flowering in June. Harefield in Middlesex, Asply in Nottinghamshire, King's hedges, Chesterton, Hinton, Triplow, Devil's ditch, Cambridgehire, rough pastures adjoining Cowley common in Oxfordshire, on the Wiltshire downs, pastures under Shortwood near Pucklechurch, Gloucestershire, Knutsford moor, Cheshire, in a morass near Leeds, near Auchin Dewney seven miles from Edinburgh, and abundantly on the hilly grounds north of the river Leven, Dunbartonshire. In the moist heathy ground of Newton park, Ireland.

39. Lower leaves palmate, lanceolate, large. Spike narrow. Flowers obsoletely yellow. Native of Virginia^k.

40. Native of Siberia.

41. Stem a span high. Leaves lanceolate-linear, alternate, the lower ones longer. Spike leafy. Upper lip trifid; lower obcordate, two-lobed. Horn or spur slender. Native of the island of Ceylon^l.

42. Stem a palm high with the Spike. Leaves alternate, lanceolate, the length of the stem. Spike ovate, with linear-lanceolate bractes, the length of the flowers. Corollas yellowish-green: uppermost petal wider, ovate; the two upper lateral ones lanceolate, converging to the first; the two lower lateral ones oblong: lip scarcely longer than the petal. Native of Island; found by Koenig^m.

43. Roots composed of thick horizontal fibres wrinkled transversely. Stem straight, upright, eighteen inches or more in height, blue or violet, leafless but sheathed with scales. Flowers in a very long thin spike, violet. Bractes the length of the germ. Spur conical, slightly curved, acutely pointed, longer than the germ: the lower lip oval and entire, which distinguishes this plant clearly from *O. nidus avis*, that has this lip prolonged and cloven, with the segments at right angles. Fruit the largest of any in the Orchis tribeⁿ.

^z Haller.

^h Villars.

ⁱ Woodw. Mfs.

^k Linn. spec.

^l Linn. zeyl.

^m Linn. mant.

ⁿ Linn. Villars, Woodw. Mfs. Haller.

Native of France, Germany, Switzerland, Austria, Norway. Mr. John Goodyer is supposed to have found this in the border of a field called Marborne, near Habridge in Haliborn, a mile from Alton in Hampshire; the 29th of June 1621. He describes the stalk as nine inches high, with a few small sharp-pointed short skinny leaves set without order, very little or nothing at all wrapping the stalk, having a spike of flowers like those of *Orobanch*, without tails or leaves growing amongst them. The lower part of the stalk within the ground is not round like *Orobanch*, but slender or long, and of a yellowish white colour, with many small brittle roots growing underneath confusedly, folded together like those of the common *Nidus avis*. The whole plant as it appears above ground, is of a violet or deep purple colour^o. It has not been since found by any person, so that it is yet a doubtful native of Britain.

44. Stem upright, smooth, from ancipital acutely four-cornered. Leaves on the stem from three to five, alternate, sessile, acute, smooth, quite entire, nerved, keeled, sheathing at the base, two inches long. Spike ovate-oblong, many-flowered. Flowers blue-purple. Bractes lanceolate, nerved, a little longer than the germs. Petals flat, equal in length, three lines long: the uppermost or dorsal petal ovate, obtuse, erect; the two outer lateral ones ovate, acute, spreading very much; the two inner lateral ones oblong, obtuse, next the dorsal petal erect, below the middle dilated, and there toothletted, attenuated at the base: lip of the nectary a little longer than the petals, the divisions wide, wedge-form, equal, flat, subdivided in the middle into awl-shaped cilia; the side ones divaricated, the middle one spreading. Germ half an inch long.

Native of Canada and Newfoundland. Introduced in 1777, by William Pitcairn, M.D. It flowers in July^p.

45. This has the habit of *Orchis maculata*. Stem with linear, acuminate, scattered leaves on it. Spike long, close. Petals converging; the three outer ovate, the two inner oblong, subciliate. Lip reflex, the segments very narrow at the base, wedge-form, ciliate at the tip. Native of North America^q.

46. Root-leaves two, oval, petioled, blunt, almost the length of the plant. Spike of five or six flowers. Bractes lanceolate-oval, the length of the germ. The two outer petals of the flowers spreading a little, green; three converging and more tender: lip oval, emarginate, with the tips divaricating. Native of Virginia^r.

47. Stem half a foot high and more, somewhat flexuose. Root-leaves very many, linear, acute, short: stem-leaves lanceolate, acuminate. Spike of eight or nine flowers, remote; germs clothed with bractes: uppermost petal pedicelled, arched, oval-oblong; the lateral ones sessile, rising up: nectary within the flower erect, turbinate, cowed; upper lip bifid, obtuse, lower the same; horn capillary, hanging down, the length of the petals.

Native of the Cape of Good Hope, where it was found by Thunberg^s.

48. Root-leaves lanceolate-ovate, petioled. Scape leafless, except that there is a small lanceolate leaf in the middle. Flowers alternate in an oblong spike: upper lip three-leaved, ovate; the middle leaf longest, lower lip a little longer, three-parted, almost equal, with linear segments: horn six times as long as the petals. Native of Kamtschatka^t.

49. Stem somewhat angular, smooth, a span high. Leaves alternate, half embracing, lanceolate, somewhat keeled, entire, smooth, longer than the internodes, about six, a finger's length; the upper ones narrower and shorter. Flowers in spikes, snow white, very many. Bractes lanceolate, the length of the flower. Perianth three-leaved: upper dorsal leaf ovate, concave, erect, entire, two lines long; the two lower lateral, subtriangular, concave, hanging down, the size of the upper one. Corolla three-

^o Ger. emac.
^r Idem.

^p Hort. kew.
^s Linn. suppl.

^q Linn. spec.
^t Idem.

petalled: the two upper petals lateral, lanceolate, erect, forming a helmet, the length of the calyx; the lower two-horned; upper horn or lip cylindrical, a little attenuated, hanging down; the lower cylindrical, gradually attenuated, hanging down, recurved, three times as long as the capsule. Anthers sessile, ovate, white, inserted into the stigma. Pollen peduncled, granulated, yellow. Stigma concave. Native of Japan, near Miaco; flowering in June.

50. Root-leaves several, equitant, ensiform, convoluted, revolute-flicked, smooth, a finger's length, the lower ones shorter. Scape erect, smooth, shorter than the leaves. Flowers in spikes. Horn of the nectary curved, an inch long.

Native of Japan, near Nagasaki, in the mountains, among shrubs².]

PROPAGATION AND CULTURE.

All the sorts of Orchis for the singularity and beauty of their flowers, deserve a place in every good garden; and the reason for their not being cultivated in gardens, proceeds from their difficulty to be transplanted; though this, I believe, may be easily overcome, where a person has an opportunity of marking their roots in their time of flowering, and letting them remain until their leaves are decayed, when they may be transplanted with safety; for it is the same with most sorts of bulbous or fleshy-rooted plants, which, if transplanted before their leaves decay, seldom live, notwithstanding you preserve a large ball of earth about them; for the extreme parts of their fibres extend to a great depth in the ground, from whence they receive their nourishment; which, if broken or damaged by taking up their roots, seldom thrive after; for though they may sometimes remain alive a year or two, yet they grow weaker until they quite decay; which is also the case with Tulips, Fritillarias, and other bulbous roots, when removed, after they have made shoots; so that whoever would cultivate them, should search them out in their season of flowering, and mark them; and when their leaves are decayed, or just as they are going off, the roots should be taken up, and planted in a soil or situation as nearly resembling that wherein they naturally grow, as possible, otherwise they will not thrive, so that they cannot be placed all in the same bed; for some are only found upon chalky hills, others in moist meadows, and some in shady woods, or under trees; but if their soil and situation be adapted to their various sorts, they will thrive and continue several years, and, during their season of flowering, will afford as great varieties as any flowers which are at present cultivated.

[These plants, says Mr. Curtis, multiply themselves very little, the small increase they make appearing to be from off-sets; that hitherto we have no satisfactory proof of their being propagated from seed; yet the seed-vessels in many of them are large, well-formed, and filled with seeds, which though extremely minute appear perfect. The smallness of the seed is certainly no argument against its vegetating; some of the Ferns whose seeds are much smaller are now well known to be propagated from seed; and it is most probably owing to a want of minute attention, that the progress of Orchis seedlings has not yet been observed. Such as are disposed to doubt the vegetative power of these seeds may perhaps urge that their barrenness is owing to their not being properly impregnated, the anthers in this tribe appearing to be different in their structure from those of other plants, and not containing, so far as we have yet been able to discover, any similar pollen.

Mr. Salisbury of Chapel Allerton near Leeds in Yorkshire, a very eminent botanist and skilful cultivator of rare exotic plants, has raised abundance of young plants from the seeds of the splendid Limodorum Tankervilleæ, so long since as the year 1785 or 1786. This is perhaps the first instance of the kind among the Orchis tribe³; and may encourage skilful cultivators to try the experiment on some of the other genera.]

² Thunberg.

³ Smith's tour, 1. 32.

ORCHIS. See [*Aletris*, *Arethusa*, *Cypripedium*, *Epidendrum*] *Ophrys*, *Satyrium*, *Serapias*.

[*Orchis burmanniana*.—*O. pectinata*. Thunb. See *Arethusa ciliaris*.

OREGA. See *Origanum*.

ORELIA. See *Allamanda*.

ORELLANA. See *Bixa*.]

OREOSELINUM. See *Atbamanta*.

[ORFOTA. See *Mimosa*.

ORIBASIA. See *Psychotria*.

Origano cognata. See *Origanum*.]

ORIGANUM. From *oros*, mons, and *ganos* lætitia: the delight of the mountain. *Origanum* of Pliny, *Oxygonon* of Theophrastus and Dioscorides.)

Lin. gen. n. 726. Reich. n. 784. Schreb. n. 981. Tournef. t. 64. Juss. 115.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ*. *Labiatæ* Juss.

GENERIC CHARACTER.

CAL. Involucre spiked: composed of imbricate, ovate, coloured bractes. Perianth unequal, various.

COR. one-petalled, ringent: tube cylindrical, compressed: upper lip erect, flat, blunt, emarginate: lower trifid, the segments almost equal.

STAM. Filaments four, filiform, the length of the corolla, of which two are longer. Anthers simple.

PIST. Germ four-cleft. Style filiform, inclined to the upper lip of the corolla. Stigma very slightly bifid.

PER. none. Calyx converging, fostering the seeds at bottom.

SEEDS four, ovate.

OBS. The involucre of the calyx constitutes the essence of the genus.

The Perianth in some almost equal, five-toothed; in others bilabiate, the upper lip large, entire, the lower scarcely any; in others two-leaved.

Origanum T. Flowers solitary each from its proper scalelet. Calyx five-toothed.

Majorana T. Flowers in an imbricate four-cornered head. Calyx two-leaved.

Dictamnus of Ray and Boerb. *Amaracus* Gled. Flowers in a loose imbricate head. Calyx labiate. Tube of the corolla spurred or gibbous.

ESSENTIAL CHARACTER.

Strobile four-cornered, spiked, collecting the calyxes.

SPECIES.

1. *Origanum ægyptiacum*. *Egyptian Marjoram*.

Lin. spec. 822. Reich. 3. 76. Hasselqu. it. 479. ed. angl. 251.

Majorana rotundifolia scutellata exotica. Tourn. inst. 199.

Origano cognata Zatarhendi. Bauh. pin. 223. Mor. hist. 3. 360. f. 11. t. 3. f. ult.

Zatarhendi. Alp. ægypt. 94. t. 95.

Leaves fleshy tomentose, spikes naked.

2. *Origanum Dictamnus*. *Dittany of Crete or Candia*.

Lin. spec. 823. Reich. 3. 76. hort. cliff. 304. mat. met. 150. Kniph. cent. 4. n. 58. Ludw. est. t.

134. Blackw. t. 462. Sabb. hort. 3. t. 76.

Regn. bot. Curt. magaz. 298. Lour. cochinch. 373.

Dictamnus creticus. Bauh. pin. 222. Park. theat. 27. 1. Raii hist. 537.

Dictamnus cretense. Cam. epit. 472.

Dictamnus. Lob. ic. 502.—creticum. Ger. 651. 1. emac. 797. 1.

Dictamnus cretica f. vera. Bauh. hist.

Lower leaves tomentose, spikes nodding.

3. *Origanum sipyleum*. *Dittany of Mount Sipylus*.

Lin. spec. 823. Reich. 3. 77. hort. cliff. 304.

O. montis sipyli. Herm lugdb. 462. t. 463.

O. spicatum. mont. sipyli, foliis glabris *Wheeleri*. Raii hist. 540.

Dictamnus sipyleus, *majoranæ* foliis. Mor. hist. 3. 357. f. 11. t. 4. f. 2.

Leaves all smooth, spikes nodding.

4. *Origanum Tournefortii*. *Dittany of Amorgos*.

Ait. hort. kew. 2. 311.

O. hybridum. Mill. dict. n. 12.

O. Dictamni

- O. Dictamni cretici facie, folio crasso, nunc villosa, nunc glabro. *Tourn. cor.* 13. *it.* 1. 240. *fig. ed. oct.* 1. 285.
Spikes four-cornered, bractes roundish very large.
5. *Origanum creticum.* *Cretan Marjoram.*
Lin. spec. 823. *Reich.* 3. 77. *mat. med.* 151. *Hall. helv. n.* 234. *Gron. orient.* 75. *Amoen. acad.* 1. 160. *Lour. cochinch.* 373.
O. creticum. *Bauh. pin.* 223. *Bauh. hist.* 3. 238. *Raii hist.* 540. *Mor. hist.* 3. 260.
- β. O. folio subrotundo. *Bauh. pin.* 223.
O. monspeliense pulchrum. *Camer. epit.* 468. *Bauh. hist.* *Raii hist.* 540.
Spikes aggregate long prismatic straight, bractes membranaceous twice as long as the calyx.
6. *Origanum smyrnæum.* *Smyrna Marjoram.*
Lin. spec. 823. *Reich.* 3. 77. *hort. cliff.* 304. *Wheeleri.* *Raii hist.* 540.
Majorana cretica, Origanum foliis, villosa, Satureiæ odore, corymbis majoribus albis. Tournef. cor. 13. *Leaves ovate acute serrate, spikes heaped umbellately fastigate.*
7. *Origanum heracleoticum.* *Winter Sweet Marjoram.*
Lin. spec. 823. *Reich.* 3. 77. *Lour. cochinch.* 373.
O. heracl. *Cunila gallinacea* *Plinii.* *Bauh. pin.* 223.
O. heracl. *Ger.* 541. 1. *emac.* 666. 1. *Raii hist.* 539.—*verius.* *Park. theat.* 15. 1.
Orega, O. heracl. Cunila. Lob. ic. 492.
Spikes long peduncled aggregate, bractes the length of the calyxes.
8. *Origanum vulgare.* *Common Marjoram.*
Lin. spec. 824. *synt.* 541. *Reich.* 3. 78. *hort. cliff.* 305. *fl. succ. n.* 534. *mat. med.* 151. *Woodv. med. bot.* 451. *t.* 164. *Huds. angl.* 262. *Wither. arr. ed.* 3. 535. *Curt. lond.* 5. 39. 338. *Lightf. scot.* 317. *Relb. cant. n.* 445. *Sibth. oxon. n.* 535. *Hall. helv. n.* 233. *Gmel. sib.* 3. 244. *Neck. gallob.* 259. *Crantz. austr.* 282. *Scop. carn. n.* 740. *Pollich pal. n.* 573. *Fl. dan. t.* 638. *Allion. pedem. n.* 82. *Villars dauph.* 2. 395. *Krock. files. n.* 952. *Ludw. ect. t.* 90. *Kniph. cent. 4. n.* 59. *Sabb. hort.* 3. *t.* 75. *Regn. bot. Gron. virg.* 65.
O. sylvestre. *Bauh. pin.* 223. *Blackw. t.* 280. *Dod. pempt.* 285. 2.
O. sylv. f. vulgare. *Fuchs. hist.* 552. *Riv. mon.* 60. *f.* 1.
O. vulgare. *Matth.* 701. *Trag.* 36. 1. *Lonic.* 1. 118. 2. *Mor. hist. f.* 11. *t.* 3. *f.* 12.
O. vulg. spontaneum. *Bauh. hist.* 3. 236. *Raii hist.* 539. *syn.* 236. *Petiv. brit. t.* 34. *f.* 8.
O. anglicum. *Ger.* 541. 4. *emac.* 666. 4.
Majorana sylvestris. Park. theat. 12. 6.
β. O. humile. *Mill. dict. n.* 4.
O. fyl. humile. *Bauh. pin.* 223. *prodr.* 109.
γ. O. latifolium. *Mill. dict. n.* 3.
O. humilius latifolium glabrum. *Tournef. inst.* 199.
δ. O. orientale. *Mill. dict. n.* 5.
O. orient. *Prunellæ folio glauco, flore purpureo. Boerb. ind.* 1. 179.
Spikes roundish paniced conglomerate, bractes longer than the calyx ovate.
9. *Origanum Onites.* *Pot Marjoram.*
Lin. spec. 824. *Reich.* 3. 78.
O. lignosum syracusanum perenne, umbella amplissima brevi, lato & nervoso folio. *Bocc. mus.* 2. 45. *t.* 38.
Spikes oblong aggregate hirsute, leaves cordate tomentose.
- [10. *Origanum syriacum.* *Syrian Marjoram.*
Lin. spec. 824. *Reich.* 3. 78. *Lour. cochinch.* 374.
Majorana syriaca vel cretica. Bauh. pin. 224. *Raii hist.* 538.
Marum syriacum. Lob. ic. 499.
Spikes long ternate peduncled villose, leaves ovate villose.
11. *Origanum Maru.*
Lin. spec. 825. *Reich.* 3. 79.
Majorana cretica, Origanum folio, villosa Satureiæ odore, flore purpurascens. Tournef. cor. 13.
Maru creticum. Alp. exot. 289. *t.* 288.
Spikes hirsute, leaves ovate tomentose sessile.]

12. *Origanum Majorana.* *Sweet or knotted Marjoram.*
Lin. spec. 825. *Reich.* 3. 79. *hort. cliff.* 304. *ups.* 161. *mat. med.* 298. *Woodv. med. bot.* 453. *t.* 165. *Blackw. t.* 319. *Regn. bot. Lour. cochinch.* 374.
Majorana vulgaris. Bauh. pin. 224. *Raii hist.* 538.
M. vulg. annua. *Mor. hist. f.* 11. *t.* 3. *f.* 1.
M. vulg. æstiva. *Park. theat.* 11. 1.
M. major. *Ger.* 538. 1. *emac.* 664. 1.
M. majori folio, ex semine nata. *Bauh. hist.*
Amaracus vulgarior. Lob. ic. 498.
β. M. tenuifolia. *Bauh. pin.* 224. *Ger.* 539. 3. *emac.* 664. 3. *Park. theat.* 11. *Raii hist.* 538.
M. tenuior & lignosior. *Bauh. hist.*
M. hortensis odorata perennis. *Mor. hist.* 3. 359.
Leaves oval blunt, spikes roundish compact pubescent.

DESCRIPTIONS, &c.

1. This is a perennial plant with a low shrubby stalk; seldom rising more than a foot and half high, dividing into branches. Leaves roundish; thick, woolly, hollowed like a ladle; they are like those of common Marjoram; but of a thicker substance, and have much the same scent. The flowers are produced in roundish spikes, closely joined together at the top of the stalks; and at the end of the small side branches; they are of a pale flesh colour, peeping out of their scaly coverings.

[Hasselquist mentions that it is cultivated in the gardens at Cairo on account of its smell, which is stronger than that of Dittany of Crete, aromatic, and comforting the head; and that the Arabians call it Zatarhendi; that is *Origanum indicum*.

Native of Egypt. Cultivated in 1731, by Mr. Miller. It flowers from June to August².]

2. This also is a perennial plant. Stalks hairy, about nine inches high, of a purplish colour, sending out small branches from the sides by pairs. Leaves round, thick, woolly, very white. The whole plant has a piercing aromatic scent, and biting taste. The flowers are collected in loose leafy heads of a purple colour, and nodding; they are small, and the stamens stand out beyond the corolla.

[The fabulous qualities attributed to Dictamnus may be seen in Virgil's 12th *Æneid*, and in Cicero de *Natura Deorum*, 2. 50.

Native of the island of Candia; and, according to Loureiro, of China near Canton. It flowers from June to August. Cultivated in 1568, by Mr. Riche, as appears from Turner's *herbal*².]

3. This has a perennial root, but an annual stalk. The root is composed of many slender woody fibres. The leaves are oval, smooth, and of a grayish colour; the stalks are slender, of a purplish colour, smooth, near two feet high, sending out slender branches opposite, terminated by slender oblong spikes of small purplish flowers, peeping out of their scaly covers. The stamens are extended beyond the corolla to a considerable length. The leaves on the lower part of the stalk are almost as large as those of the common sort, but those on the upper part of the stalk and branches are very small, and sit close to the stalk.

It grows naturally in the Levant, and was discovered by Sir George Wheeler on mount Sipylus; he sent the seeds to the Oxford garden: [where it was cultivated in 1699, by Mr. Jacob Bobart. It flowers from June to September².]

4. Root sometimes as large as the thumb, woody, about a foot long, brown without, reddish within, with twisted fibres. Stems eight or nine inches high, glaucous, simple or branched. Leaves round or oval, nine or ten lines in length, not unlike those of n. 2. some of them thick, fleshy and smooth, others thinner and slightly villose, some are insipid, others sharp, some odoriferous, others without scent; none of these leaves diminish, except towards the top of the branches and stems, which commonly divide into two spikes, or are terminated by one only; each spike is fifteen or twenty lines long, and five or six wide, formed by four rows of scales, of a pale purple colour, oval pointed, four or five lines long; sometimes they are pale green with

² Hort. kew.² Idem.² Idem.

purple borders: the flowers expand successively from the axils of these, nine or ten lines long: the tube is half a line in diameter, white, and spreads into two lips, the upper two lines and a half long, blunt and folded; the lower of the same size, rounded and divided into three blunt segments, terminated behind by a spur half a line in length. Stamens longer than the upper lip, but of the same colour: anthers twin. Calyx tubular, two lines and a half long, pale green; at the bottom of it two or three very small blackish seeds ripen, one of the embryos being always abortive. The seeds vegetated well in the Royal Garden at Paris, and the plant was not altered by culture^b.

Native of the island of Amorgos. Introduced in 1788 by the late John Sibthorp, M. D. It flowers in August^c.

Mr. Miller applies this name of Tournefort's to his twelfth sort, which he says] is undoubtedly a variety produced from the intermixing the farina of the Cretan Dittany with that of Mount Sipylus, for the plants in the garden belonging to the Company of Apothecaries were accidentally produced from the seeds of one species, where both sorts stood near each other in the botanic garden of John Browning, Esq. Master in Chancery, at Chelsea; the seeds were dropped from the plant into the border between the two sorts, so that it is uncertain from which species they came; but as the stalks and heads of flowers bear a greater resemblance to the Dittany of Mount Sipylus, we may suppose it arose from the seeds of that, impregnated by the farina of the Cretan Dittany, which grew near it; for the under leaves of this are round, of a thick texture and woolly, so nearly resembling those of the Cretan Dittany as not to be distinguished from it, but the stalks rise full as high as those of the Dittany of Sipylus, but branch out more their whole length; they are of a purple colour and hairy: the lower leaves on the stalk are much larger than those of Mount Sipylus and are hairy, approaching to those of the Cretan Dittany, but not so thick or woolly; the upper leaves are smooth, and approach to those of the other sort, but are larger, as are also the spikes of flowers, and the scaly leaves which cover the flowers are larger and of a deeper purple colour.

Mr. Miller had also dried samples of another variety, which arose from seeds in the Leyden garden: these seeds were sent from Paris, by the name which Tournefort gave to that which he found in the Levant. The leaves of this are as large as those of the Dittany of Crete, but not so thick or woolly; the stalks rise more like those of the Dittany of Mount Sipylus, but branch out wider at the top; the flowers grow in closer clusters, and do not hang downward: they are small, shaped like those of the former sort, and flower at the same time.

By the character which Linneus gave to the Cretan Dittany, it may be supposed he had not seen the true sort, for it better suits the variety. All the leaves of the true Dittany are very thick and woolly, even those which are situated immediately below the flowers, whereas the lower leaves only are so in his character.

[Mr. Miller's hybridum seems to be only a variety of the second sort, and by no means the same with this of Tournefort.]

5. This is the *Origanum* of Crete, directed to be used in medicine; but there has been great confusion among botanists in distinguishing the species. It rises a foot and half high. The leaves are ovate and hoary, with a strong aromatic scent. The flowers grow in long, erect, bunched spikes at the top of the stalks, having membranaceous bractes between, twice the length of the calyx. The flowers are small and white, like those of common *Origanum*. It flowers in July, but seldom perfects seeds in England.

[According to Gronovius, the leaves are ovate, acute and smooth, with the veins rugged; according to Linneus, in the *Amoenitates*, they are ovate, blunt, rugged and quite entire; the spikes clustered, compact and smooth.

^b Tournef. voyage.

^c Hort. kew.

Haller says that he compared the dry plant with the specimen in Caspar Bauhin's herbarium; that it agrees with it in the spikes, which are long, cylindric, and have bractes such as are in the common sort, ovate-lanceolate, but heaped and imbricate, to twenty-four in a single spike. In the Swiss specimen the leaves are more acuminate; in the Cretan specimen they are a little rounder. The Cretan may be a variety of the Swiss with larger bractes, and the flowers are sometimes larger.

Native of the South of Europe, about Basil, and in Palestine on mount Libanus, the mount of Olives, and between Rama and Joppa. China near Canton, according to Loureiro.

6. This is a perennial plant, with several rod-like, woody, long stems, putting forth branchlets at intervals. Leaves smaller than those of Cretan Marjoram, less hoary, and not so round, but rather oblong, acuminate, nerved, and somewhat lanuginose. Scaly heads terminate the stems and branches. It exhales a very fragrant smell.

Found by Sir George Wheeler abundantly at Smyrna, on the mount upon which the citadel is built^d. Linneus adds Crete, and Tournefort gives it the epithet *cretica*.]

7. Root perennial; from which arise many branching stalks a foot and half high, hairy, and inclining to a purplish colour. Leaves ovate, obtuse, hairy, resembling greatly those of Sweet Marjoram, on short foot-stalks. Flowers in spikes about two inches long, several arising together from the divisions of the stalk. Flowers small, white, peeping out of their scaly covers.

[Linneus remarks, that it has the habit of Common Marjoram, but that the spikes are a finger's length, loosely imbricate. It differs from *O. creticum*, in having the bractes longer than the calyxes, and the spikes peduncled.]

It grows naturally in Greece and the warm parts of Europe. It is now commonly known by the name of Winter Sweet Marjoram, but was formerly called Pot Marjoram. It is chiefly cultivated for nasegays, because it comes sooner to flower than Sweet Marjoram. There is a variety with variegated leaves.

[Mr. Miller cultivated it in 1731^e. According to Loureiro, it is a native of China and Cochinchina.

8. Root perennial, creeping, horizontal, brown, tufted with numerous fibres. Stem a foot, eighteen inches or near two feet in height, upright, somewhat woody, a little downy, and often tinged with purple: branches opposite, upright, more tender than the stalk, in other respects similar. Leaves ovate, pointed, finely and thinly toothed, above nearly smooth, beneath downy, dotted on both sides, the edge finely ciliate, spreading. Petioles downy. The axils of the leaves, in the cultivated plant, bear numerous smaller leaves. Bractes ovate, ovate-lanceolate or lanceolate, sessile, concave, entire, more deeply coloured than the corolla, appearing downy when magnified^f. Calyx nearly equal, the mouth closed with bristly hairs, which at first lie parallel to the sides, but when the corolla falls off they stand out closing up to the mouth; without beset with short fine hairs, and minute white shining globules. Corolla pale red, hairy, the middle segment rather longer than the rest. Stamens as long as, or longer than the corolla, but in some specimens shorter, and then the anthers appear to be destitute of pollen^g.

Wild Marjoram is an aromatic and ornamental plant, growing wild in thickets and hedges, chiefly in a calcareous soil; and flowering from the end of June through August.

The dried leaves, used instead of tea, are exceedingly grateful; they are also used in fomentations: the essential oil is so acrid, that it may be considered as a caustic, and is much used with that intention by farriers; a little cotton moistened with it, and put into the hollow of an aching tooth, frequently relieves the pain. The country people use the tops to dye woollen cloth purple^h. It also dyes linnen of a reddish brown

^d Ray.

^e Hort. kew.

^f Curtis.

^g Withering.

^h Idem.

colour; for this purpose the linnen is first macerated in alum water and dried; it is then soaked for two days in a decoction of the bark of the crab-tree; it is wrung out of this, boiled in a ley of ashes, and then suffered to boil in the decoction¹. According to the Swedish experiments, goats and sheep eat it; horses are not fond of it; and kine refuse it.

The leaves vary in shape from ovate to ovate-lanceolate and ovate-cordate.] There is a variety with white flowers and light-green stalks; and another with variegated leaves. It is sometimes cultivated in gardens, and is by some called Pot Marjoram; being commonly used in soups.

[Our Wild Marjoram is found not only in most parts of Europe, but also in the rocky parts of Canada, where the bractes are of a very high colour^k. I have placed three of Mr. Miller's species as varieties under this.

9. Pot Marjoram has the habit of Sweet Marjoram (*O. Majorana*), but it is woody. Stems with long spreading hairs. Leaves small, subsessile, acute, thinly ferrate, tomentose on both sides; with rudiments of branches from the axils. Spikes heaped, as in *O. Majorana*, but oblong, by threes on each peduncle; the middle one sessile, villose: flowers white^l.]

Stems perennial, woody, a foot and half high, dividing into many small branches. Leaves a little larger than those of Marjoram and woolly. Flowers small, white, just emerging out of their scaly covers. They appear in July, but seldom perfect seeds in England.

Native of Sicily, about Syracuse. [Cultivated in 1759, by Mr. Miller^m. Certainly not an English plant. We do not know what Mr. Hudson took for it.

10. This has the habit of *O. Majorana*. Leaves roundish-ovate, acute, with wandering hairs scattered over them. Racemes from the axils. Corymb terminating, brachiate with longer branches. Spikes generally every where three, terminating, long, erect, four-cornered, villose.

Place of growth uncertainⁿ. According to Loureiro it grows wild in Cochinchina.

11. This also has the appearance of the next species, but is more rigid. Leaves without any manifest petioles, very thick, tomentose, ovate not obovate, white. Stem purple, with a few villose hairs scattered over it. Heads very hirsute, triternate; the last sessile, terminating the stem and branches.—Native of Crete^o.

12. Root biennial, brown, with many long tough fibres. Stems numerous, woody, branched, a foot and half high. Leaves downy, entire, pale green, petioled. Flowers small, white, appearing successively between the bracteal leaves, which are numerous, and form roundish compact terminating spikes. Calyx tubular, divided at the brim into five pointed segments. Tube of the corolla funnel-shaped, divided at the border into two lips, the upper erect and roundish, the under cut into three pointed segments^p.]

It begins to flower in July, at which time it is cut for use, and is then called Knotted Marjoram, from the flowers being collected into roundish close heads like knots.

Sweet Marjoram was cultivated here in 1597, as appears from Gerarde's Herbal^q. Loureiro says it grows in China and Cochinchina, but is rare, and perhaps introduced from abroad.

It is thought to be the *Σαμψυχον* or *Amaracus* of the ancients. The place of which it is a native has not been ascertained.

The leaves and tops have a pleasant smell, and a moderately warm aromatic bitterish taste. They yield a considerable quantity of essential oil, amounting, according to Beaumé, to fifteen ounces from one hundred and fifty pounds of the recent plant. This oil, on being long kept, assumes a solid form. The medicinal qualities of this plant agree with those of Wild Marjoram; but being much more fragrant, it is deemed more cephalic, and better adapted to those complaints known by the name of nervous, and may be therefore employed with the same intentions as Lavender. It is

¹ Haller.

^k Linn.

^l Idem.

^m Hort. kew.

ⁿ Linn.

^o Idem.

^p Woodville.

^q Hort. kew.

directed in the composition of *Pulvis sternutatorius* in the London and Edinburgh Pharmacopœias, with a view to the agreeable odour which it gives to the *Asarabacca*, rather than to its errhine power, which is very inconsiderable: In its recent state we are told that it has been successfully applied to schirrous tumours of the breasts^r.

Our English name is evidently corrupted from *Majorana*; by our old herbarists it is written *Marjerome*; and Gerarde says, of the best sort it was called *Majorane*.]

PROPAGATION AND CULTURE.

1. It is increased by slips or cuttings, planted in a border of good earth in any of the summer months, shaded and duly watered. Plant them in small pots filled with light kitchen-garden mould, when they are well rooted, and place them in the shade till they have taken new root; then remove them to an open situation till the end of October, when they must be placed under shelter. Under a hot-bed frame, where they may be protected from hard frost, and have as much free air as possible in mild weather, they will thrive better than if more tenderly treated.

2. Dittany of Crete is increased in the same manner, in pots or a shady border, covering the slips or cuttings close with a bell-glass or hand-glass, and now and then refreshing them with water, but not too much. The following spring some of the plants may be shaken out of the pots, and planted in a warm border, in a dry soil, where they will live through common winters; but being liable to be killed by severe frost, it will be proper to keep a few plants in pots, to be sheltered in winter.

3, 4. May be propagated and treated in the same manner.

5, 6. Are increased by parting the roots in autumn, but must have a dry soil and a warm situation.

7. Winter Sweet Marjoram is hardy enough to thrive in the open air in England; in a dry soil, and is generally propagated by parting the roots in autumn.

8. Common Marjoram, with all its varieties, is propagated in the same manner; or it will rise plentifully from scattered seeds.

9, 10, 11. May be increased by cuttings or slips.

12. Sweet or knotted Marjoram is propagated by seeds, which are generally imported from the South of France or from Italy, for they seldom ripen in England. Sow them on a warm border towards the end of March; and when the plants are about an inch high, transplant them into beds of rich earth, at six inches distance every way; watering them duly till they have taken new root: after which they require only to be kept clean from weeds.

[*ORIGANUM*. See *Clinopodium*, and *Monarda*.

ORLEANA. See *Bixa*.

Ornithogali facie. See *Hypoxis*.

Ornithogalo affinis. See *Claytonia* and *Ornithogalum*.

ORNITHOGALUM (of Pliny. *Ορνιθογαλον* of Dioscorides. *Ορνιθου γαλα*, *Avis lac*. From the white colour of the flowers (or roots) like the feathers or beaks of some fowls.)

Lin. gen. n. 418. *Reich. n.* 451. *Schreb. n.* 566.

Tournef. t. 203. *Juss.* 53. *Gærtn. t.* 17. *Stellaris Dill. gen.* 110.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronaria*. *Asphodeli* Juss.

GENERIC CHARACTER.

CAL. none.

COR. *Petals* six, lanceolate, upright below the middle; above it spreading, permanent, losing their colour.

STAM. *Filaments* six, upright, alternately widening at the base, shorter than the corolla. *Anthers* simple.

PIST. *Germ* angular. *Style* awl-shaped, permanent. *Stigma* blunt.

PER. *Capsule* roundish, angular, three-celled, three-valved.

SEEDS many, roundish.

Obs. *Filaments* in some flat, upright, the alternate ones trifid at top, the middle segment supporting the anther; in others alternate simple.

^r Woodville.

ESSENTIAL CHARACTER.

Cor. six-petalled, upright, permanent, spreading above the middle. Filaments alternate widening at the base.

SPECIES.

* With all the stamens awl-shaped.

- [1. *Ornithogalum uniflorum*. One-flowered Star of Bethlehem.

Lin. syst. 327. Reich. 2. 52. mant. 62. Laxm. nov. act. petrop. 18. t. 6. f. 3.

Scape two-leaved, peduncle one-flowered.

2. *Ornithogalum niveum*. Snowy Star of Bethlehem.

Ait. hort. kew. 1. 440.

Raceme few-flowered, petals lanceolate, leaves filiform channelled.]

3. *Ornithogalum umbellatum*. Umbelled Star of Bethlehem.

Lin. spec. 441. syst. 328. Reich. 2. 56. hort. cliff. 124. upf. 84. Ait. hort. kew. 440. Hudf. angl. 143.

Wither. arr. ed. 3. 337. Engl. bot. 130.

Relb. cant. n. 1070. suppl. 2. Sibth. oxon. n. 335.

Hall. belv. n. 1215. Pollich pal. n. 333. Gron.

orient. n. 111. Scop. carn. n. 403. Jacqu. austr.

4. 22. t. 343. Allion. pedem. n. 1901. Villars

dauph. 2. 272. Krock. files. n. 525.

O. umb. medium angustifolium. Baub. pin. 70. Raii syn. 372.

O. vulgare. Ger. 132. 1. emac. 165. 1. Park. par. 136.

O. vulg. & verius. Baub. hist. 2. 630. Raii hist. 1153.

Bulbus *Leucanthemus minor* five *Ornithogalum*. Dod. pempt. 221. 1.

O. candidum vulg. Lob. obs. 72. 2.

O. spicatum. Swert. 1. 57. 4.

Eliocarnos. Renealm. spec. 88. t. 87.

Corymb few-flowered, peduncles longer than the bractes, the outer taller than the central ones.

4. *Ornithogalum luteum*. Yellow star of Bethlehem.

Lin. spec. 439. syst. 327. Reich. 2. 53. fl. suec.

n. 285. hort. cliff. 124. Hudf. angl. 143.

Wither. arr. ed. 3. 336. Engl. bot. 21. Lightf.

scot. 180. Sibth. oxon. n. 334. Hall. belv. n.

1213. Gmel. fib. 1. 46. Neck. gallob. 162.

Scop. carn. n. 410. Pollich pal. n. 332. Fl. dan.

t. 378. Allion. pedem. n. 1898. Villars dauph.

2. 268. Krock. files. n. 521. Baub. pin. 71.

Park. par. 140. t. 137. 7. Lob. obs. 72. 3. ic.

149. Raii hist. 1153. syn. 372. Petiv. brit. t.

66. f. 12. Swert. 1. 57. 3. Mor. hist. f. 4.

t. 13. f. 12.

O. lut. f. *Cepe agraria*. Ger. 132. 2. emac. 165. 2.

Bulbus *Trag.* 737.—*silvestris* Fuchs. 169. Dod. pempt. 222.

Clus. hist. 1. 188. 2. Tabern. 633. Lonic. 193. 1.—flore luteo, f. O. luteum. Baub.

hist. 2. 622. 1.

Pyrrhochiton. Renealm. spec. 91. t. 90.

Scape angular two-leaved, peduncles umbelled simple.

5. *Ornithogalum minimum*. Small Star of Bethlehem.

Lin. spec. 440. syst. 327. Reich. 2. 53. Fl. suec.

n. 286. Gunn. norv. n. 1114. Gouan. monsp.

309. illustr. 26. Leers herb. n. 254. Villars

dauph. 2. 269. Krock. files. n. 522. Fl. dan. t.

612. Kniph. cent. 6. n. 66. Hall. belv. n. 1214.

(Phalangium.)

O. pannonicum minus flore luteo. Clus. pann. 190. 191. hist. 189. 1.

O. luteum minus. Baub. pin. 71.

O. pallido flore. Baub. hist. 2. 624.

O. luteum. Tabern. 633.

Hypoxis. Renealm. spec. 92.

β. O. bulbiferum minimum. Col. ecphr. 323. 324. Rudb. elys. 139. Mor. hist. f. 4. t. 13. f. 13.

Scape angular two-leaved, peduncles umbelled branched.

6. *Ornithogalum pyrenaicum*. Pyrenean Star of Bethlehem.

Hudf. angl. 143. Wither. arr. ed. 3. 337. Jacqu.

austr. 2. 2. t. 103. Hall. belv. n. 1210. (Pha-

langium.)

O. angustifolium majus, floribus ex albo virefcentibus. Baub. pin. 70. Raii hist. 1151. syn. 373. Mor.

hist. f. 4. t. 13. f. 5.

O. majus. Clus. hist. 1. 187.

O. pyrenaicum. Clus. cur. 21.

Asphodelus bulbosus. Ger. 89. emac. 97.—Galen, f.

O. majus flore subvirescente. Park. parad. 136. t. 137. 5.—*Dodonæi* (209. 1.) f. O. spicatum flore

virente. Baub. hist. 2. 627. 1.

Raceme very long, petals linear blunt, filaments lanceolate equal, style the length of the stamens.

- [7. *Ornithogalum stachyodes*. Close-spiked Star of Bethlehem.

Ait. hort. kew. 1. 441.

O. pyrenaicum. Lin. spec. 440. Reich. 2. 54.

Gouan. fl. monsp. 309. illustr. 26. Scop. carn. n.

409. Gron. orient. n. 110. Villars dauph. 2. 271.

Krock. files. n. 523.

Stachyoides. Renealm. spec. 93. t. 90.

Raceme very long, petals lanceolate-oblong, filaments broad-lanceolate, alternate ones shorter by half.

8. *Ornithogalum narbonense*.

Lin. spec. 440. syst. 327. Reich. 2. 54. amoen. 4.

312. Pall. it. 3. 654. Gouan. illustr. 26.

Dod. pempt. 222. Allion. pedem. n. 1900.

O. majus spicatum, flore albo. Baub. pin. 70. Park. par. 135. 2. t. 137. 3. Raii hist. 1151.

O. spicatum. Ger. emac. 168. 8.

Raceme oblong, filaments lanceolate membranaceous, peduncles and flowers spreading.]

9. *Ornithogalum latifolium*. Broad-leaved Star of Bethlehem.

Lin. spec. 440. syst. 327. Reich. 2. 55.

O. latifolium & maximum. Baub. pin. 70.

O. max. album. Park. par. 135. 1. t. 137. 2.

O. max. floribus prorsus niveis. Clus. Baub. hist. Raii hist. 1152.

O. vel *Lilium alexandrinum*, flor. albis innumerabilibus. Swert. floril. 58.

Raceme very long, leaves lanceolate-ensiform.

- [10. *Ornithogalum longibracteatum*.

Lin. syst. 327. Jacqu. hort. 1. t. 29.

Raceme very long, bractes almost double the length of the peduncles, leaves lanceolate-ensiform.

11. *Ornithogalum comosum*.

Lin. spec. 440. Reich. 2. 55. amoen. 4. 312.

O. spicatum f. *comosum*, flore lacteo. Baub. pin. 70.

Rudb. elys. 2. 135. f. 1.

O. lactei species major. Best. exst.

Raceme very short, bractes lanceolate the length of the flowers, petals blunt.]

12. *Ornithogalum pyramidale*. Pyramidal Star of Bethlehem.

Lin. spec. 441. Reich. 2. 55. Gärtn. fruct. 1. 65.

O. angustifolium spicatum maximum. Baub. pin. 70.

Rudb. elys. 2. 134. f. 4.

O. lacteum maximum. Best. exst. vern. 5. t. 14. f. 2.

Raceme conical, flowers numerous ascending, petals elliptic-oblong flat, stamens lanceolate equal, style very short.

- [13. *Ornithogalum unifolium*. One-leaved Star of Bethlehem.

Retz. obs. 2. 17. n. 46.

Leaf radical solitary fleshy oblong ciliate, scape naked, raceme short.]

** With the alternate stamens emarginate.

14. *Ornithogalum arabicum*. Great-flowered Star of Bethlehem.

Lin. spec. 441. syst. 327. Reich. 2. 55. Clus.

hist. 1. 186. Best. exst. vern. 5. t. 12. f. 1.

Park. parad. 134. t. 137. f. 1. Raii hist. 1152.

Mor. hist. f. 4. t. 13. f. 1.

O. majus arabicum. Ger. emac. 167. 7.

O. umbellatum maximum. Baub. pin. 69. Rudb. elys. 2. 130. f. 1.

Lilium alexandrinum, f. O. magnum syriacum. Baub. hist.

Melenomphale. Renealm. spec. 89. t. 90.

Corymb many-flowered, filaments awl-shaped, corolla broad bell-shaped, outer petals obsolete three-toothed.

15. *Ornithogalum thyrsoides*. Spear-leaved Star of Bethlehem.

Lin. syst. 328. Ait. hort. kew. 1. 442.

α. O. dubium. Houtt. nat. hist. 12. 309. t. 82. f. 3.

With yellow flowers, and bractes shorter than the peduncles.

- β. *O. thyrsoides*. *Jacqu. hort.* 3. 17. t. 23.
O. racemo conico laxo, pedunculis longissimis, floribus erectis. Mill. fig. 128. t. 192.
 With white flowers, and bractes the length of the peduncle.
 Corymbs many-flowered raceme-form, alternate filaments forked, leaves lanceolate.
- [16. *Ornithogalum caudatum*. *Long-spiked Star of Bethlehem.*
Ait. hort. kew. 1. 442.
 Raceme very long, leaves lanceolate-linear, corollas spreading, stamens widened, the alternate ones wedge-form.]
17. *Ornithogalum nutans*. *Neapolitan Star of Bethlehem.*
Lin. spec. 441. *syft.* 328. *Reich.* 2. 56. *hort. cliff.* 124. *upf.* 84. *Jacqu. austr.* 4. 1. t. 301. *Hall. belv. n.* 1216. *Gärtn. fruct.* 1. 66. *Curt. magaz.* 269.
O. exoticum magno flore minori innato. Baub. pin. 70. *Rudb. elyf.* 1. 137. f. 12.
O. neapolitanum. Clus. app. 2. p. 9. t. 9. *Ger. emac.* 168. f. 9. *Park. par.* 138. t. 137. 8. *Baub. hist. Raii hist.* 1152.
 Flowers directed one way pendulous, nectary stameneous bell-shaped.
18. *Ornithogalum capense*.
Lin. spec. 441. *Reich.* 2. 56. *Thunb. prodr. cap.* 62.
O. africanum plantaginis rosæ folio radice tuberosa. Comm. hort. 2. 175. t. 88.
Ornithogalo affinis radice tuberosa, cyclaminis folio, flore pallide cæruleo. Breyn. cent. t. 41. *Rudb. elyf.* 1. 138. f. 14.
 Leaves cordate petioled.
- *** *New Species.*
- [19. *Ornithogalum crenulatum*.
Lin. syft. 328. *suppl.* 198. *Thunb. prodr. cap.* 62.
 Leaves oblong blunt ciliate, raceme upright.]
20. *Ornithogalum rupestre*.
Lin. syft. 328. *suppl.* 199. *Thunb. prodr. cap.* 61.
 Leaves filiform fleshy, flowers reflex.
21. *Ornithogalum ciliatum*.
Lin. syft. 328. *suppl.* 199. *Thunb. prodr. cap.* 62.
 Leaves ovate acute ciliate, raceme upright.]
22. *Ornithogalum altissimum*.
Lin. syft. 328. *suppl.* 199. *Thunb. prodr. cap.* 62.
 Leaves oblong-elliptic, raceme very long, bractes bristle-shaped.
23. *Ornithogalum pilosum*.
Lin. syft. 328. *suppl.* 199. *Thunb. prodr. cap.* 61.
 Leaves linear-ensiform ciliate, flowers racemed, peduncles curved inwards.
24. *Ornithogalum bulbiferum*.
Lin. syft. 328. *suppl.* 199. *Pallas it.* 2. 736. t. 9.
 Bulbs axillary, stem many-leaved, one-flowered.
25. *Ornithogalum circinatum*.
Lin. syft. 328. *suppl.* 199.
O. reticulatum. Pallas it. 3. 727. t. D. f. 2.
 Hoary with hairs, leaves linear recurved channelled, root-leaf solitary, stem-leaves three, stem three or four-flowered.
26. *Ornithogalum japonicum*.
Lin. syft. 328. *Thunb. jap.* 137.
 Raceme spiked cylindric very long, scapes striated.
27. *Ornithogalum finense*.
Lour. cochinch. 206.
 Scape round grooved, spike simple long upright.
28. *Ornithogalum graminifolium*.
Thunb. prodr. cap. 61.
 Leaves linear entire smooth, raceme spiked erect.
29. *Ornithogalum alburoides*.
Thunb. prodr. cap. 62.
 Leaves linear channelled smooth, raceme upright.
30. *Ornithogalum maculatum*.
Thunb. prodr. cap. 62.
 Leaves lanceolate, flowers directed one way, the three outer petals shorter dusky-spotted.
31. *Ornithogalum ovatum*.
Thunb. prodr. cap. 62.
 Leaves ovate entire smooth, raceme ovate.
32. *Ornithogalum nanum*.
Thunb. prodr. cap. 62.

- Fritillaria nana. Lin. syft.* 325. *Reich.* 2. 46. *Burm. prodr.* 9.
 Leaves obovate, scape club-shaped, flowers spiked aggregate fleshy.
33. *Ornithogalum undulatum*.
Thunb. prodr. cap. 62.
 Leaves ensiform waved, scape subcylindrical, raceme comose short.
34. *Ornithogalum punctatum*.
Thunb. prodr. cap. 62.
 Leaves ensiform channelled, scape cylindrical, raceme very long comose, flowers remote.
35. *Ornithogalum aureum. Golden Star of Bethlehem.*
Curt. magaz. 190.
 Leaves ovate-lanceolate edged with white flowers racemed clustered, filaments placed on an emarginate nectary.

DESCRIPTIONS, &c.

1. The plant altogether resembles *O. luteum*, but the peduncle is undivided and one-flowered. Flower half the size of *Tulipa sylvestris*, but three times as big as that of *O. luteum*. Petals lanceolate, bluntish, yellow, green underneath. Filaments and anthers yellow, shorter than the petals. Germ oblong. Style the same length with the stamens. Stigmas three, blunt, all yellow. Leaves on the stem two, one above, both the length of the flower or the plant, double the breadth of *O. luteum*. Found in Siberia by Laxman[†]. Introduced in 1781, by Baron Claes Alstroemer[†].

2. Leaves smooth, scarcely a finger's length. Scape shorter than the leaves. Peduncles scarcely half an inch long. Bractes oblong, acuminate, very short. Petals four lines in length, white; the three outer with a green keel. Filaments shorter by half than the petals, snow white, alternately wider and narrower. Anthers pale yellow. Found by Maffon at the Cape of Good Hope, and introduced in 1744. It flowers here in august[†].

3. Bulb solid, having smaller bulbs joining to it. Root-leaves (sometimes five) soft, keeled, or convex on the outside and channelled within, with a white silvery streak, from one to two lines in width, and above a foot in length, linear, bright green. Scape upright, round, very smooth, a long span or a foot in height, terminating at top in alternate peduncles, very long and broad, all together forming a sort of corymb, resembling an irregular umbel, but not springing from the same point; the lower ones being longer the flowers are all nearly of the same height; they are one-flowered, and each has a white, membranaceous, lanceolate, very large bracte. Petals white, with a broad green streak along the under side; lanceolate, in two rows, three appearing to be a little larger, near an inch long, and four lines wide. Filaments lanceolate, flat, fleshy, every other broader; all simple, not three of them forked or emarginate, as described by Linneus, Haller, &c. Anthers pale yellow, two lines in length. Germ with six blunt angles. Stigma three-sided, white, blunt. Capsule ovate, blunt[†].

Mr. Woodward remarks that this species is very improperly called *umbellatum*, as the flowers are in a most evident spike (or rather corymb), whereas in *O. luteum* they actually grow in an umbel.

Native of the southern parts of Europe, Germany, France, Switzerland, Austria, Carniola, Italy; also of the Levant; in orchards, pastures, vineyards, and thickets. With us it is a doubtful native, as many of the bulbous plants are. In the closes about Streatham in Surry. Stillingfleet observed it in Norfolk, Relhan in Cambridgeshire, Sibthorp near Barton, and in Christ-Church meadows Oxfordshire, and Mr. Robson says it is plentiful in a field near Knareborough, Yorkshire. By Ledstone Hall near Leeds in the same county. It flowers in april and may.

4. Root-leaves generally single and longer than the stem, which is from four to six inches high. Stem-leaves sometimes two, three or four, one very large, the other smaller, all unequal; fringed with fine white hairs. From these arise a few fruit-stalks, (three to seven)

[†] Linn. mant.[†] Hort. kew.[†] Idem.[†] Pollich, Haller, Villars, Withering, Woodw. Mss.

each supporting one flower, and forming an umbel. Petals in two series, the inner greenish yellow, the outer entirely green^y.

Mr. Woodward has a specimen from the banks of the Tees, in which from two bracteal leaves, arises a single fruitstalk, supporting one flower. He remarks that this plant is well figured in *Flora Danica*, only much too large. *Gerarde emac.* 165. 2. and *Petiver*, 66. 12. both represent it well. *Morison's* is a very bad figure.

The roots of this species have been used for food in times of scarcity in Sweden: those of all the species are nutritious and wholesome^z.

Native of most parts of Europe, in woods, pastures, and moist sandy places; flowering in April. With us in the meadows near Godalmin in Surry. Woods near Ashford-mill, and Fauler in Oxfordshire. In several parts of the North, as in a meadow adjoining to the Copper-mills, Derby. Under Malham-cove; near Doncaster, Yorkshire; and Kendal, Westmoreland; woods on the banks of the Tees near Greta-bridge, and Bignal, Yorkshire. In Northumberland. Found in Scotland by Sibbald.

5. This resembles the preceding very much, but the petals are more acute^a. *Scopoli* and *Gmelin* think that they are only varieties; and *Haller* allows that there is a great similitude between them. The preceding has the flowers yellow and larger, on simple peduncles: the leaves are also wider and greener. This has smaller flowers, more numerous, greenish or ash-coloured yellow, on subdivided peduncles; leaves small, ash-coloured green^b.

Leers distinguishes it from the common yellow fort by the scape being roundish, the umbel shorter, the leaves of the involucre more and longer, the peduncles round somewhat branched pubescent, the petals six, eight or nine, of a golden shining yellow, spreading very much, sharper, the three outer blunter, pubescent underneath, the pistil subvillose commonly abortive, the bulbs or offsets heaped axillary bracted.

Krocker remarks, that it is readily known from the preceding by its growing in a tuft.

The Bishop of Drontheim, who doubts whether this and the *luteum* be distinct, says that it is only half the size, that the root-leaf is very narrow, and filiform at the base, not so flat as that of *O. luteum*. One or two of the peduncles branched, but this is sometimes the case in the *luteum*. The petals are acute, nay extremely so in both; but sometimes both have them blunt. The roots, though small, are esculent^c.]

Mr. Miller says that the bulbs are not larger than peas, that one or two narrow keel-shaped leaves about five inches long of a grayish colour arise from them, that the stalk is angular, about four inches high, having two narrow keel-shaped leaves just below the flowers, which are disposed in an umbel on branching peduncles, they are yellow within but of a purplish green on the outside; they appear in May, and are succeeded by small triangular capsules, filled with reddish uneven seeds.

[Native of Sweden, Norway, Denmark, Germany, France, Switzerland, Hungary, Italy, on the borders of fields.

6. Stem naked, a foot and half or two feet high. Flowers in a long spike on slender peduncles, each arising from a membranaceous half-embracing bracte, broad at the base, tapering to a point. Petals narrow, spreading, pale yellow within, green on the outside with whitish margins^d.]

Bulb pretty large, with several long keeled leaves coming out from it and spreading on the ground; among these comes out a single naked stalk about two feet long, sustaining a long loose spike of flowers of a yellowish green colour, on pretty long peduncles and spreading wide from the principal stalk; petals narrow, making little appearance. The flowers have an agreeable scent, and appear in May: when the seed-vessels are formed, the fruit-stalks become erect, and approach to the stalk. The seeds ripen in August.

^y Woodw. Mss. Robson in With.

^z Linn. succ. & With.

^a Linn.

^b Villars.

^c Fl. norv. 147.

^d Woodw. Mss.

[Native of some parts of Europe, in pastures. Between Bath and Bradford, near Little Ashley. Between Bath and Warminster, three miles from Bristol in the way to Bath, and near Queen Charlton in Somersetshire. Half a mile from Chichester southgate, in a meadow.

7. Height almost three feet. Bractes not embracing, very much tailed, the length of the pedicels. Petals very narrow, concave, wider at the tip, sulphur-coloured, with a green dorsal nerve. Stamens not narrower one than another, but only alternately shorter. Flowers from fifty to sixty.

It is easily known from *O. narbonense*, to which it is nearly allied, by the leaves being scarcely a palm in length and very narrow, whereas in the other they are a foot and half long, and an inch wide^e.

According to *Scopoli*, the principal difference consists in the flowering peduncles of this spreading very much, but the fruiting peduncles erect and pressed or parallel to the scape. Besides the root is easily pulled up; the leaves three or four, channelled, turning yellow and withering, whilst the plant is flowering; scape round, naked, two feet high, terminated by flowers in a long raceme and spreading; filaments alternately shortly bifid when examined by a glass. Capsule ovate, terminated by the style, and having five seeds in a cell.

Native of the South of Europe. Introduced about 1771. It flowers in April^f.

8. This is smaller than the preceding, with longer wider leaves. *Gerard* and others regard it as a variety of that.

Native of the South of France, Spain, Italy, Germany and Siberia.]

9. Bulb large. Root-leaves several broad sword-shaped, spreading on the ground. Stalk thick, strong, between two and three feet high, bearing a long spike of large white flowers, upon long pedicels.

[The leaves are a foot long, and more than two inches in breadth^g.

Ray, who cultivated it in his little garden at Cambridge, remarks that in the flowers which opened first the tips of the petals were green, whereas *Clusius* says they are all of a snowy whiteness without any green nerve; that the pedicels are two inches long; and that the leaves begin to wither before the flowers open, nay are quite dried up if the plant be late in flowering. *Clusius* counted above one hundred flowers on a spike.

Native of Egypt and Arabia. Cultivated here in 1629, as appears from *Parkinson*. It flowers in June^h.

10. This species was received by Professor *Jacquin* from the Cape of Good Hope, and is figured in the third volume of his *Hortus Vindobonensis*. The bulb is ovate, whitish, with closely compacted scales, and of the size of an egg. Leaves about a foot and half long, and an inch and half broad, glossy, acute, of a bright green, somewhat erect, thickish, several in number. Stem erect, cylindric, of the thickness of a finger, and two feet high, terminating in a conic, thick spike, which is gradually displayed, and at length changes into a lax, cylindric raceme of almost a foot long. The bractes, which are seated at the base of every footstalk, are lax, of a pale green, subulate; the lower ones nearly four inches long; the upper ones gradually shorter. Footstalks numerous, and about two inches long: flowers white, inodorous, with obtusish petals each streaked behind with a green stripe or line. Stamens shorter than the flower, widest at bottom. Anthers oblong, yellow, incumbent. Pistil green. This species may perhaps be the same with the *O. bracteatum* of *Thunberg* *prodr. plant. capens.* p. 62.

11. *Besler* describes this species as having a root consisting of two connate bulbs, with their fibres: leaves narrow, thick, porraceous, reflex. Stems asfurgent, cloathed on the upper part with numerous milk-white flowers, of a medicated odour. Stamens purple with yellow anthers.—See *Besl. Hort. Eyst.* 1. Ord. 5. *Plant. Vern.* t. 14. fig. 3.]

^e Gouan. illustr.

^f Hort. kew.

^g Linn.

^h Hort. kew.

12. This has a very large oval bulb, from which arise several long keeled leaves, of a dark green colour; in the middle of these springs up a naked stalk near three feet high, terminated by a long conical spike of white flowers, on pretty long pedicels.

[Capsule superior, ovate-pyramidal, membranaceous, thin, whitish, three-grooved, having the partition in the middle. Receptacle none, besides the central margin of the partitions, to which the seeds are fastened horizontally in a double row. Seeds six or eight in each cell, few of them ripening, ovate-globular, beaked with a tubercle at the navel, somewhat wrinkled, black¹.]

It grows naturally upon the hills in Spain and Portugal, but has been long cultivated in the English gardens by the name of Star of Bethlehem. It flowers in June, and the seeds ripen in August. [Cultivated by Mr. Müller in 1739^k.

13. Bulb ovate, the size of a hazel nut. Leaf upright, flat, broad-lanceolate, blunt, naked, ciliate, sheathing the scape at the base. Scape upright, round, longer than the leaf, terminated by a few-flowered raceme. Flowers peduncled, alternate. Bracte equalling the pedicel, embracing the base of it, awl-shaped. Corolla dirty yellow, spreading very wide; petals lanceolate, blunt. Filaments broad-lanceolate, quite entire, alternately wider and narrower. Anthers versatile, yellow. Germ roundish three-cornered, with the corners channelled. These corners are white from the base, and being placed as it were on the germ, terminate in a subulate-three-cornered style; the deep sinuses between these are green and melliferous. Stigma simple. Thunberg sent the bulbs from the Cape of Good Hope, and it flowered in the garden at Lund in 1776^l.

I do not find this plant in Thunberg's prodromus of Cape plants, published in 1794.

The *Ornithogalum unifolium* of Parkinson is the *Scilla unifolia* of Linneus.]

14. Bulb large. Many long keeled leaves arise from it, which embrace each other at the base; they are of a deep green and stand erect. [Bractes embracing, cordate. Stamens connate^m. Stem eighteen inches high, smooth, naked, slender. Flowers the size of those of Narcissus, on long pedicels; petals white, sinelling like Coriander seedⁿ.

Native of Arabia, according to Miller; of Alexandria in Egypt and the Cape of Good Hope, according to Linneus. Clusius says that in his time it was sent every year to Vienna from Constantinople.—In the Kew catalogue it is set down as a native of Egypt and Madeira; Parkinson says it was often sent him out of Turkey, and likewise out of Italy, and that he had two roots sent him out of Spain by Guillaume Boel, which, as he said, he gathered there.

It flowers here in March and April.] Miller says that he had never seen the flowers, though he tried many ways to procure them; that the bulbs are frequently brought over from Italy for sale, but that he had not heard of any having flowered. [Clusius does not say that he never saw but one root flower; but that the bulbs did not flower at Vienna unless they came fresh from Constantinople. Parkinson calls it the Great Starre-flower of Arabia; and Ray, Great Arabian Star-flower.

15. This species, variety α , is figured in Houttuyn. 12. t. 82. fig. 3. and Professor Jacquin has figured variety β on pl. 28 of his *Hortus Vindobonensis*. The whole plant is smooth. Leaves several, weak, long-lanceolate, sharp and thickish. Stem a foot high, of the thickness of a goose-quill, and glaucous. Raceme erect, nearly six inches long, thick, and elegantly thyrsiform. Peduncles an inch long. Bractes at their bases of the same length and lanceolate. Flowers snow-white, with a spot of brownish yellow at the base of each petal. Sometimes (but not always) each alternate petal is narrower than the rest. Germ blackish-green. Flowers slightly odorous.—Received by Jacquin from the Cape of Good Hope.

The variety α , figured in Houttuyn, seems chiefly to differ in being somewhat thinner or narrower in all its parts than the plant represented by Jacquin, and in having yellow flowers.

16. The whole plant is smooth. Leaves a foot and half long, an inch and half wide. Scape round, three feet high. Raceme a foot and half long: peduncles scattered, spreading during flowering, scarcely an inch in length. Bractes lanceolate, awl-shaped, the length of the peduncles, membranaceous. Petals half an inch long, white with a longitudinal green fillet. Filaments shorter than the petals, white. Style three-sided, white, the length of the stamens.

Native of the Cape of Good Hope. Found there by Mr. Fr. Maffon. Introduced in 1774. It flowers from February to August¹.]

17. This has a pretty large, compressed bulbous root, from which come out many long narrow keeled leaves, of a dark green colour. The stalks are very thick and succulent, about a foot high, sustaining ten or twelve flowers in a loose spike, each hanging on a footstalk an inch long. Petals white within, but of a grayish green on their outside: within the petals is situated the bell-shaped nectarium composed of six leaves, out of which arise the six stamens, terminated by yellow anthers. As the capsules grow large, they are so heavy as to weigh the stalk to the ground. [They are ovate, three-cornered, black. Seeds globular, the size of Radish seed, without any tubercle at the navel, with small excavations all over them, of a blackish brown colour^t.

Native of Italy.] It grows in great abundance in the kingdom of Naples, and is now become very common in England. The roots propagating so fast by offsets and seeds as to become troublesome weeds in gardens; and where the roots have been thrown out, they grow on dunghills and waste places plentifully. [It is also become a denizen of Switzerland, is common in the meadows near Berne, and in the orchards about Geneva. I found it in April 1779 at Chatelaine. It was cultivated in England in 1633. Linneus says it was known at Naples about 1570. It flowers in April and May.]

18. This has an irregular tuberous root, varying greatly in form and size, covered with a dark brown skin, from which spring several leaves, upon pretty long foot-stalks, and having several longitudinal veins like Ribwort Plantain. The flower-stalks are slender, naked, and about a foot high, sustaining several small greenish-white flowers, formed in a loose spike, standing upon long slender pedicels. They come out in November, make but little appearance, and are not succeeded by seeds in England.

Native of the Cape of Good Hope. [Linneus remarks, that the stamens are connected into a cylinder.

19, 20, 21, 22, 23. Found at the Cape of Good Hope by Thunberg.

24. This is a very distinct plant with a simple one-flowered stem; leaves alternate filiform, all having a little bulb in the axils; flowers yellow, like those of *O. minimum*, with awl-shaped petals.

Found by Pallas in muddy places that are dry by the Wolga and Jaick.

25. This resembles *O. minimum* very much, but is quite distinct. Sheath loose, fibrous, netted, ferruginous, surrounding the leaf and scape as it were with a cowl. Root-leaf slender, recurved, linear, channelled, longer than the scape and cyme. Stem-leaves three or four, as many as the flowers, of the same form with the root-leaf. Cyme of the same division and number of flowers as in *O. minimum*. Flowers larger and handsomer than those of *O. luteum*. Outer petals quite awl-shaped. The whole plant, except the flower, covered with a very small hoary shagginess.—Found by Pallas in dry spots near Astrachan^r.

26. Bulb conical, fleshy, white, a little larger than a hazel nut. Leaves radical, linear, flat, smooth, upright, a finger's length, shorter than the scape. Scape round, smooth, upright, a foot high or more. Flowers

¹ Gartner^k Hort. kew.^l Retzius.^m Linn.ⁿ Clusius.^p^q Hort. kew.^r Gartner.^s Linn. suppl.

upright, opening one after another, in a raceme of a finger's length or upwards. Bractes linear, shrivelling but permanent, shorter than the peduncles; which are capillary, erect, one-flowered, a line in length. Corolla blue-purple, spreading, permanent: petals lanceolate, a line in length. Filaments awl-shaped, erect, white, the length of the corolla, alternately broader at the base. Anthers ovate, twin. Germ superior. Style awl-shaped, erect, white, the length of the corolla. Stigma simple, blunt, white. Capsule ovate, acute, three-sided, six-freaked, somewhat villose.

Native of Japan, about Jedo, Nagasaki, &c. flowering in august and september¹.

27. Bulb ovate, tunicated, an inch and half long. Leaves radical, subulate-linear, strict, channelled, smooth. Scape quite simple, two feet high, straight, round, many-grooved, naked. Flowers small, violet, on short pedicels. Bractes lanceolate, small, permanent. Corolla inferior, deeply six-parted, erect. Stamens equal, entire, three alternate ones wider at the base. Capsule triangular-ovate, with one seed in each cell.—Native of China about Canton.

It is nearly allied to the preceding, but the flowers are by no means in a branched or racemed spike. The petals are neither distinct nor very spreading. The leaflet under each flower involves it, and is therefore rather a spathe than a bracte².

28, 29, 30, 31, 32, 33, 34. Found at the Cape of Good Hope by Thunberg³.

35. Bulb whitish, resembling in shape and size that of *Lachenalia tricolor*; from this spring three or four smooth, somewhat fleshy, upright, dark-green leaves, about half an inch wide, and three or four inches long, edged with white, and, if magnified, appearing fringed with very fine villose hairs. Stalk naked, from eight to twelve inches high, supporting many flowers, which spring from the axils of large, hollow, pointed bractes, and opening one after another, keep the plant a considerable time in flower; they are usually of a bright orange or gold colour, but sometimes paler. All the filaments are dilated at the base, or rather sit on a white glandular nectary, emarginate on the outside.

Native of the Cape of Good Hope. Introduced by Messrs. Lee and Kennedy, a few years since. It flowers in january and february, and continues for several months⁴.

Jacquin has figured five new species (*giganteum*, *scilloides*, *revolutum*, *juncifolium*, *barbatum*) in t. 87, 88, 89, 90, 91. of a magnificent work entitled *Hortus Schoenbrunensis*.]

PROPAGATION AND CULTURE.

Several of these plants (3, 4, 5, 6, 7, 9, 12, 14, 17) are cultivated for ornament in the English gardens, and are hardy bulbs. They are propagated by offsets, which their roots commonly produce in great plenty. The best time to transplant them is july or august, when their leaves are decayed; for if they are removed late in autumn, their fibres being shot out, they will be apt to suffer on being disturbed. They should have a light sandy soil, not over-dunged. They may be mixed with other bulbs in the borders of the pleasure-garden; and need not be transplanted oftener than every other year: for if they are taken up every year, they will not increase much, and if they are suffered to remain much longer unremoved, they will have so many offsets as to weaken the blowing roots. They may also be propagated from seeds, but the plants will not flower under three or four years.

The 3d, 4th, 5th, 14th and 17th, have in general no great beauty, but thriving in any situation, a few plants of each may be admitted for variety. The 3d, 5th and 17th will thrive in shade, but the 4th should have an open situation. The 14th multiplies so fast by offsets as to become a troublesome weed.

The Cape forts (2, 15, 16, 18—23, 28—35) are also propagated by offsets, but being too tender to thrive in the open air, the roots must be planted in pots filled with light earth, and in autumn placed under a hot-bed frame, where they may be screened from

¹ Thunberg. ² Loureiro. ³ Prodr. cap. ⁴ Curtis.

frost, and in mild weather enjoy the free air. In the beginning of july the leaves and stalks generally decay, and then the roots may be taken up, and laid in a dry cool place till the end of august, when they must be planted again.

[ORNITHOGALUM. See *Albuca*, *Hypoxis*, *Melanthium*, *Scilla*.

ORNITHOPODIO AFFINIS. See *Astragalus*, *Hippocrepis*, *Ornithopus*.

ORNITHOPIDIUM. See *Hedysarum* and *Ornithopus*.

ORNITHOPUS. (*Opvithos πους*, Bird's-foot. The legumes growing several together, in manner and shape like bird's claws.)

Lin. gen. n. 884. Reich. n. 957. Schreb. n. 1199.

Juss. 361. Gärtn. t. 155. Ornithopodium.

Tournef. t. 224.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Umbel simple. Perianth one-leaved, tubular; mouth five-toothed, almost equal, permanent.

COR. papilionaceous. Standard obcordate, entire. Wings ovate, straight, scarcely the size of the standard. Keel compressed, very small.

STAM. Filaments diadelphous (simple and nine-cleft). Anthers simple.

PIST. Germ linear. Style bristle-shaped, ascending. Stigma a terminating dot.

PER. Legume awl-shaped, round, bowed, jointed, intercepted by isthmuses, separating by joints.

SEEDS solitary, roundish.

ESSENTIAL CHARACTER.

Legume jointed, round, bowed.

SPECIES.

1. *Ornithopus perpusillus*. Common Bird's-foot.

Lin. spec. 1049. Juss. 670. Reich. 3. 494. hort.

cliff. 364. Hudf. angl. 321. Wither. arr. ed. 3.

640. Curt. lond. n. 64. Lightf. scot. 399. Relb.

cant. n. 530. Sibth. oxon. n. 630. Neck. gallob.

309. Pollich pal. n. 692. Fl. dan. t. 730.

Krock. fles. n. 1192. Sauv. monsp. 236. Villars

dauph. 3. 397. Hall. helv. n. 393. (Ornithopo-

dium). Berg. phyt. 2. 193.

Ornithopodium minus. Baub. pin. 350. Ger. 1061.

emac. 1241. 4. Park. theat. 1092. 2.

O. perpusillum. Dalech. hist. 487.

β. *O. majus*. Baub. pin. 350. Mor. hist. f. 2. t. 10.

f. 13. Ger. emac. 1241. 3. Park. theat. 1092. 1.

Dod. pempt. 544.

γ. *O. nodosus*. Mill. dict. n. 2.

O. radice tuberculis nodosa. Baub. pin. 250. Kniph.

cent. 7. n. 66.

O. rad. nodosa. Park. theat. 1093. Raii hist. 931.

syn. 326.

O. tuberosum Dalechampii. Baub. hist. 2. 351.

Leaves pinnate, legumes bowed inwards.

2. *Ornithopus compressus*. Hairy Bird's-foot.

Lin. spec. 1049. Juss. 670. Reich. 3. 495. hort.

cliff. 364. Sauv. monsp. 236. Berg. phyt. 2. 191.

Allion. pedem. n. 1245.

Ornithopodium affinis hirsuta scorpioides. Baub. pin.

350. Raii hist. 932.

Scorpioides leguminosa. Dalech. hist. 493. Baub.

hist. 2. 349. Ger. 266. 2. emac. 1241. f. 5. Park.

theat. 1095. f. 7.

Leaves pinnate, legumes bowed back compressed wrinkled,

bracte pinnate.

[3. *Ornithopus durus*.

Cavan. ic. hisp. 31. n. 45. t. 41. f. 2.

Stem suffruticose, leaves pinnate glaucous somewhat fleshy

shorter than the peduncle.]

4. *Ornithopus scorpioides*. Purflane-leaved Bird's-foot.

Lin. spec. 1049. Juss. 670. Reich. 3. 495. hort.

cliff. 364. Juss. 234. Gärtn. fruct. 2. 345. Scop.

carn. n. 914. Villars dauph. 3. 398. Cavan. ic.

hisp. 26. n. 39. t. 37. Berg. phyt. 2. 187. Allion.

pedem. n. 1246.

O. trifolius. Lamarck. flor. franc. 2. 659. n. 634. § 4.

Ornithopodium portulacæ folio. Tournef. inst. 400.

Mor. hist. f. 2. t. 11. f. 5.

Scorpioides. *Matth.* 801. *Dalech.* 1353. *Dod. pempt.* 71. 3. *Camer. epit.* 1002. *Riv. tetr. t.* 96. *Ger.* 266. 1. *emac.* 337. f. 2. *Park. theat.* 1117. f. 3. *Raii hist* 931.

S. portulacæ folio. *Bauh. pin.* 287.

Leaves ternate subsessile, the end leaflet very large.

[5. *Ornithopus tetraphyllus.*

Lin. spec. 1049. *Reich.* 3. 495. *amoen.* 5. 402.

Sloan. jam. 1. 186. t. 116. f. 3.

Leaves in fours, flowers solitary.

DESCRIPTIONS, &c.

1. Common Bird's-foot has an annual slender root, nearly as long as the stem, with few long whitish lateral fibres. Stems several, trailing, from one to six inches in length, simple, round, pubescent. Root-leaves numerous, prostrate, sometimes on short petioles: those on the stem alternate, sessile. Leaflets ovate or elliptic, opposite or alternate, somewhat keeled, appearing hairy when magnified, sometimes blotched with purple; from three to fourteen pairs, usually from six to nine, generally terminated by an odd one, which is smaller. Flowers small, one to five in a bunch, commonly two or three, terminating, opposite to a leaf; on peduncles nearly of the same length with the leaf. Corolla variegated with white, red and yellow; standard reddish white, marked with crimson lines, slightly notched at the end, the claw yellowish brown; wings white with a reddish tinge; keel pale straw-colour: sometimes it is entirely yellow. Calyx hairy. Legume with cross divisions, separating at the joints. Seeds about six, one in each joint. It is an elegant little plant, with pretty flowers, and singular seed-vessels resembling the claws of a bird, whence its name. It is not uncommon on dry heaths, commons and downs, on banks and by road sides, especially in a gravelly or sandy soil: and flowers from May to September. It varies much in size, and has sometimes little knobs adhering to the roots; but this is common in leguminous plants^a. Hence authors have distinguished it into three, and Mr. Miller into two species.]

2. The root of this runs deep into the ground, sending out a few small fibres on the side; the stalks are about six inches long, and do not lie flat on the ground like the preceding; the leaves are composed of ten or twelve pairs of narrow hairy leaflets, with an odd one at the end; the flowers grow in small bunches at the ends of the branches; they are yellow, and are generally succeeded by two flat pods not much more than an inch long, turned inwards like a bird's claws.

[According to Linneus, the plant is tomentose; the leaflets sessile; the peduncles shorter than the leaf; and the flowers commonly two.

It is an annual plant, native of the South of Europe, flowers in June and July, and was cultivated by Mr. Miller in 1731^a.

3. Root whitish, round, gradually sharper, fibrous, an inch and half in length. Stems branching, suffrutescent, erect, very smooth, three or four inches high. Leaves unequally pinnate; pinnules nine ovate, the two lower orbiculate. Stipules two scarious, short, deciduous, connate at the base, and half embracing the stem. Flowers in a sort of umbel: common peduncle an inch long, axillary, solitary, erect, longer than the leaf, supporting one, two or three small flowers at the end. Calyx smooth, the two upper teeth very small. Corolla deep yellow: standard ovate, plaited, with lines of the same colour on the outside; wings ovate, concave, approximating to and shorter than the standard, the claws of all very short; keel shorter with a bifid base. Germ oblong: style from recurved upright: stigma acute. Legume spiral, round. Seeds oblong, cylindrical, rufescent.

It seems to be allied to *Coronilla minima* *Linn. Jacqu. austr.* t. 271. but is abundantly distinct from it in the fruit.

Native of Spain, on hills, flowering and fruiting in June^b.]

4. This has many smooth branching stalks, which rise near two feet high, and towards the top have tri-

^a Curtis, Stokes, Withering.

^a Hort. kew.

^b Cavanilles.

foliate oval leaves fitting close, with two small appendages. The lower leaves are often single, and of a grayish colour, the middle leaflet being twice the size of the two side ones. The flowers stand upon slender peduncles, are yellow, and succeeded by taper pods two inches long.

[Root annual, round with sessile tubercles, fibrous. Stems branched, half a foot high, herbaceous, erect or diffused. The whole plant is smooth. Leaves ternate, subsessile, the lateral leaflets orbicular, the middle one many times longer, ovate; all quite entire, bright green. Stipule opposite to the leaf, membranaceous, pellucid, sheathing the stem, bifid at top. According to Linneus, the leaves are ternate, or rather simple, petioled, with roundish stipules. Flowers umbelled: common peduncle axillary, solitary, longer than the leaf, naked, having from two to four flowers at top on very short pedicels. The three lower toothlets of the calyx a little shorter than the other two. Corolla deep yellow: standard ovate, entire, from erect reflex, with streaks of a deeper colour, and a short claw; wings shorter than the standard, converging, concave; keel very short, bifid at bottom. Germ linear: style setaceous, ascending: stigma a brown terminating dot. Legume awl-shaped, round, pendulous, a little bowed, jointed. Seeds ovate^c.

According to Gærtner, the legume is about two inches in length, slender, awl-shaped, grooved and angular, bowed, jointed, but scarcely separating spontaneously at the joints; which are six or eight in number, oblong, one-celled, valveless; the last very small, sterile, clawed. Seeds oblong, somewhat compressed, slightly curved inwards, smooth, blackish: navel in the middle with a convex margin, fastened to the edge of the cell at the outer suture.

Native of the South of Europe, among corn and on the borders of fields. Cultivated in 1656 by Mr. John Tradescant, junior. It flowers in June and July^d.

5. This rises to about a foot high, being erect, branched, and having twigs set with leaves alternately, on petioles three quarters of an inch long: leaflets small, obcordate, yellowish green, smooth, with a prominent midrib on the lower surface. Flowers yellow, solitary from the upper axils^e.

Linneus remarks, that having an opportunity of examining the plant only in a dry state, he could not ascertain whether it belonged to this genus or another, or whether it ought to form a new one.

Native of Jamaica.]

PROPAGATION AND CULTURE.

These plants (except the fifth) are propagated by sowing their seeds in the spring, upon a bed of light fresh earth, where they are to remain. When the plants come up, clear them from weeds, and thin them to about ten inches distance. In June they will flower, and the seeds will ripen in August. There is no great beauty in them, but for the variety of their jointed pods they are preserved in some pleasure-gardens. They are annual plants, and perish soon after the seeds are ripe.

[ORNUS. See *Fraxinus*.]

OROBANCHE (of Pliny. *Οροβανχη* of Theophrastus and Dioscorides. From *οροβος* Orobus. and *ανχω* strangulo: because it is supposed to strangle the plants to which it fixes itself.)

Lin. gen. n. 779. *Reich. n.* 841. *Schreb. n.* 1045.

Tournef. t. 81. *Juss.* 101. *Aphyllon.* *Mitch.* 25.

Class. 14. 2. *Didynamia Angiospermia.*

[*Nat. order of* *Personatae. Pediculares*, *Juss.*

GENERIC CHARACTER.

CAL. Perianth one-leafed, two or five-cleft, erect, coloured, permanent.

COR. one-petalled, ringent: tube inclined, wide, ventricose; border spreading: upper lip concave, open, emarginate: lower lip reflex, trifid, with an unequal margin; all the segments nearly equal.

STAM. Filaments four, awl-shaped, concealed beneath the upper lip; two of them longer. Anthers erect, converging, shorter than the border.

Nectary a gland at the base of the germ.

^c Idem.

^d Hort. kew.

^e Sloane.

PIST. Germ oblong. Style simple, length and situation of the stamens. Stigma semibifid, blunt, thickish, nodding.

PER. Capsule ovate-oblong, acuminate, one-celled, two-valved.

SEEDS numerous, very small. Receptacles four, linear, lateral, adnate.

OBS. Each segment of the stigma is emarginate.

ESSENTIAL CHARACTER.

Cal. bifid. **Cor.** ringent. **Caps.** one-celled, two-valved, many-seeded. Gland under the base of the germ.

SPECIES.

1. *Orobanche major*. Common Broom-rape.
Sutton in *Lin. transf.* 4. 175. *Curt. lond.* 4. t. 44. 232. *Wither. arr. ed.* 3. 557. *Engl. bot. t.* 421. *Hudf. angl.* 265. *Lightf. scot.* 332.
O. major garyophyllum olens. *Baub. pin.* *Raii syn.* *288. *Petiv. brit. t.* 69. f. 10.
O. f. Rapum genistæ. *Ger.* 1130. 2. *Raii hist.* 1227.
O. Matth. 536. *Tabern.* 684.
Stem quite simple, corollas quadrifid inflated, stamens naked below, stigma with two distant lobes, style pubescent above.
2. *Orobanche elatior*. Tall Broom-rape.
Sutton in *Lin. transf.* 4. 178. t. 17. f. 4.
Stem quite simple, corollas quadrifid, stamens with glandular hairs below, stigma obcordate, style smooth above.
3. *Orobanche caryophyllacea*. Clove Broom-rape.
Smith in *Lin. transf.* 4. 169. *Tour* 2. 308.
O. major. *Pollich pal. n.* 600. *Villars dauph.* 2. 407. 6.
O. major, garyophyllum olens. *Baub. pin.* 87.
Stem simple, corolla inflated fringed and curled, segments of the lower lip blunt and equal, stamens hirsute at the base within.
4. *Orobanche gracilis*. Slender Broom-rape.
Smith in *Lin. transf.* 4. 172.
Stem simple, corolla inflated, lower lip very short with the segments obcordate unequal fringed and curled, stamens and style with hairs standing out.
5. *Orobanche minor*. Small Broom-rape.
Sutton in *Lin. transf.* 4. 179. t. 17. f. 1, 2, 3. *Engl. bot. t.* 422.
O. major. *Loeff. hisp. n.* 35.
O. major β. *Hall. helv. ed.* 1. 610. 2. n. 295. *Hudf. angl. ed.* 1. 232?
O. flore minore. *Raii syn.* *288. 2. *hist.* 1227.
O. ramosa β. *Hudf. angl. ed.* 2. 266?
Stem quite simple, corollas quadrifid, stamens with glandular hairs below, stigma retuse, style smooth above.
6. *Orobanche americana*. American Broom-rape.
Lin. syst. 573. *Reich.* 3. 184. *mant.* 88.
Stem quite simple imbricate with leaves, corollas recurved, stamens standing out.
7. *Orobanche cernua*. Drooping Broom-rape.
Lin. spec. 882. *Reich.* 3. 184. *Loeff. it.* 2. 329.
Stem quite simple, corollas recurved, bractes ovate shorter than the corolla, stem almost naked.
8. *Orobanche purpurea*. Purple Broom-rape.
Lin. syst. 573. *suppl.* 288.
Stem simple and branched, corollas quadrifid, stamens spurred.
9. *Orobanche coerulea*. Blue Broom-rape.
Sutton in *Lin. transf.* 4. 182. *Engl. bot. t.* 423. *Villars dauph.* 2. 406. *Hall. helv. n.* 294.
O. purpurea. *Jacqu. austr. t.* 276. *vind.* 50.
O. purpurascens. *Lin. syst. ed.* *Gmel.* 954.
O. lævis. *Lin. spec.* 882. *syst.* 573. *Reich.* 3. 183.
O. ramosa 2. *Wither. arr. ed.* 3. 558.
O. flor. cæruleis laxæ spicatis. *Gmel. fib.* 3. 215. t. 46. f. 1.
O. subcæruleo flore, f. secunda Clusii. *Magn. bot. monsp.* 196.
O. magna purpurea monspessulana. *Baub. hist.* 2. 782. *ic. non descr.*
O. majore flore. *Baub. pin.* 88. *Raii hist.* 1227. 3.
O. caule simplici cæruleo, bracteis brevibus. *Sauv. meth.* 4.
Stem commonly simple, corollas quinquefid, bractes by threes, calyxes tubular half quadrifid.

10. *Orobanche ramosa*. Branched Broom-rape.

Lin. spec. 882. *Reich.* 3. 184. *Hudf. angl.* 266. *Wither. arr. ed.* 3. 558. *Engl. bot. t.* 184. *Sutton in Lin. transf.* 4. 185. *Hall. helv. n.* 296. *Pollich pal. n.* 601. *Villars dauph.* 2. 408. *Baub. pin.* 88. *Raii syn.* *288. *hist.* 1227.

Stem branched, corollas quinquefid, bractes by threes, calyxes short deeply quadrifid.

11. *Orobanche tinctoria*.

Vahl symb. 2. 70. *Forst. descr.* 112.

Stem quite simple imbricate, calyxes quinquefid blunt, corollas quinquefid, lobes quite entire.

12. *Orobanche virginiana*. Virginian Broom-rape.

Lin. spec. 882. *Reich.* 3. 185. *Gron. virg.* 168. *Mor. hist.* 3. 502. f. 12. t. 16. f. 9. *Raii suppl.* 595.

Stem branched, corollas four-toothed.

13. *Orobanche uniflora*. One-flowered Broom-rape.

Lin. spec. 882. *syst.* 574. *Reich.* 3. 185. *Raii suppl.* 595.

Dentariæ f. Anblato Cordi affinis, flore pallide cæruleo. *Gron. virg.* 70.

Gentiana minor aurea, &c. *Pluk. mant. t.* 348. f. 3.

Aphyllon. *Mitch.* 25.

Stem one-flowered, calyxes naked.

14. *Orobanche Æginetia*.

Lin. spec. 883. *Reich.* 3. 185.

Æginetia. *Lin. spec. ed.* 1. 632.

Tsjam-Cumulu. *Rheed. mal.* 11. 97. t. 47.

Stem one-flowered, flower subspathaceous.

DESCRIPTIONS, &c.

Jussieu describes the plants of this genus as fleshy herbs of a russet colour, and fastening themselves to the roots of other plants. Root tuberous, imbricate with scales. Stem with alternate scales on it, generally simple. Flowers in terminating spikes, supported by bractes. Some of the species have a naked one-flowered scape, with a spathaceous flower, and are akin to the one-flowered *Lathræas*. Thunberg describes a plant resembling an *Orobanche* under the name of *Phelypæa*.—See *Lathræa Phelypæa*.

The Rev. Charles Sutton, who has bestowed great attention on this genus, observes that these plants are not strictly Parasitic, as *Epidendrum*, *Viscum*, &c. are; for they acquire sustenance and stability not only from the foster-plants to which they are attached, but also, and that in no small degree, from the soil, into which they send forth radical fibres: that they exhibit an ungraceful formality from the want of leaves, and have their surface more or less beset with minute pellucid glanduliferous hairs, which project perpendicularly from the stems, scales, bractes, calyx and corolla, and are sometimes found within the flowers, upon the very stamens and pistils; these, according to the remarks of Guettard, have each an articulation at the distance of about two thirds from their base, and are tipped with a globular sort of cup, bearing a viscid gland: we may suppose them to be intended to carry off secretions, and to answer the purposes of leaves in performing the offices of respiration, &c. They have an acrid astringent taste, and are rejected by all animals, except the minuter tribes of *Cimices* and *Thripsæ*. He remarks lastly that they are acotyledonous; for, when a seed has attached itself to the root of any living plant, to which it is suited by its nature to adhere, it swells into a pellucid scaly germ or bulb: and after throwing out around the point of adhesion several tender fibres, it pushes up at once into a perfect plant, without any lateral lobes or cotyledons: developing first the scales and then the stalk, with a head of flowers concealed by bractes, in form resembling a young head of *Asparagus*: the flowers afterwards expand in succession upwards, and the head becomes a spike. Adanson has classed this genus among his *Monocotyledones*^f; and Jussieu among his *Dicotyledones*.

It is singular that these plants should attach themselves to shrubs and herbs of the class *Diadelphia* chiefly. Mr. Sutton says he has had no experience of

^f *Linn. transf.* 4. 173.

the common notion of the banefulness of Orobanche, in destroying the plants that feed it: the learned Dr. William Turner however affirms, that notwithstanding he has not seen any Broom choked with this herb, that he has observed Clover to be utterly strangled, and all the natural juice to be clean drawn out by it; he therefore calls it Choke-weed².

Dr. Smith having shown that no such plant as Orobanche levis exists^h, it is here omitted.

1. Our common Broom-rape has a large thick fleshy oval scaly root, sometimes bulbous, adhering to the woody roots of Broom and Furze for the most part; "the which (as Turner speaks) it claspeth aboute with certaine lyttel rootes on everye side lyke a dogge holding a bone in his mouth." It is furnished with simple fibres, which are very brittle. Stems several, upright, fleshy, hollow, channelled or angular, hairy, the thickness of a finger, from eight inches or a foot to eighteen inches in height, of a dusky yellow or rust-colour tinged with purple, clothed with lanceolate scattered scales, which are much closer under ground. Flowers in spikes, at first pointed but afterwards cylindrical; they are sessile, hairy, brownish rust-colour, with a purplish tinge for the most part; when old they become stiff and of a dirty rust colour. Bractes lanceolate, acuminate, hairy, generally longer than the flowers. Calyx almost equal, hairy, two-leaved, the lateral one with the leaflets deeply bifid, the segments acute and unequal: varying with one leaf, four-cleft, posteriorly divided to the very base.

Mr. Woodward describes it with four teeth, the two outer longer and sharper, the lower blunt: and Mr. Curtis, as one-leaved, divided into four segments, posteriorly quite down to the base, and anteriorly more deeply than at the sides; villose, whitish, the segments or teeth nearly equal and ferruginous. Corolla hairy: tube inflated upwards, curved in, slightly keeled at the back; mouth very open; border two-lipped, obsoletely toothletted; upper lip arched, blunt, entire, a little reflex; lower lip three-lobed, the lobes nearly equal, acute, flattish, the middle one hanging down. Filaments hairy at top, but quite naked at bottom, channelled, flat, the two shorter inserted into the sides, the two longer into the front of the tube, decurrent, recurved at top. Anthers twin, mucronate at one of the tips, adhering slightly, straw-coloured; finally, together with the style, standing out. Germ shining, somewhat hairy. Style also somewhat hairy, pubescent at top, purplish. Stigma two-lobed; the lobes globular, yellow, distant, divided transversely along the middle. Capsule opening longitudinally. Seeds subtrubinate, netted-cellular.—Mr. Curtis remarks, that the germ is marked anteriorly at the base with three protuberant yellow glands, which pour forth plentifully a sweet liquor; that it varies in size according to the size of the root it grows on; the stem being sometimes almost as thick as the human thumb, and at other times not much larger than a wheat-straw; and that the flowers vary much in their colour, but are mostly dead purple or yellowish¹.

Such is our English Broom-rape, which is supposed not to be the Orobanche major of Linneus and some other foreign botanists.

It is found in dry barren ground, generally at the roots of Broom or Furze, flowering in June.

2. Tall Broom-rape has a root like that of the preceding, adhering mostly to the woody roots of *Centaurea Scabiosa* and *Trifolium pratense*. Stem also like that of the preceding, but taller. Flowers in a long spike, hairy, of a pale russet or feuilemort colour, with darker veins, and pale yellow stigmas; afterwards they become stiff, somewhat compressed, and rust-coloured; sometimes there are upwards of a hundred of them in a spike. Bractes as in the preceding. Calyx abbreviated, hairy, one-leaved, four-cleft, behind divided to the very base, with the segments lanceolate, acuminate, the two posterior ones divaricating and longish; it is slightly striated, dirty

dirty white with pale-red lines. Corolla four-cleft hairy: tube cylindrical recurved, keeled at the back; mouth open; border two-lipped, unequal, fringed and curled; upper lip rounded, reflex, entire; lower three-lobed, the lobes equal and rounded. Nectary, four glands inserted into the tube at the base of the filaments; which are smooth and naked in front, hairy at the base behind, the hairs not glandular; the two shorter filaments are inserted into the sides, the two longer into the anterior part of the tube. Anthers twin, mucronate at one of the tips, slightly adhering; finally standing out along with the style. Germ ovate, smooth, naked. Style smooth, naked. Stigma two-lobed, obcordate, yellow, transversely cloven along the middle. Seeds wrinkled, or obsoletely netted.

It is found among Clover, but not the first year; also on the borders of corn fields by *Centaurea Scabiosa* and *nigra*, *Scabiosa arvensis*, &c. flowering in July and August, and is no uncommon plant, but has been confounded with the preceding, although notwithstanding they are similar in general appearance, the difference is very discernible on a closer inspection. There is reason to suppose it may have been noticed by Ray very early; for in his Cambridge catalogue, printed in 1660, he speaks of having found the *O. flore majore* in a field of barley between Cambridge and Granchester, and in a corn field at Cherry-hinton, places in which this species is very likely to be found, as it grows among herbaceous plants, and never on the roots of Broom or Furze. He adds, also at Gamlingay, at the roots of Broom plentifully: here he undoubtedly means our *O. major*, for that is still found there in great abundance. In his *Catalogus Plantarum Angliæ*, published ten years afterwards, he notices them thus; "ad radices genistæ, interdum et inter segetes"^k. The same notice is continued in the third edition of the Synopsis by Dillenius. They were not therefore ever considered as distinct species by these celebrated botanists.

3. Root bulbous, covered with scales. Stem upright, not branched, more than a palm in height, five lines thick at the base, somewhat angular, solid within, yellowish white, slightly pubescent; having instead of leaves scales, which are ovate, acuminate, yellowish white, scattered and sessile. Flowers solitary, alternate, sessile, erect, forming a loose spike, closer at top; sometimes there are two or three flowers together from a bracte, and about twenty-two in the whole spike; they are half an inch in diameter, above seven lines in width, and an inch in length. Bractes lanceolate, the length of the flowers, yellowish brown. Calyx whitish tinged with pale red, pubescent all over on the outside, ciliate on the edge, consisting of two segments at the base irregularly toothed; the two lateral teeth larger than the others and sharp. Corolla whitish, very pale purple at top, with a small mixture of yellow, pubescent on the outside: upper lip blunt, multifid, crenulate, waved, with pale purple veins on the inside; lower lip trifid, waved, the edge brown, ferrulate, lobed, the middle segment a little longer. Filaments bent, white, pubescent. Anthers yellowish brown. Germ ovate, smooth. Style pubescent. Stigma bifid, blackish, bent in. Capsule ovate, blunt, surrounded by the calyx and corolla, shrivelled and permanent. Seeds orbicular, smooth, dusky. It has a strong smell of Cloves^l.

O. caryophyllacea agrees very nearly with *O. major* in habit and size, as well as in the appearance of the flowers; but differs in having the three segments of the lower lip obtuse, and much more fringed and curled. The germ also is entirely smooth, which in *O. major* is hairy in the upper part, and the style is much less downy than in that species. But the most striking mark consists in the lower part of the stamens, on the inside, being thickly clothed with hairs, whereas in *O. major* it is always perfectly smooth. The stigma of this is brown or purplish: that of *O. major* is yellow.

This has been so generally confounded with our *O. major* by foreigners, that it is impossible to allot to

² Linn. transf. 174. 175.

^h Idem, 164.

¹ Sutton in Linn. transf. Curtis lond. Woodw. Mss. Relh. cant.

^k Sutton in Linn. transf.

^l Pollich.

each its proper synonyms, no botanist having properly described the stamens, in which the true character resides; much less do the figures of old authors lend any assistance towards this discrimination. The *caryophyllacea* is so named from its having a very strong and fragrant smell of Cloves when fresh; whereas our plant has not the least degree of that smell, though some English writers affirm that it has a faint smell of Cloves.

It was gathered by Dr. Smith on shrubby hills near Valcimara at the foot of the Apennines, in april 1787. Linnæus received it from Siberia^m. Pollich found it about Lauteren in the Palatinate, in dry pastures, orchards, corn-fields, and among hemp; flowering in may and june. Probably in other parts of Europe, but not so common as the first species.

4. This has a taller and more slender stem than *O. major*, and is upon the whole less pubescent. The bractes are shorter than the flowers. Corolla the size of *O. major*, but the upper lip is of a dark or purplish colour, and less fimbriated or crisped. The lower lip is remarkably short, in three obcordate fimbriated segments, of which the middle one is larger than the other two, and is connected at its base with the very prominent two-lobed palate of the flower. The stamens are slender, thinly clothed all over, as well as the style, with scattered hairs, and project out of the mouth of the flower. The germ is smooth.

O. gracilis has most affinity to the *minor* in some of its characters, but differs in its larger inflated corolla, short lower lip, longer stamens and hairy style.

Gathered by Dr. Smith in hilly pastures at St. Orfese near Genoa, in july 1787ⁿ.

5. Root like those of *O. major* and *elatior*, only with fewer scales, adhering for the most part to the woody root of *Trifolium pratense*. Stem from six to twelve inches high, erect, roundish, hairy, almost the thickness of a goose quill, flesh-coloured, or sometimes yellow, scaly but with fewer scales: there are several of them sometimes aggregate. Flowers in spikes, whitish yellow with purple veins, hairy; varying of a full yellow; finally becoming rigid, and ferruginous: the lower flower is often peduncled. Bractes simple, lanceolate, hairy, almost the length of the flowers. Calyx almost equal, of the same colour with the stem, hairy, two-leaved, lateral, with the leaflets sometimes bifid; the segments very narrow, unequal; sometimes simple, lanceolate, entire, or gashed on one side. Corolla four-cleft, hairy: tube cylindrical, spreading, incurved, keeled at the back: mouth open: border two-lipped, unequal; upper lip rounded, crenulate, entire; lower trifid, the segments equal, rounded, crenulate; varying sometimes with the middle segment three-lobed. Nectary four saffron-coloured glands at the base of the filaments; which are smooth and naked in front, hairy behind, the hairs not glanduliferous; the two shorter inserted into the sides, the two longer into the anterior part of the tube. Anthers twin, mucronate at one of the tips; finally standing out together with the style. Germ ovate-oblong, naked; style filiform, almost naked; stigma retuse, dilated at the edge, purple, with a transverse cleft along the middle; sometimes it becomes triangular or square. Capsule as in the others. Seeds wrinkled or obsoletely netted. It differs from *elatior* in its two-leaved variable calyx; from *major* in its cylindrical corolla; from both, in the smallness of the corolla.

It is frequently found with a much longer spike than it is represented with in English Botany; in which case the flowers are not only more numerous, but much closer set than in that figure. From its growing so very copiously among Clover it is probably the same which Dr. Turner noticed as being so pernicious to it. Dr. Smith remarks that this is the only species growing in such situations or in such abundance as to be deemed a weed. None of the other old Herbalists have mentioned it, nor has it been introduced into any of our British Floras, if we except Hudson, who is thought to have it in his first edition; but from his uncertainty respecting it afterwards, it should seem he

^m Smith in Linn. transf.

ⁿ Idem.

took it upon trust from Dillenius, who, in his edition of Ray's synopsis, speaks of its being found in a field of oats near Rochester.

It might possibly not be unknown to Ray: for having described *O. majore flore* of John Bauhin, he adds that *O. flore minore* of the same author differs so little from it, that he can scarcely believe it to be a distinct species^o. There is little doubt of its being different from those above described.

It is found in fields of Clover, but not the first year; also in pastures with *Hypochaeris radicata*. It is in the Linnean herbarium under the name of *Orobancha major*, and was given to Linneus by Loeffling. July and august are the months of its flowering^p.

Vahl has an *Orobancha* which he gathered in the fields about Tunis, especially among Beans. Although it differs in size and colour from *O. major*, yet he does not distinguish it specifically from that. He frequently found it without scent, which is also the case in *O. major*, the stamens are included, as in that, and the anthers are awned in several of the species. The stems are a foot high or more, the thickness of the little finger, and the whole plant is of a dusky purple colour^q.

Micheli, in a little treatise on this genus, published in the Italian language at Florence in 1723, enumerates many varieties, among which probably some of the above species may be found. Gmelin, in his Flora Sibirica, has also several varieties. Haller has a variety of his n. 295. which is probably a distinct species, or a variety of our *O. caryophyllacea*^r. These obscure notices solicit farther enquiry.

6. Stems scarcely so thick as the human finger, a span high, round, coloured, succulent, imbricated all over with ovate-lanceolate, sessile, acuminate, erect, coloured, shrivelling leaves. Spike sessile, terminating, the length of the stem, imbricate with the fructifications. Bractes solitary, lanceolate, almost the length of the corolla. Flowers subsessile. Calyx ventricose, with the margin entire. Corolla incurved, with the border narrower; upper lip longer, lower two-parted, erect. The whole plant with the fructification yellow.

Found in Carolina at the roots of trees and shrubs, by Dr. Garden. Linneus received one very like it from Siberia, scarcely to be distinguished except in the bluntness of the leaves^s.

7. Native of Spain and Siberia^t.

8. This is of a red purple when fresh, but turns black in drying. The flowers are large.—It was found at the Cape of Good Hope by Thunberg^u.

9. Root as in the other species, with fibres embracing the roots of different herbs. Stem from six to ten inches high, erect, rigid, somewhat hairy, a little flexuose, angular, somewhat woody, of a yellow olive colour, the thickness of a goose or swan's quill; the scales on it ovate-lanceolate. Flowers in loose bluntish spikes, violet with deeper-coloured veins, slightly hairy, like those of *O. ramosa* but larger; becoming finally twisted, compressed, drooping, dusky; the lower flower is often peduncled. Bractes scarcely equal to the calyx, the two lateral ones interior, linear-lanceolate, the middle one exterior, ovate-lanceolate, with short hairs. Calyx of the same colour with the stem, the four segments equal, lanceolate, acuminate, hairy, with the rudiment of a fifth at the deeper posterior incisure; sometimes, but seldom, it is five-cleft with the rudiment of a sixth segment behind. Corolla hairy, twice as long as the calyx; tube round below, gradually widening upwards, compressed-triangular, sharply keeled at the back, bluntly incurved in the middle; mouth gaping; border two-lipped, almost equal; upper lip bifid; the segments bluntish, reflex, toothletted, lower three-lobed, with the segments equal, sharpish, palate silky, being covered with white hairs pressed close but not glanduliferous. Filaments filiform, naked, smooth, scarcely recurved, the two shorter inserted into the sides, the two longer

^o Hist. 1227.

^p Sutton in Linn. transf.

^q Symb. 2: 70.

^r Smith in Linn. transf. 4. 170. 171.

^s Linn. mant.

^t Linn. spec.

^u Linn. suppl.

into the anterior part of the tube. Anthers whitish yellow, converging within the mouth, finally included. Germ ovate-oblong, naked, even: style filiform, incurved, somewhat hairy: stigma headed, white, two-lobed, without any cleft in it, closing the mouth. Capsule ovate-oblong, grooved along the middle, opening longitudinally. Seeds subtrubinate, netted-cellular.

This and the next species differ from the five first in many respects: the upper lip of the corolla is divided, the shape of the flower is not cylindrical, the stamens are short and filiform, the stigma has no apparent transverse fissure, the calyx is tubular, the bractes are ternate, and the plants altogether less succulent, and perhaps less parasitic.

The stem in this species, though generally, is not always unbranched. The little that was known of it in England, till lately, was from Mr. Pitchford's specimen found in 1779, at Northrepps, and from Mr. Lightfoot's, now in the possession of the Queen. Being most allied to *ramosa*, it was taken at first for a variety of that. In 1796 Mr. Scrimpsire found several plants of it at Sheringham, and Mr. Sutton a few in the adjoining parish of Beeston. It seems to be more generally found abroad, where it has usually passed for *O. levis* of Linneus. It grows among grass in pastures, and on the borders of fields*, in Switzerland, Austria, Germany, and the South of France.

10. Root a solid bulb, elliptical, naked, or furnished with one or two ovate-lanceolate sessile scales; and numerous short thick fibres, affixed laterally, and intermixed with the slender fibres of the roots of Hemp or other annual plants, and sometimes to those of grass. Stem a continuation of the bulb, nearly round, brown or dirty yellow, naked or furnished with very few scales, (from six to ten inches high, upright, somewhat flexuose, hairy, somewhat woody, yellow tinged with purple, the thickness nearly of a swan's quill.) Branches either immediately from the root or alternate on the stem, swelling at the base, nearly erect, similar to the stem, with each a scale, as before described, at the base. Stem and branches terminated by a thick (sharp) spike of sessile flowers, each having an ovate-lanceolate somewhat carinated bracteal scale. (The bractes are by threes, as in the preceding, short, scarcely equal to the calyx, membranaceous, soon becoming dusky, the two lateral ones interior, lanceolate, acuminate, the outer one ovate-lanceolate.) Calyx of four acute segments, of which the two outer are largest. Tube of the corolla bellied at the base and yellow; upper part and lips blueish purple, hairy on the outside: upper lip roundish, bifid, lower broad, trifid, the middle segment largest, and with two yellowish prominencies at the mouth. Filaments within the tube, blueish with yellow anthers, nearly equal. Style arising from the oval germ, longer than the stamens, and bending towards them, blueish with a blunt stigma. Capsule oblong. The stem is sometimes simple, though rarely without one or two lateral branches, and then almost without scales[†].

It is distinguished from the preceding by its sharp spikes, the few scales on the stem and branches, the calyxes and bractes being shorter by half than the corolla, the tube of which after flowering is globular at bottom[‡].

Native of several parts of Europe, South of France, Switzerland, Germany, England. Near Beccles in Suffolk, by James Sherard, M. D. Isle of Shepey and near Feverham and Rochester, in Kent, about Glastonbury, and in Devonshire and Hampshire, by Hudson. In hemp-fields near Wisbeach, by Relhan; and at Outwell, in Norfolk. Brome near Bungay in Suffolk, on the first of September 1784, by Mr. Woodward. Mr. Sutton remarks, that it was probably introduced into England with Hemp. Mr. Woodward found it on *Galeopsis Tetrabit*. Linneus says it is found in *siccis*; Dr. Withering gives it to corn fields and dry pastures. Mr. Sutton has not known it to be

* Sutton.

† Woodward. Mss. with the passages between hooks from Sutton, Linn. trans.

‡ Sutton.

found in any other than a rich light moist soil, such as Hemp generally grows in. He doubts whether *O. ramosa* of Osbeck be the same with ours.

11. Stem a span high or more, the thickness of the little finger, smooth, covered with scattered ovate-lanceolate, smooth scales, the uppermost broader, sometimes acuminate. Spike three inches long, thick. Flowers alternate, contiguous, imbricated. Bractes the length of the calyx, of the same structure with the scales on the stem, under each flower; two linear, shorter at the base of the calyx. Calycine segments oblong, smooth, one-third of the length of the corolla; which is an inch and half long; the tube widening towards the border and curved; lobes of the border rounded and quite entire. Filaments shorter than the corolla, hirsute at the base. Anthers oblong, villose, terminated by a dagger point at the base. Germ oblong. Style the length of the filaments. Stigma large. It varies with blue and yellow corollas, and narrower bractes a little longer than the calyx.—Native of Arabia and Barbary^a.

12. From a thickish root composed of scales with fibres annexed arise seven or eight stalks, a palm and half or a long span in height, slender, hard and woody, with sharp and scarcely conspicuous scales, one of which is placed as a bractes to each flower. Flowers oblong of an obsolete colour, covering the stem from the very root. Capsules small, round, hard, on a very short peduncle. Seeds round, pale yellow, very small. Sent by Banister from Virginia^b.

13. Stem of a shining red. Flowers small, consisting of six petals, five of which are red and the sixth white, without any spots. Capsule yellow^c. Linneus remarks, that the sheath is spathaceous; the flower pale blue and hanging down.—Native of Virginia, where it flowers in October.

There are many other North American Orobanches in the Supplement to Ray's history, found there by Dr. Krieg, Banister and Vernon.

14. Stems quite simple, strict, round, with three lines, without any leaves, terminated by one flower. A spathe invests the flower.—Native of Malabar^d.

OROBANCHE. See *Hyobanche*, *Lathraea*, *Monotropa*, *Obolaria*, *Ophrys*, *Orchis*, *Tozzia*.

OROBANCHOIDES. See *Monotropa*.]

ORÖBUS. (*Οροβος* of *Theophrastus* and *Dioscorides*. From *ορω* excito and *βους*, *bos*; or *παρά το επεπλεσθαι υπο των βοων*. This herb, whatever it was, being used by the ancients in fattening oxen.)

Lin. gen. n. 871. Reich. n. 945. Schreb. n. 1185.

Tournef. t. 214. Juss. 360. Gertn. t. 151.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceae* or *Leguminosae*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, blunt at the base: mouth oblique, five-toothed, very short; the three lower toothlets sharper; the two upper shorter, more deeply and bluntly divided: shrivelling.

COR. papilionaceous: banner obcordate, reflex at the tip and sides, longer: wings two, oblong, almost the length of the banner, rising, converging: keel manifestly bifid below, acuminate, rising; with the edges converging, parallel, compressed; the bottom ventricose.

STAM. Filaments diadelphous (simple and nine-cleft), ascending. Anthers roundish.

PIST. Germ cylindrical, compressed. Style filiform, bent upwards, erect. Stigma linear, pubescent on the inner side from the middle to the top.

PER. Legume round, long, acuminate and ascending at the end, one-celled, two-valved.

SEEDS very many, roundish.

ESSENTIAL CHARACTER.

Cal. blunt at the base; the upper teeth deeper and shorter. Style linear.

SPECIES.

1. *Orobanchis lathyroides*. Upright Bitter-Vetch.

Lin. spec. 1027. Reich. 3. 458. hort. upf. 220.

Gmel. fib. 4. p. 12. Pall. it. p. 559. Amm. ruth.

151. t. 7. f. 2. (*Lathyroides*).

Leaves conjugate subsessile, stipule toothed.

^a Vahl.

^b Morison.

^c Ray suppl.

^d Linn. spec.

- [2. *Orobis hirsutus*. *Hairy Bitter-Vetch*.
Lin. spec. 1027. *Reich.* 3. 458. *hort. cliff.* 366.
Boerb. lugdb. 2. 46. *Buxb. cent.* 3. 22. t. 41.
Leaves conjugate petioled, stipules entire.]
3. *Orobis luteus*. *Yellow Bitter-Vetch*.
Lin. spec. 1028. *syft.* 661. *Reich.* 3. 459. *mant.*
442. *Gmel. fib.* 4. 13. t. 4. *Hall. helv.* n. 419.
Ger. prov. 492. 2. *Villars dauph.* 3. 437. *Allion.*
pedem. n. 1212. *Mill. fig.* 129. t. 193. f. 1.
 α . *O. alpinus latifolius*. *Baub. pin.* 351. *prodr.* 149.
 β . *O. sylvaticus pallido flore*. *Baub. pin.* 351. *Raii*
hist. 913. *Tournef. inst.* 393.
O. montanus. *Scop. carn.* n. 886. t. 41.
O. alpinus galegæ foliis longioribus & angustioribus.
Ponted. compend. 101.
Galega montana. *Dalech.* 1139. *Baub. hist.* 2.
343.
Leaves pinnate ovate-oblong, stipules rounded-crescent-
shaped toothed.
4. *Orobis vernus*. *Spring Bitter-Vetch*.
Lin. spec. 1028. *Reich.* 3. 459. *hort. cliff.* 366.
Fl. suec. n. 641. *Hall. helv.* n. 416. *Scop. carn.*
n. 882. *Pollich pal.* n. 672. *Neck. gallob.* 304.
Reyg. ged. 2. 115. *Crantz. austr.* 373. *Gunn.*
norv. n. 236. *Weig. pom.* n. 458. *Pallas it.* 1.
160. *Krock. files.* n. 1158. *Ger. prov.* 491. 1.
Villars dauph. 3. 437. *Allion. pedem.* n. 1213.
Rivin. tetr. t. 58. *Junghans ic. cent.* 1. t. 9.
Schmidel, t. 59. f. 79.
O. sylvaticus purpureus vernus. *Baub. pin.* 351. *Thal.*
herc. t. 6. *Raii hist.* 912. *Tournef. inst.* 393.
Garid. aix. 345. *Blackw. t.* 208. f. 1, 2.
O. sylv. purp. major. *Park. parad.* 337. f. 13.
O. pannonicus 1. *Clus. hist.* 2. 230.
O. pannon. *Best. exst. vern.* 6. f. 2.
O. sylv. vernus. *Ger. emac.* 1247. 2.
Galega nemorensis verna. *Baub. hist.* 2. 343.
Astragalus Dioscoridis. *Col. phytob.* 48. t. 14.
 β . *O. latifolius parvo flore purpureo*. *Baub. pin.* 351.
Tournef. inst. 393. *Garid. aix.* 344.
Galegæ nemorensi similis multiflora, flore purpureo.
Baub. hist. 2. 345. *Raii hist.* 913.
Leaves pinnate ovate, stipules semisagittate quite entire,
stem simple.
6. *Orobis tuberosus*. *Tuberous Bitter-Vetch*.
Lin. spec. 1028. *syft.* 661. *Reich.* 3. 460. *hort.*
cliff. 366. *fl. suec.* n. 642. *Huds. angl.* 314.
Wither. arr. ed. 3. 631. *Curt. lond.* 1. 53. *Lightf.*
scot. 388. *Sibbald scot. illustr. t.* 1. *Sibth. oxon.*
n. 618. *Hall. helv.* n. 417. *Scop. carn.* n.
883. *Pollich pal.* n. 673. *Fl. dan.* t. 781.
Weig. pom. 459. *Crantz. austr.* 377. *Krock.*
files. n. 1160. *Ger. prov.* 492. 3. *Villars dauph.*
3. 438. *Allion. pedem.* n. 1214. *Retz. obs.* 1.
24.
O. radice tuberosa. *Riv. tetr.* t. 59.—*sylvestris tub.*
rad. *Mor. hist. f.* 2. t. 21. f. 3.
Astragalus sylvaticus. *Thal. herc.* 7. t. 1. *Ger. emac.*
1237. 2. *Raii hist.* 916.—*foliis oblongis glabris*.
Tournef. inst. 393. *Raii syn.* 324.
A. sylvestris fol. obl. glabr. *Baub. pin.* 351.
Lathyrus sylvestris lignosior. *Park. theat.* 1062. 5.
L. angustifolius rad. tuberosa. *Loef. pruss.* 138. t. 37.
Leaves pinnate lanceolate, stipules semisagittate quite en-
tire, stem simple.
- [6. *Orobis angustifolius*. *Narrow-leaved Bitter-Vetch*.
Lin. spec. 1028. *syft.* 661. *Reich.* 3. 460. *Gmel.*
fib. 4. t. 14. f. 5. *Pallas it.* 1. 176.
Leaves two-paired ensiform subsessile, stipules subulate,
stem simple.
7. *Orobis albus*. *White Bitter-Vetch*.
Lin. syft. 661. *suppl.* 327. *Villars dauph.* 3. 436.
O. pannonicus. *Jacqu. austr.* 1. 25. t. 39.
Leaves two-paired ensiform petioled, stipules simple, stem
simple.
8. *Orobis canescens*. *Hoary Bitter-Vetch*.
Lin. syft. 661. *suppl.* 127.
O. angustifolius β . *Lin. syft. ed.* 13. 550. *Ger. prov.*
493. 4. *Villars dauph.* 3. 435.
O. orientalis, fol. angustissimis costæ brevissimæ innas-
centibus. *Tourn. cor.* 26.
Araci vel apios leguminosa species. *Baub. hist.* 2. 326.
- Stem branched, leaves two-paired linear, stipules semi-*
sagittate awl-shaped.]
9. *Orobis niger*. *Black Bitter-Vetch*.
Lin. spec. 1028. *Reich.* 3. 460. *hort. cliff.* 366.
fl. suec. n. 643. *Fl. dan.* t. 1170. *Hall. helv.*
n. 418. *Scop. carn.* n. 884. *Pollich pal.* n. 674.
Reyg. ged. 1. 178. n. 2. *Crantz. austr.* 372.
Weig. pom. n. 460. *Ger. prov.* 493. 5. *Villars*
dauph. 3. 439. *Krock. files.* n. 1159. *Allion.*
pedem. n. 1215. *Kniph. cent.* 3. n. 69. *Gærtn.*
fruct. 2. 327.
O. sylvaticus, vicæ foliis. *Baub. pin.* 352. *Raii hist.*
916. *Riv. tetr.* t. 60.
O. pannonicus 2. *Clus. hist.* 2. 230.
Astragaloides herbariorum. *Park. theat.* 1086. 8.
Astr. major Fuchsi. *Baub. hist.* 2. 334.
Stem branched, leaves six-paired ovate-oblong.
10. *Orobis pyrenaicus*. *Pyrenean Bitter-Vetch*.
Lin. spec. 1029. *Reich.* 3. 461. *Scop. carn.* n. 885.
Sauv. monsp. 235.
O. pyrenaicus, foliis nervosis. *Tournef. inst.* 235.
O. pyr. latifolius nervosus. *Pluk. phyt. t.* 210. f. 2.
Stem branched, leaves two-paired lanceolate nerved, sti-
pules somewhat thorny.
11. *Orobis sylvaticus*. *Wood Bitter-Vetch*.
Lin. spec. 1029. *Reich.* 3. 461. *amoen.* 4. 284.
n. 66. *Huds. angl.* 314. *Wither. arr. ed.* 3. 630.
Lightf. scot. 390. t. 16. *Raii hist.* 1892. *syn.* 324.
Astr. par. 1706. 87. t. 90.
Stems decumbent hirsute branched.
12. *Orobis venetus*. *Venetian Bitter-Vetch*.
Mill. diet. n. 8. *fig. t.* 193. f. 2. *Clus. hist.* 232.
Ger. emac. 1247. 1. *Raii hist.* 917.
Leaves pinnate ovate acute four-paired, stem simple.
13. *Orobis americanus*. *American Bitter-Vetch*.
Mill. diet. n. 9. *Houst. Mfs.*
Leaves pinnate linear-lanceolate tomentose underneath,
stem very much branched frutescent.
14. *Orobis argenteus*. *Silvery Bitter-Vetch*.
Mill. diet. n. 10. *Houst. Mfs.*
Leaves pinnate oblong-ovate silky underneath, stem erect
tomentose, flowers in terminating spikes.
15. *Orobis procumbens*. *Procumbent Bitter-Vetch*.
Mill. diet. n. 11. *Houst. Mfs.*
Leaves pinnate, outer leaflets larger tomentose, stem pro-
cumbent.
16. *Orobis coccineus*. *Scarlet Bitter-Vetch*.
Mill. diet. n. 12. *Houst. Mfs.*
Leaves pinnate, leaflets linear villose, stem procumbent,
flowers axillary and terminating.

DESCRIPTIONS, &c.

1. Root perennial. Stalks three or four, branching, about a foot high. Leaflets smooth, stiff, of a lucid green. Flowers in close spikes on short peduncles, from the axils of the leaves at the top of the stalks, where are generally three or four of these spikes standing together. The corolla is of a fine blue colour. The flowers appear in June, and are succeeded by short flattish pods, containing two or three seeds in each, which ripen in August.

Native of Siberia. [Cultivated in 1759 by Mr. Miller*.

2. Native of Thrace†.

3. Root very thick, often transverse, hard, with the fibres widely diffused. Stem a foot high and more, straight, angular, striated, smooth. Leaflets four or five pairs, entire, veined on both sides, netted, smooth, whitish underneath, terminated by a bristle; sometimes there is an odd leaflet. Stipules semisagittate, entire or obscurely serrate with distant teeth, of the same colour with the leaves. Peduncles angular, striated, smooth, naked, twice as long as the leaves. Flowers in loose spikes, all directed the same way, twelve or more. Calyx five-cleft, the lower segments longer. Corolla pale yellow, with the standard and keel of the same length. Legumes long, linear, smooth, compressed.

It differs from the next species in having a higher stem, less angular; wider leaflets; narrower stipules;

* Hort. kew.

† Linn.

longer peduncles: and larger flowers, in greater abundance, of a yellow colour^g.

According to Turra in *Linn. mant.* the stem is three feet high, simple or branched; leaves glaucous underneath. Stipules quite entire and semisagittate, not roundish crescent-shaped and toothed.—Gerard says that the stem is simple; Haller, that it is altogether branched; Villars, that it is simple or branched.

Haller describes it as one of the handsomest of the papilionaceous tribe; the stem three feet high and more; stipules large, hooked downwards, ferrate; leaves numerous, ascending, smooth; flowering stems from all the axils, a long span in length, bearing a loose pendulous spike of ten flowers; calyx cylindrical, compressed, the two upper segments very short, lanceolate, recurved, the lower straight and triangular; corolla long, ochroleucous; standard narrow; wings blunt, equal to the keel, with blunt hooks; keel cloven at bottom, very sharp at top; legume oblong, smooth, many-seeded.

Native of Siberia, Switzerland, the South of France and Italy. Cultivated in 1757 by Mr. Miller^h.

4. Root perennial, creeping, not tuberous, woody, black, with many strong fibres. Stem about a foot high, upright, unbranched, smooth, angular, twisted or elbowed at each insertion of the leaves. Leaves alternate, petioled, leaflets two or three pairs, without an odd one, large, ovate-lanceolate, sessile, quite entire, nerved, bright green, smooth, tender. Stipules at the base of the petioles, large, wide. Midrib or rachis of the leaf long, channelled, ending in a sharp point. Peduncles axillary, an inch and half long, terminated by a one-sided loose raceme, consisting of from four to eight or ten flowers. The two upper toothlets of the calyx are shorter, the lowest is longest. Corolla large and handsome, singular in the different shades of colour: the standard is wide and emarginate, the upper part of it is red or purple with blood-red veins, the wings are blue, the keel is blue tinged with green; the colours change as the corolla advances, and become sky-blue when the corolla is ready to fall. Legumes straight, round, from red becoming black, and containing from five or six to nine or ten rounded, compressed seedsⁱ.

Scopoli remarks, that the pedicels are shorter than the calyx; that the uppermost stamen is bowed, and applies its anther to the base of the stigma, and that all the filaments are not antheriferous.

Native of many parts of Europe, in woods. Cultivated here in 1629, as appears from Parkinson^k. It flowers early, namely in march or april, or, as Scopoli expresses it, before the arrival of the Swallow.]

Mr. Miller mentions a variety of it with pale flowers.

5. [Root perennial, consisting of tough fibres, swelling here and there into irregular tubercles, each of which produces a stalk about a foot high, simple, upright, having two or three leafy or winged angles. Leaves alternate, three or four in number; each consisting of two or three pairs of smooth sessile leaflets without an odd one, the petiole terminated by a kind of awn, as are the leaflets, being a production of the midrib; leaflets all elliptical, blueish underneath, the lower ones broader, the upper approaching to linear, all having three nerves or longitudinal veins. Stipules in pairs at the base of each leaf, frequently entire, but more often jagged at bottom, with one or several teeth. Flowers from two to four or five in a thin spike on naked slender axillary peduncles. Calyx purple, blunt at the base, the three lowest teeth sharper, the two upper shorter. Corolla beautiful, reddish purple, turning blue as it goes off: standard large, oval, veined, with reflexed elevated margins; wings converging, connected with the keel, claw linear; keel acuminate, rising upward, with hollow edges for the reception of the wings. At the base of the uppermost or single filament two small holes are conspicuous. Germ a flattened cylinder: style interiorly

near the top villose, not pointed at the end. Legume above an inch long, cylindrical, a little curved at the end, first red, but black when ripe, pendent, containing from four to nine or even twelve roundish compressed seeds of a yellowish brown colour^l.

Native of most parts of Europe, in woods, principally in a strong clayey soil; flowering in may and june, sometimes in april: the seed is ripe in july. The root is large, deep in the earth, and taken up with difficulty. The Highlanders of Scotland have a great esteem for the tubercles of the root; they dry and chew them in general to give a better relish to their liquor; they also affirm them to be good against most disorders of the thorax, and that by the use of them they are enabled to repel hunger and thirst for a long time. In Breadalbine and Rosshire they sometimes bruise and steep them in water, and make an agreeable fermented liquor with them. They have a sweet taste, something like the roots of liquorice, and when boiled, are well-flavoured and nutritive, and in times of scarcity have served as a substitute for bread^m.

In English it is called *Wood-Pea* or *Heath-Pea*. Dr. Withering names it *Heath-Peaseling*. In Erse it is *Cor-meille*.

Retzius mentions a variety, with the stem more than a foot high, wide large ovate blunt leaves, and great stipules crose-toothed at the base.

6. This has the habit of the preceding, but the leaves are ensiform-lanceolate with two or three pairs of opposite leaflets without any tendril. Flowers few, yellow, in racemesⁿ.

Native of Siberia. Cultivated in 1766, in the Botanic Garden at Oxford^o.

7. Roots tuberous, sessile. It resembles the preceding very much, but the leaves are petioled and not subsessile; the flowers are white, not yellow; racemes without any terminating thread. Native of Austria^p.

8. This also resembles *O. angustifolius*, but the stem is branched, and the flowers are white with a tinge of blue^q.

It differs from *O. angustifolius* in having a branched stem, and blue flowers; nor is it a native of the Alps; but of the Levant, and the South of France, in barren pastures.]

9. Root perennial, strong, woody. Stems many, branching, two feet high, having one pinnate leaf at each joint, composed of five or six small, oblong, oval leaflets. Flowers on very long, axillary peduncles, having four, five or six purple flowers at the top.

[Stem upright, a foot and half high, with alternate branches. Leaflets five or six pairs, hardish, glaucous-green, ovate, acuminate, the midrib ending in a point. Stipules pale, lanceolate, terminating in little hooks at the base. Peduncles axillary, three inches long, bearing six or seven (sometimes twelve) flowers in a raceme, often pointing mostly one way, hanging down. Corolla purple, easily changing colour: standard emarginate, bent back; wings ending in blunt hooks, extending a little beyond the keel, which ends in a sharp beak. Stigma bent down^r. Legume two inches long and more, about a line and half wide, at first pendulous, but extending more straight out as it ripens, oblong, roundish, incurved a little at the base, ending in a point, knobbed a little where the seeds lie, smooth, black. Seeds from three or four to six or eight, orbicular, cylindrical or conoid-ovate, smooth, with small, scattered, dusky spots: navel linear, almost the length of the seed, chord very short, bifid at top^s.

Native of most parts of Europe, in woods and among bushes, but not of Britain, flowering from may to july.—Cultivated in 1656, by Mr. John Tradescant junior^t. It turns black in drying, whence the trivial name.

10. Stem angular, with the angles slightly winged, branched, somewhat villose. Leaflets on short petioles, the nerves underneath villose. Stipules oblong,

^l Lightf. Curtis, Woodw. Mfs. Withering.

^m Lightfoot.

ⁿ Linn. spec.

^o Hort. kew.

^p Linn. suppl.

^q Idem.

^r Pollich, Scopoli.

^s Gærtner, Pollich.

^t Hort. kew.

^g Gerard.

^h Hort. kew.

ⁱ Haller, Pollich, Villars, Krockner.

^k Hort. kew.

one-tailed. Racemes striated. Flowers directed one way, pendulous: standard obcordate, red, with lines of a deeper colour. Legume subpubescent^u.

Native of the South of Europe.—Cultivated in 1699, by the Dutchess of Beaufort^{*}.

11. From the root arise numerous procumbent stems, much branched, and even the younger shoots but slightly hairy. Leaves alternate, with each a pair of semisagittate stipules at the base, resembling those of *O. tuberosus*, but smaller, and terminating in a more acute point. Leaflets oval or elliptical, never acutely pointed, terminated by the produced midrib, as in *O. tuberosus*, on very short hairy footstalks, somewhat alternate, six to twelve pairs without an odd one, but a sort of beard terminating the footstalk, which as well as the stem is but slightly hairy. The flowers numerous to twelve, on short pedicels, crowded on the summit of a long naked peduncle, mostly pointing one way. Calyx short, somewhat bilabiate, nearly equal, the upper lip consisting of two teeth, the lower of three rather longer, green tinged with red, and fringed with hairs. Corolla long and narrow. Legume short, compressed, smooth^v.

According to Linneus, the stems are branched and grooved, leaflets six or seven pairs, corolla red on the outside, white within with purple lines, legume compressed containing two or three seeds.

Lightfoot describes the flowers as white striated with purple veins, the apex of the keel bright purple. Legumes hardly an inch long. The whole plant has a disagreeable bitter taste.

Mr. Woodward remarks, that his specimens differ so materially in some points from Mr. Lightfoot's description and figure, that he should have been tempted to suppose his a different plant, were it not that he gathered it on the spot described by Ray, and that it answers to the description in the synopsis, which is quoted by Linneus; and is as follows.

Root thick, woody, perennial, with a leguminous taste. Stems numerous, a foot or eighteen inches in height, hairy, striated, branched, reclining, although they are rigid. Leaves smaller than those of the common Vetch, to seven or eight pairs, without any odd leaflet or tendril, dark green above, smooth beneath. Flowers six, seven or more on the same common peduncle, approaching in their form to those of *Vicia sylvestris multiflora* or *Glycyrrhiza sylvestris*, pendulous on slender pedicels, reddish on the outside, white with purple veins within. Legumes short, broad, smooth, containing two or three, seldom more, small, compressed, greenish seeds.

Native of France and England. Found by Mr. Ray at Gambleby in Cumberland, about six (ten) miles from Penrith, in the way to Newcastle, in the hedges and pastures plentifully: by Tho. Willisel below Brecknock-hills in the way to Caerdiff, and in Merionethshire not far from Bala: in Denbighshire by Mr. Griffith. In the upper part of Merley-wood near Oxford, by Dr. Sherard. In Scotland plentifully by Mr. Sutherland and Dr. Hope: on the Tweed half a mile below the Buld, by the latter; in the woods about Airly Castle, by Mr. Donn; on the bank of the Clyde near Lanerk, and in the isle of Rum, by Mr. Lightfoot. In Ireland, near Ross-Trevor, by Dr. Sherard. It flowers from may to july.]

12. Root perennial. Stalks two or three, about a foot high. Leaflets smooth, pale green, placed pretty far distant on the midrib. Peduncles axillary, slender, sustaining four or five purple flowers at the top. Legumes swelling, an inch and half long, containing three or four roundish seeds. The flowers appear in march or april, and the seeds sometimes ripen in may. Native of Italy.

13. This grows naturally in Jamaica, whence the late Dr. Houstoun sent the seeds in 1731. This rises with a very branching woody stalk about three feet high; the leaves are composed of five or six pairs of narrow spear-shaped leaflets, which are woolly on their under side. The flowers grow in loose spikes at the end of the branches, are of a pale purple colour, and

are succeeded by smooth compressed pods an inch and a half long, each containing five or six roundish seeds.

14. The fourteenth sort was discovered by the late Dr. Houstoun at La Vera Cruz, whence he sent the seeds to England. This rises with a shrubby stalk five or six feet high, dividing into many slender branches, which are covered with a brown woolly bark, and have soft, fatty, winged leaves; those on the young branches are composed of four pairs of oval obtuse leaflets, of a brownish green colour, hairy on their upper side, but of a silvery silky hue on their under. The leaves on the upper branches are composed of seven or eight pairs of oblong oval leaflets, of the same colour and consistence as the lower. The flowers are produced in long erect spikes at the end of the branches; they are of a deep purple colour, and are succeeded by long, woolly, compressed pods, each containing four or five seeds.

15. The fifteenth sort was discovered by Dr. Houstoun at La Vera Cruz, and he sent it to England in 1730. This is a low plant, whose stalks bend to the ground, and are seldom more than six or eight inches long, from which come out a few short side branches; the leaves are composed of four or five pairs of small, oblong, oval, woolly leaflets, terminated by an odd one, the upper ones being much larger than the lower. The flowers come out in small bunches, standing upon short axillary peduncles; they are small, and of a bright purple colour; these are succeeded by compressed pods near two inches long, each having six or seven roundish compressed seeds.

16. This was discovered at the same time, growing naturally in the same country as the former, by the same gentleman. It has a pretty thick woody root, which sends out many slender stalks a foot and half long, trailing upon the ground; leaves composed of three or four pairs of narrow hoary leaflets, about half an inch long. The flowers come out from the side and at the end of the stalks, three or four standing upon a short footstalk; they are small and of a scarlet colour, and are succeeded by short taper pods, each containing three or four small roundish seeds.

PROPAGATION AND CULTURE.

All the species, except the four last, are hardy perennials, and several of them may be increased by parting their roots. The best time for doing this is in the autumn, that the plants may be well established before the spring; for as several of them begin to put out their stalks very early in the spring, so if they are then disturbed, it will either prevent their flowering, or cause their flowers to be very weak. Most of these plants delight in a shady situation, and a loamy soil.

They are also propagated by seeds, but these should be sown in the autumn, for if they are kept out of the ground till spring, many of the sorts will never grow, and those which do, seldom vegetate the same year. When the plants come up they must be kept clean from weeds, and where they are too close together they should be thinned, so as they may have room to grow till the autumn, when they should be transplanted into the places where they are designed to remain. If the roots are strong, they will flower very well the following spring, but those which are weak will not flower till the second year; therefore such may be planted in a shady border at four or five inches distance, where they may grow one year to get strength, and then may be removed to the places where they are to remain. The farther care of them is only to dig the ground between them in winter, and in summer to keep them clean from weeds.

The four last mentioned sorts being natives of hot countries are tender, and must be preserved in stoves, otherwise they will not live in England. These are propagated by seeds, which should be sown early in the spring, in small pots filled with light rich earth, and plunged into a hot-bed of tanner's bark, observing frequently to moisten the earth, otherwise the seeds will not grow. When the plants come up, they should be carefully taken out of the pots, and each transplanted

^u Scopoli.

^{*} Hort. kew.

^v Woodw. Mss.

transplanted into separate small pots filled with rich earth, and then plunged again into the tan-bed, observing to shade them until they have taken root; after which time they should have fresh air admitted to them every day in warm weather, and must be frequently watered. With this management the plants will make a great progress. When any of the plants are grown too tall to remain in the hot-bed, they should be taken out, and plunged into the bark-bed in the stove, where they may have room to grow, especially the thirteenth and fourteenth sorts; but the other two being of humbler growth, may be kept in the hot-bed until Michaelmas, when the nights begin to be cold; at which time they should be removed into the stove, and plunged into the bark-bed, where they must be treated as other tender exotic plants; by which method they may be preserved through the winter, and the following summer they will produce flowers. These plants are perennial, so that if they should not perfect their seeds, the plants may be maintained for several years.

[OROBUS. See *Abrus*, *Ervum*, *Galega*.

ORONTIUM. (*The name of an herb in Galen, used in baths for the jaundice. Perhaps from οραω to see; if it purged the visual ray.*)

Lin. gen. n. 435. Reich. n. 469. Schreb. n. 587.

Juss. 25. Aronia. Mich. 1.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Piperitæ. Aroideæ, Juss.

GENERIC CHARACTER.

CAL. *Spadix* cylindrical, quite simple, covered with florets. *Spathe* none. *Perianth* none (unless the corolla be so called.)

COR. *Petals* six, peltate, roundish-angular, permanent.

STAM. *Filaments* six, very short, ensiform, within each petal. *Anthers* twin, oblong.

PIST. *Germ* roundish, depressed. *Style* none. *Stigma* roundish, bifid.

PER. *Follicle* slender, immersed with the corolla in the spadix.

SEED single, round, fungose.

ESSENTIAL CHARACTER.

Spadix cylindrical, covered with florets. *Cor.* six-petalled, naked. *Style* none. *Follicles* one-seeded.

SPECIES.

1. *Orontium aquaticum*.

Lin. spec. 463. Juss. 340. Reich. 2. 92. amoen. 3. 17.

t. 1. f. 3. Kalm. it. 3. 54. ed. angl. 2. 100.

Giseck. ic. fasc. 1. n. 6.

Arum folio enervi ovato. Gron. virg. 113.

A. fluitans, pene nudo. Banist. virg. 1924. Catesb. car. 1. t. 82.

Leaves lanceolate-ovate.

2. *Orontium japonicum*.

Lin. Juss. 340. Thunb. jap. 144. ic. Kämpf. t. 12.

Leaves ensiform veined.

DESCRIPTIONS, &c.

1. The leaves of this are broad, like those of Lily of the Valley, green on the upper side, and covered with very minute hairs, so that they look like a fine velvet. Cattle, hogs and stags are very fond of these leaves in the spring, and they come out among the earliest. The Indians gather the seeds and eat them when dried like peas; boiling them repeatedly in water before they are fit for use: they also boil them in milk or butter, and use them instead of bread. They call the plant *Taw-kee*. It grows in marshes, near moist and low grounds very plentifully in Virginia, Canada and other provinces of North America². It was introduced here in 1775, by John Fothergill, M. D. and flowers in June³.

2. Radical leaf solitary, ensiform, attenuated at bottom, convoluted, having several longitudinal veins, entire, smooth, two inches wide, and two feet long. Scape round, smooth, upright, from a finger to a palm in height. Flowers at the top of the scape distinct, in an oblong spike, an inch in length. It differs from the preceding in having much longer leaves attenuated below and marked with several raised veins, and a shorter scape.

² Kalm.

³ Hort. kew.

Native of Japan, near Nagasaki, &c.^b Introduced in 1783 by Mr. John Græfer. It flowers in January^c.

ORONTIUM. See *Antirrhinum*.

ORPINE. See *Sedum* and *Telephium*.

ORTEGIA. (*So named by Loeffling, in honour of Joseph Ortega, his companion in his travels.*)

Lin. gen. n. 51. Reich. n. 57. Schreb. n. 70.

Juss. 299. Gærtn. t. 129.

Class. 3. 1. Triandria Monogynia:

Nat. order of *Caryophyllæ*.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, erect, with oval leaflets membranaceous at the edge, permanent.

COR. none.

STAM. *Filaments* three, awl-shaped, shorter than the calyx.

Anthers linear, compressed, shorter than the filaments.

PIST. *Germ* ovate, three-sided at top. *Style* filiform; almost the length of the calyx. *Stigma* blunt-headed.

PER. *Capsule* ovate, three-cornered above, one-celled, three-valved at the top.

SEEDS very many, extremely small, oblong; sharp at both ends.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* none. *Caps.* one-celled. *Seeds* very many.]

SPECIES.

1. *Ortega hispanica*. *Spanish Ortega*.

Lin. Juss. 82. Reich. 1. 95. Willd. 190. mant.

320. Loeff. it. 112. Cavan. ic. 1. 35. n. 53.

t. 47. Gærtn. fruct. 2. 224.

Rubia linifolia aspera. Bauh. pin. 333. Raii hist. 1033.

Juncaria salmantica. Clus. hist. 1. 174. Park.

Stem branched, peduncles many-flowered.

[2. *Ortega dichotoma*. *Forked Ortega*.

Lin. Juss. 82. Reich. 1. 95. Willd. 190. Allion.

pedem. n. 2061. misc. taurin. 3. 176. t. 4. f. 1.

Stem dichotomous, peduncles one-flowered.

DESCRIPTIONS, &c.

1. Root round, knobbed, descending, with branched fibres in the lower part. Stems several, a foot high, thickened at the joints, which are red, and distant; branches from bottom to top, decussately opposite, erect, subdivided. Leaves almost linear, opposite, sessile, erect, bright green, as is the whole plant. Between each pair of leaves are two red tubercles on each side, from the centre of which issues a bristle-shaped, whitish, deciduous stipule. Flowers herbaceous, small, from each axil, and frequently a third from the forking of the branchlets, so close as to appear to be glomerate, on very short peduncles. Calycine leaflets ovate-acute, concave, two exterior, three interior. Filaments inserted into the base of the germ, yellowish, concealed within the internal leaflets of the calyx: anthers cordate at the base, acute at the tip. Germ superior, acute at both ends, ventricose, sharpest at the tip: style erect: stigma red. Seeds ovate, yellowish red.

It is a low trailing annual plant, native of Spain, where it was first observed by Clusius^d. Cultivated in 1768, by Mr. Miller. It flowers in June and July^e. In the Kew catalogue it is marked as perennial.—Gærtner remarks, that the embryo is straight, which is unusual in this family.

2. Root perennial. Stature of *Galium*. Stem erect, stiff, somewhat rugged, channelled on each side, thickened at the joints. Leaves opposite, linear, spreading, by no means smooth at the back. Two stipules on each side between each pair of leaves, minute bristle-shaped, with a thickish coloured base. Branches alternate. Panicle terminating. Flowers dichotomous on very short peduncles, green. Stigmas three, distinct, oblong, pubescent; each thicker than the style. It is very nearly allied to *Polycarpon*^f.—Native of Italy. Introduced in 1781, by Mons. Thouin. It flowers in August and September^g.

ORTHOTRICHUM. See *Weissia*.

ORTIGA. See *Loofa*.

ORVALA. See *Lamium* and *Salvia*.

^b Thunberg.

^c Hort. kew.

^d Cavanilles.

^e Hort. kew.

^f Linn.

^g Hort. kew.

ORYZIA. See *Portulaca*.]

ORYZA (of *Pliny*. *Opvζα* of *Dioscorides*: *Opvζov* of *Theophrastus*. Perhaps from *opvζα*, to dig.)

Lin. gen. n. 448. *Reich. n.* 483. *Schreb. n.* 609.

Tournef. t. 296. *Mich.* 81. *B.B.* *Juss.* 32.

Gertn. t. 80.

Class. 6. 2. Hexandria Digynia.

Nat. order of *Gramina*, *Gramineæ* or *Grasses*.

GENERIC CHARACTER.

CAL. Glume one-flowered, two-valved, very small, acuminate, almost equal.

COR. two-valved: valves boat-shaped, concave, compressed, the larger five-angled, awned.

Neetary (Petals of *Micheli*) two-leaved, flat, on one side of the germ, very small: leaflets narrow at the base, truncate at the tip, caducous.

STAM. Filaments six, capillary, the length of the corolla. Anthers bifid at the base.

PIST. Germ turbinate. Styles two capillary, reflex. Stigmas club-shaped, feathered.

PER. none. Corolla growing to the seed, oval-oblong, compressed, margins thin, two streaks on each side at the side.

SEED single, large, oblong, blunt, compressed, with two streaks on each side.

OBS. Is the flower composed of two florets? Aymen.

ESSENTIAL CHARACTER.

Cal. Glume two-valved, one-flowered. Cor. two-valved, almost equal, growing to the seed.

SPECIES.

1. *Oryza sativa*.

Lin. spec. 475. *syft.* 345. *Reich.* 2. 113. *hort. cliff.*

137. *mat. med.* 97. *Mill. illustr.* *Gertn. fruct.*

2. 5. *Lour. cochinch.* 214. *Thunb. jap.* 147.

Oryza. Bauh. pin. 24. *theat.* 479. *Camer. epit.* 192.

Dod. pempt. 509. *Matth.* 403. *Ger.* 72. *emac.* 79.

Park. theat. 1136. *Raii hist.* 1246. *Catech. car.* 1.

t. 14. *Plenck.* 278.

[α. *O. communissima*. Common Rice.

Pady taun. *Rumph. amb. l.* 8. c. 30.

β. *O. præcox*. Early Rice.

Pady djiji. *Rumph. amb. l.* 8. c. 30.

γ. *O. montana*. Dry or Mountain Rice.

Pady baggea. *Rumph. amb. l.* 8. c. 30.

δ. *O. glutinosa*. Clammy Rice.

Lour. cochinch. 215. *Berg. mat. med.* 294.

Bras Pulu. *Rumph. amb. l.* 8. c. 31. p. 201.

DESCRIPTIONS, &c.

Rice has the culm from one to six feet in length, annual, erect, simple, round, jointed. Leaves subulate-linear, reflex, embracing, not fleshy. Flowers in a terminating panicle. Calycine leaflets lanceolate. Valves of the corolla equal in length; the inner valve even, awnless; the outer twice as wide, four-grooved, hispid, awned. Style single, two-parted.

α. Culm four feet high. Panicle spiked, the spikes commonly simple. Fruit oblong, pale, with long awns. It is late, and is cut from six to eight months after planting. Cultivated in marshes, and withering with drought or a small degree of saltiness.

β. Culm three feet high. Panicle spiked; spikes branching. Fruit turgid, brownish red, with shorter awns. It ripens and is cut in the fourth month from planting. It is cultivated in marshes, and is not injured by the influx of salt water.

γ. Culm three feet high, and more slender. Fruit longish, with awns the longest of all. It is sown on mountains, and in dry soils; rots with a long inundation, and perishes with sea water.

δ. Culm four feet high. Leaves wider, yellowish. Panicle large, with shorter awns. Seed oblong, largish, glutinous, usually very white. This is cultivated both in wet and dry places. It varies with a black seed, which is higher flavoured, and also with a red seed^h.

The varieties of Rice, as of other cultivated grain, are innumerable. Loureiro proposes the above as species, distinct not from culture, but by nature; differing in the time of springing, growth and maturity, in the sort of soil that they require, in the form and

colour of the seed, and probably in other characters, if they were carefully examined.

The native place of Rice, like the other sorts of grain in common use, is unknown. Linneus indeed says, *habitat forte in Æthiopia*, but I do not know what authority he has for this assertion. By a mistake he has generally put Æthiopia for the country about the Cape of Good Hope: but perhaps he may here intend Abyssinia.

Rice is cultivated in great abundance all over India, where the country will admit of being flooded; in the southern provinces of China; in Cochinchina, Cambodia, Siam, Japan, &c. In Japan it is very white and of the best quality.

It has also been introduced into cultivation in the southern kingdoms of Europe, Italy, Spain, the South of France, and within a few years into Hungary.

In Carolina it has long been a staple commodity. Mr. Houghton's account of its introduction there is, that Mr. Ashby was encouraged to send a hundred pound bag full of Rice to that province, from which in 1698, sixty tons were imported into Englandⁱ.

Mr. Dalrymple says, that Rice in Carolina is the result of a small bag of Paddy, given as a present from Mr. Dubois treasurer of the East India Company to a Carolina trader. A Dutch vessel also from Madagascar brought Rice into the same province; and to this is attributed their having two kinds^k.

Mr. Miller cultivated it here in 1739^l: but Gerarde had it long before, for he says "the flower did not show itself with me, by reason of the injury of our unseasonable year 1596." In his time flowers were unknown.

In the hilly parts of Java, and in many of the Eastern Islands, the Mountain Rice is planted upon the sides of hills, where no water but rain can come; it is however planted in the beginning of the rainy season, and reaped in the beginning of the dry season. The natives call it *Paddy Gunung*, which signifies Mountain Rice. In the western parts of India it is entirely unknown^m.

It is well known in Cochinchina, where it thrives in dry light soils mostly on the sides of hills, not requiring more moisture than the usual rains and dews supply, neither of which is frequent at the season of its vegetationⁿ.

The French colonies are indebted to M. Poivre for introducing this dry rice in Cochinchina^{*}.

PROPAGATION AND CULTURE.

In China.

Much of the low grounds in the middle and southern provinces of China is appropriated to the culture of Rice; which constitutes the principal part of the food of all those who are not so indigent as to be forced to subsist on cheaper kinds of grain. A great proportion of the surface of the country is well adapted to the production of Rice. Many and great rivers run through the several provinces of China; the low grounds bordering on those rivers are annually inundated, by which means a rich mud or mucilage is brought upon their surface, that fertilizes the soil, in the same manner as Egypt is by the overflowing of the Nile.

After the mud has lain some days, preparations are made for planting Rice. For this purpose, a small spot of ground is inclosed by a bank of clay; the earth is ploughed up; and an upright harrow with a row of wooden pins in the lower end, is drawn lightly over it by a buffalo. The grain, previously steeped in dung diluted with animal water, is then sown very thickly on it. A thin sheet of water is immediately brought over it, either by channels leading to the spot from a source above it, or when below it, by means of a chain-pump, the use of which is as familiar as that of a hoe to every Chinese husbandman. In a few days the shoots appear above the water. In that interval, the remainder of the ground intended for cultivation, if stiff, is ploughed, the lumps broken by

ⁱ Collections, 2. 461.

^k Oriental Repertory, 1.

^l Hort. kew.

^m Cook's voy. 2. 732.

ⁿ Staunton's Emb. to China, 1. 349.

^{*} Rochon, Madag. introd. p. 45.

^h Loureiro.

hoes, and the surface levelled by the harrow. As soon as the shoots have attained the height of six or seven inches, they are plucked up by the roots, the tops of the blades cut off, and each root is planted separately, sometimes in small furrows turned with the plough, and sometimes in holes made in rows by a drilling stick for that purpose. The roots are about a foot asunder. Water is brought over them a second time, for the convenience of irrigation, and to regulate its proportion. The Rice fields are subdivided by narrow ridges of clay into small inclosures. Through a channel in each ridge the water is conveyed at will to every subdivision. As the Rice approaches to maturity, the water, by evaporation and absorption, disappears entirely; and the crop, when ripe, covers dry ground. The first harvest, in the southern provinces particularly, happens towards the end of May or beginning of June.

The instrument for reaping is a small toothed sickle. The sheaves are placed regularly in frames, two of which suspended at the extremities of a bamboo pole are carried across the shoulders of a man to the place where it is to be threshed. This operation is performed not only by a flail, or by the treading of cattle, but sometimes also by striking it against a plank set upon its edge, or by beating it against the side of a large tub scooped for that purpose; the back and sides being much higher than the front, to prevent the grain from being dispersed. After being winnowed it is carried to the granary.

To remove the skin or husk of Rice, a large strong earthen vessel, or hollow stone, in form somewhat like that which is used elsewhere for filtering water, is fixed firmly in the ground, and the grain, placed in it, is struck with a conical stone fixed to the extremity of a lever, and cleared, sometimes indeed imperfectly, from the husk. The same object is attained by passing the grain between two flat stones of a circular form, the upper of which turns round upon the other, but at such a distance from it as not to break the grain. The operation is performed on a larger scale, in mills turned by water; the axis of the wheel carrying several arms, which raise levers by striking upon the ends of them. Sometimes twenty of these levers are worked at once. The straw is cut chiefly into chaff, to serve as provender for the very few cattle employed in Chinese husbandry.

The labour of the first crop being finished, the ground is immediately prepared for the reception of fresh seeds. The first operation is to pull up the stubble, collect it into small heaps, burn it, and scatter the ashes upon the field. The former processes are afterwards renewed. The second crop is generally ripe late in October or early in November. The grain is treated as before; but the stubble is no longer burnt. It is turned under with the plough and left to putrefy in the earth. This, with the slime brought upon the ground by inundation, are the only manures usually employed in the culture of Rice. Lands thus fertilized by the overflowing of the tide in the proximity of the sea, or of rivers or canals, are not appropriated solely to the production of Rice. They are found equally suitable for raising an excellent crop of sugar canes, with the precaution only of keeping off the water after the young canes appear above the surface.

Satisfied with two crops of Rice or one of Sugar in the year, the Chinese husbandman generally suffers the land to remain at rest till the following spring, when the same process is repeated. And thus from generation to generation, successive crops are raised from the same soil, without the least idea of any necessity to let the earth lie fallow or idle for a year.

Culture in England.

Sow the seeds on a hot-bed, and when the plants are come up, transplant them into pots filled with rich light earth, and placed in pans of water, which should be plunged into a hot-bed; and as the water wastes it

Staunton, Emb. to China, 2. 392 to 397. See Thunberg's travels, 4, 85. 3, 148.

must be renewed from time to time. Keep them in the stove all the summer, and towards the end of August, they will produce the grain, which will ripen tolerably well, provided the autumn prove favourable.

[ORYZA. See *Paspalum*.

OSBECKIA. (So named by Linneus, in honour of Peter Osbeck, rector of Hasloef and Woxtorp in Sweden, member of the academy of Stockholm, and of the society of Upsal: author of a Voyage to China and the East Indies, in 1751; printed in 1757—English by Forster, 1771.)

Lin. gen. n. 467. Reich. n. 503. Schreb. n. 635. Gertn. t. 126. Juss. 330.

Class. 8. 1. Oständria Monogynia.

Nat. order of *Calycanthemæ*. *Melastomæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, permanent: border four-parted, deciduous: lobes oblong, acute, with a ciliate scalelet interposed between the lobes.

COR. Petals four, roundish, sessile, longer than the calyx.

STAM. Filaments eight, filiform, short. Anthers oblong, erect, terminated by a filiform beak, the length of the anther itself.

PIST. Germ inferior, ovate, fastened to the calyx below, terminated at top by four ciliate scales. Style awl-shaped, the length of the stamens. Stigma simple.

PER. Capsule clothed with the truncated tube of the calyx, subovate, four-celled, the cells gaping longitudinally at the top.

SEEDS very many, roundish. Receptacles crescent-shaped, (wide, compressed, G.)

ESSENTIAL CHARACTER.

Cal. four-cleft, with the lobes separated by a ciliary scale (or five-cleft without intercalated scales, G.)

Cor. four-petalled (or five-petalled. Stam. eight or ten. G.) Anthers beaked. Caps. inferior, four-celled (or five-celled, G.) surrounded by the truncated tube of the calyx.

SPECIES.

1. *Osbeckia chinensis*.

Lin. spec. 490. Syst. 357. Reich. 2. 145. suppl. 215. Osb. it. 213. t. 2. ed. angl. 1. 343. Burm. ind. 86. Lour. cochinch. 228. Gertn. fruct. 2. 202. Pluk. phyt. t. 173. f. 4. (Echinophora). Raii suppl. app. 236. (Kadali).

Leaves sessile, peduncles axillary three-flowered bracted.

2. *Osbeckia zeylanica*.

Lin. syst. 357. suppl. 215.

Leaves petioled, peduncles axillary one-flowered naked.

DESCRIPTIONS, &c.

1. Root perennial, woody, sometimes consisting of a little knob with branches. Stems quadrangular, the thickness of a packthread, seldom exceeding half a yard in length, generally branched, and sometimes like a little bush. The branches, which are quadrangular and somewhat hairy, are commonly opposite, and single, or not divided. On the top are commonly two flowers, surrounded with four leaves, two of which are short, but longer than the flowers: the leaves are opposite; each couple is an inch or more from the other, and the nearer to the flower the farther they are asunder. They are somewhat obtuse in young plants, and about an inch long, but in old ones they are longer, and sharp: those which grow at the bottom of the branches are frequently as long again as the others. Most of them have no petiole, and are lanceolated sometimes, yet narrower; almost every where of equal breadth; margins entire; the upper side covered with stiff hairs which lie down; on the under side, on the edge, and upon the three veins, which run almost the whole length of the leaf in a straight line, there is only a thin pubescence. The calycine segments are somewhat downy on the outside. Petals red. Filaments inflected, and together with the petals, fastened to the calyx: of the same length with the calyx, and consequently shorter than the petals. The capsule looks like a little pot or pitcher, running narrower to the bottom. Seeds small, in a microscope looking like little worms lying in a circular form.

According to Linneus it has the habit of *Melastoma*. Stem erect, brachiate, acutely quadrangular. Leaves

• Osbeck.

narrow-

narrow-lanceolate, three-nerved, opposite, rugged, subsessile. Flowers terminating, few, sessile, surrounded by four leaves, longer than the flower, and spreading¹.

Loureiro says that the stem is two feet high, suffrutescent, hairy, branched. Leaves hispid, quite entire. Flowers red, heaped, terminating; peduncled. Anthers oblong, tailed, not broken, nor beaked. Berry roundish, juiceless.

According to Gärtner, the seed-vessel is an inferior ovate Capsule, covered with the hispid calyx adhering close to it, and with stiff clustered bristles, scarcely confluent into scales, crowned at the top, five-celled, and opening into five parts above. Receptacles five, one in each cell, semiovate, wedge-form-compressed, free on one side, on the other fastened longitudinally to the axis of the capsule. Seeds very numerous, small, globular-kidney-form, somewhat russet, or dirty straw-coloured. Skin double: outer crustaceous, brittle; inner membranaceous, very thin: no vestige of any albumen: embryo of the same shape with the seed, bowed, yellow; cotyledons plano-convex, short, thick; radicle longer than the cotyledons, curved centripetal. Gärtner doubts, whether the fruit here described, may not rather be that of *Os. zeylanica*.

Native of the East Indies and China. The Chinese call it *Komm-Heyong-loaa*, or *Feather of Gold Roses*. The whole plant is sold in the apothecaries shops; they boil it with old *Kuli-Tea*, and drink the decoction in colics. In strains and swellings it is used in the bath².

2. In appearance this resembles the preceding very much. It is a native of Ceylon, and was found there by Koenig³.

OSIER. See *Salix*.

OSMANTHUS. See *Olea*.

OSMITES. (From *ὄσμη*, odor: on account of its powerful sweet smell.)

Lin. gen. n. 983. Reich. n. 1063. Schreb. n. 1326.

Gärtn. t. 174. Juss. 186. Bellidiastrum. Vaill. mem. par. 1720.

Class. 19. 3. Syngenesia Polygamia Frustranea.

Nat. order of *Compositæ Discoideæ. Corymbiferae*, Juss.

GENERIC CHARACTER.

CAL. Common imbricate, gibbous; with the inmost leaflets augmented at the tip.

COR. Compound radiate: Corollets hermaphrodite several in the disk. Female in the ray.

Proper of the hermaphrodite tubular, five-cleft: of the female ligulate, entire.

STAM. in the hermaphrodites, Filaments five, very short. Anther cylindrical, tubular.

PIST. in the hermaphrodites: germ oblong; style filiform, the length of the corollet; stigma bifid. In the females, germ smaller; style filiform, the length of the corollet; stigma obsolete.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites solitary, oblong; with scarcely any pappus, or only margined: the pappus obsolete and somewhat chaffy:—in the females, rudiments commonly abortive.

RECEPT. chaffy.

ESSENTIAL CHARACTER.

Cal. imbricate, scarious. Cor. of the ray ligulate. Down obsolete. Recept. chaffy.

SPECIES.

1. *Osmites Bellidiastrum*.

Lin. spec. 1285. Reich. 3. 892. amoen. 4. 330. (Anthemis).

Bellis frutescens africana camphorata. Raii suppl. 221.

Bellidiastrum. Vaill. mem. par. 588.

Leaves linear fleshy, stems scarious.

2. *Osmites camphorina*.

Lin. spec. 1285. syst. 783. Reich. 3. 892. mant. 477. amoen. 6. afr. 78. Gärtn. fruct. 2. 442.

Seba mus. 1. 143. t. 90. f. 2. (Bellis).

β. Anthemis leucantha. Lin. spec. 1261.

Leaves lanceolate subserrate toothed at the base.

3. *Osmites Asteriscoides*.

Lin. spec. 1285. syst. 783. Reich. 3. 893. amoen. 6. afr. 79. Berg. cap. 305. Gärtn. fruct. 2. 442.

¹ *Lin. spec.*

² *Osbeck.*

³ *Lin. suppl.*

Burm. afr. 161. t. 58. f. 1. (Leucanthemum).

Raii suppl. 221. Seba mus. 1. t. 16. f. 4. (Bellis).

Leaves lanceolate dotted, stems leafy.

4. *Osmites calycina*.

Lin. syst. 783. suppl. 380.

Leaves lanceolate naked, calyxes scarious.

DESCRIPTIONS, &c.

1. Branches woody and thickish. Leaves oblong, narrow, acute, nearly of the same form and size with those of *Hyssop*, sessile, all over the branches to the very flowers, which are several in number at the ends of the stem and branches: the disk of them is yellow and the ray white¹.

2. Stems quite simple, with one peduncled flower. Leaves like those of *Chrysanthemum Leucanthemum*, or *Ox-eye Daisy*, tooth-serrate, naked, gradually smaller towards the top: they are sessile, alternate, clustered, tomentose. Ray of the corolla white; disk yellow².

Receptacle somewhat convex: chaffs between the florets linear-oblong, concave, a little shorter than the calyx, or the same length with the florets of the disk. Linneus remarks that they are blueish at the tip. Seeds small, ovate, attenuated each way to an obsolete edge, convex on one side and grooved or striated, flat on the other; pale. Pappus chaffy, many-leaved; leaflets shorter by half than the seed, acuminate, quite entire or toothletted³. It has a very strong smell of Camphor, whence both its names.

3. Stem thick, warted. Leaves scattered, naked, linear, serrate at the tip. Flowers terminating sessile⁴. Calyx hemispherical, consisting of many leaves in a double row: leaflets herbaceous, acuminate, almost equal, pubescent on the outside. Receptacle flattish, with the chaffs of the same length with the florets of the disk. Florets of the ray neuter, with ovate-lanceolate, quite entire, yellow petals:—of the disk androgynous, tubular; the corollets when mature arched at the base into a hemispherical spongy calyptra, or veil, covering the top of the seed. These florets are succeeded by oblong seeds, somewhat convex, and grooved on one side, flat on the other, of a brown bay colour. They have no pappus; but in its stead a rim, that is somewhat waved, quite entire, covered by the veil of the corollet, surrounding a little short white papilla, placed on the very summit of the seed. This species differs so much from the preceding, that it might constitute a separate genus⁵.

4. Stem erect, proliferous, not thickened: branches a little pubescent. Leaves scattered, erect, narrow-lanceolate, naked or very little pubescent, striated, nerved underneath. Flowers terminating, solitary, sessile. The inner row of the scales of the calyx lanceolate, the same length with the disk of the corolla, and therefore the calyx is rayed. Corolla yellow⁶.

These are all shrubs, natives of the Cape of Good Hope.]

OSMUNDA.

[*Lin. gen. n. 1172. Reich. n. 1289. Schreb. n. 1622. Tournef. t. 324. Juss. 15.*

Class. 24. 2. Cryptogamia Filices.

Nat. order of *Filices* or Ferns.

GENERIC CHARACTER.

Capsules distinct, disposed in a raceme; in such a manner as to look the same way, or else heaped on the back of the pinna or division of the frond, sessile, subglobular, opening transversely, without any ring. Seeds very many, extremely minute.

OBS. The species with capsules surrounded by an elastic ring ought to be removed from this genus.

SPECIES.

1. *Osmunda zeylanica*.

Lin. spec. 1519. Reich. 4. 378. fl. zeyl. n. 373.

Ophioglossum laciniatum. Rumph. amb. 6. 153. t. 68. f. 3.

Scape cauline solitary, fronds verticillate lanceolate undivided.

2. *Osmunda Lunaria. Moon-wort.*

Lin. spec. 1519. syst. 927. Reich. 4. 379. fl. suec. n. 932. lapp. n. 389. hort. cliff. 472. Hudf. angl.

¹ Ray.

² Linn. mant. & amoen.

³ Gärtner.

⁴ Linn.

⁵ Gärtner.

⁶ Linn. suppl.

449. *Witber. arr. ed.* 3. 762. *Engl. bot. t.* 318. *Bolton fil.* 4. *Lightf. scot.* 652. *Relb. cant.* n. 755. *Sibth. oxon.* n. 738. *Hall. belv.* n. 1686. *Weif. crypt.* 285. *Pollich pal.* n. 954. *Scop. carn.* n. 1257. *Fl. dan. t.* 18. f. 1. *Villars dauph.* 3. 836. *Allion. pedem.* n. 2387. *Kniph. cent.* 11. n. 82. *Blackw. t.* 420. *Knorr. del. hort.* 2. t. O. 3. *Zorn. ic. i. t.* 65.
- O. foliis lunatis. *Tournef. inst.* 547. *Garid. aix. t.* 75.
- Lunaria minor. *Camer. emit.* 643. 1. *Dalech.* 1313. *Fuchs.* 483. *Matth.* 903. *Lonic.* 1. 77. 1. *Ger.* 328. 2. *emac.* 405. 2. *Park. theat.* 507. *Raii hist.* 127. *syn.* 128. *Mor. hist. f.* 14. t. 5. f. 1.
- L. racemosa minor & vulgaris. *Baub. pin.* 354.
- L. botrytis. *Baub. hist.* 3. 709.—minor. *Clus. hist.* 2. 118. 2.
- Lunaria. *Dod. pempt.* 139. 2. *Trag.* 914.
- L. racemosa. *Lob. obs.* 470. 3. *ic.* 1. 807. 2.
- Epimedium Dioscoridis. *Col. phyt.* 18.
- β. Lunaria racemosa ramosa major. *Baub. pin.* 355. *Witber. var.* 2.
- Lunariae rarior species. *Cam. epit.* 644.
- γ. L. racemosa minor, adianti folio. *Breyn. cent.* 183. t. 93. *Fl. dan. t.* 18. f. 3. *Mor. ord.* 2. f. 3. *Witber. var.* 3.—β. *Huds. Bolt. p.* 5. *Raii hist.* 127.
- L. minor fol. dissectis. *Raii syn.* 129.
- δ. L. minor rutaceo folio. *Baub. pin.* 355. *Scape cauline solitary, frond pinnate solitary.*
3. Osmunda virginica. *Lin. spec.* 1519. *Reich.* 4. 379. *Gron. virg.* 196. O. asphodeli radice. *Plum. fil.* 136. t. 159. *Pet. fil.* 168. t. 9. f. 2. *Scape cauline solitary, frond superdecompound.*
4. Osmunda ternata. *Lin. syst.* 927. *Thunb. jap.* 329. t. 32. *Scape cauline solitary, frond three-parted superdecompound.*
5. Osmunda phyllitidis. *Lin. spec.* 1520. *Reich.* 4. 379. *Plum. fil.* 133. t. 156. *Pet. fil.* 163. t. 8. f. 15. *Scapes cauline in pairs, frond pinnate, stem even.*
6. Osmunda hirta. *Lin. spec.* 1520. *Reich.* 4. 379. *Pet. fil.* 164. t. 14. f. 5. *Plum. fil.* 114. t. 157. Lunaria hirsuta, lonchitidis folio, spica gemella. *Raii suppl.* 102. *Mor. hist.* 3. 595. 8. *Scapes cauline in pairs, frond pinnate, stem rough-haired.*
7. Osmunda hirsuta. *Lin. spec.* 1520. *Reich.* 4. 380. *Pet. fil.* 165. t. 8. f. 16. *Plum. fil.* 138. t. 162. Lunaria elatior, matricariae folio, spica duplici. *Sloan. jam.* 1. 71. t. 25. f. 6. *Mor. hist.* 3. 595. 7. *Raii suppl.* 101. *Scapes cauline in pairs, frond bipinnate hirsute.*
8. Osmunda adianthifolia. *Lin. spec.* 1520. *Reich.* 4. 480. *Plum. fil.* 135. t. 158. *Pet. fil.* 167. t. 9. f. 1. Lunaria elatior, adianti albi folio, duplici spica. *Sloan. jam.* 1. 71. *Mor. hist.* 3. 595. 6. *Adiantum faxosum floridum.* *Plum. amer.* 29. t. 43. *Raii suppl.* 101. *Scapes cauline in pairs, frond superdecompound.*
9. Osmunda verticillata. *Lin. spec.* 1520. *Reich.* 4. 380. *Plum. fil.* 137. t. 160. *Pet. fil.* 171. t. 12. f. 4. *Scapes radicate, racemes verticillate, frond superdecompound.*
10. Osmunda cervina. *Lin. spec.* 1521. *Reich.* 4. 380. *Plum. fil.* 132. t. 154. *Pet. fil.* 162. t. 8. f. 3. *Scape radicate, frond pinnate, pinnae quite entire.*
11. Osmunda bipinnata. *Lin. spec.* 1521. *Reich.* 4. 381. *Plum. fil.* 133. t. 155. *Scape radicate, frond pinnate, pinnae pinnatifid.*
12. Osmunda peltata. *Swartz prodr.* 127. Lichen digitatus geranii facie. *Plum. fil. t.* 50. f. 4. Shoot creeping, fructifications pedate distinct roundish-balved entire, fronds dichotomous with linear segments.
13. Osmunda aurita. *Swartz prodr.* 127. *Scapes radicate, fronds bipinnate at bottom, pinnate at top, pinnae at the base eared upwards serrate convex shining.*
14. Osmunda filiculifolia. *Lin. spec.* 1521. *Reich.* 4. 381. *hort. cliff.* 172. *Plum. fil.* 138. t. 161. *Pet. fil.* 170. t. 9. f. 3. *Scape radicate panicled, frond superdecompound.*
15. Osmunda regalis. Osmund-royal, or Flowering Fern. [*Lin. spec.* 1521. *syst.* 927. *Reich.* 4. 381. *fl. suec.* n. 933. *hort. cliff.* 472. *Huds. angl.* 449. *Witber. arr. ed.* 3. 763. *Engl. bot.* 209. *Lightf. scot.* 653. *Fl. dan. t.* 217. *Villars dauph.* 3. 837. *Allion. pedem.* n. 2388. *Kniph. cent.* 2. n. 49. *Blackw. t.* 324. *Plum. fil.* 35. t. B. f. 4. *Bolton fil.* 5. *Park. theat.* 1038. *Lob. obs.* 474. 1, 2. *ic.* 1. 813. *Filix ramosa non dentata florida.* *Baub. pin.* 357. *Mor. hist. f.* 14. t. 4. *ord.* 3. f. 1. *Raii syn.* 125. *ed.* 1. 1, 2. *ad. p.* 1. fig. *F. florida f. O. regalis.* *Ger.* 971. *emac.* 1131. *Raii hist.* 151. *F. floribus insignis.* *Baub. hist.* 3. 736. *F. palustris.* *Dod. pempt.* 463. β. *Gron. virg.* 123. *Pluk. phyt. t.* 181. f. 4. *Mor. hist.* 3. 593. *Fronds bipinnate, racemiferous at the top.*
16. Osmunda claytoniana. Virginian Osmunda. *Lin. spec.* 1521. *Reich.* 4. 381. *Clayt.* *Fronds pinnate, pinnae pinnatifid closely fructifying at top.*
17. Osmunda capensis. *Lin. syst.* 927. *Reich.* 4. 382. *mant.* 306. *Fronds pinnate, pinnae cordate-lanceolate crenulate.*
18. Osmunda cinnamomea. Woolly Osmunda. *Lin. spec.* 1522. *Reich.* 4. 382. *Pet. mus.* 86. *Raii suppl.* 86. *Frond pinnate, pinnae pinnatifid, scapes hirsute, racemes opposite compound.*
19. Osmunda Struthiopteris. Bird's-nest or Russian Osmunda. *Lin. spec.* 1522. *syst.* 927. *Reich.* 4. 382. *fl. suec.* n. 935. *Pallas it.* 1. 35. *Gunn. norv. n.* 1. t. 1. f. 1, 2, 3. *Fl. dan. t.* 169. *Filix palustris altera fusco pulvere hirsuta.* *Baub. pin.* 358. *Filicestrum septentrionale & palustre.* *Amm. ruth.* 175. *act. petrop.* 10. t. 18. *Lonchitis norvegica minor.* *Raii app.* 68. *Struthiopteris.* *Thal. herc.* 119. *Fronds pinnate, pinnae pinnatifid, fructifying scape distich.*
20. Osmunda lineata. *Swartz prodr.* 127. *Fronds pinnate lanceolate, obliquely cordate at the base, entire at the edge; the fructifying pinnae crenulate scaly in the middle.*
21. Osmunda polypodioides. *Swartz prodr.* 127. *Fronds lanceolate pinnatifid, segments confluent entire ascending, with raised dots at the edge, scape lanceolate, pinnae remote.*
22. Osmunda Spicant. Rough Spleenwort. *Lin. spec.* 1522. *syst.* 928. *Reich.* 4. 383. *fl. suec.* n. 936. *Fl. dan. t.* 99. *Huds. angl.* 450. *Curt. lond.* 2. 67. 127. *Lightf. scot.* 654. *Relb. cant.* n. 756. *Blechnum Spicant.* *Witber. arr. ed.* 3. 765. *Acrostichum Spicant.* *Sibth. oxon.* n. 739. *Villars dauph.* 838. *Hedw. theor.* 5. *Struthiopteris.* *Hall. belv. n.* 1687.—*Spicant.* *Scop. carn. n.* 1258. *Weif. crypt.* 287. *Filicestrum Polypodii folio brevior et crassior.* *Act. petrop.* 10. 280. *Polypodioides vulgaris foliis angustis.* *Mich. florent.* 163. *Tozzet. it.* 1. 197. *Lonchitis altera.* *Clus. hist.* 2. 213. 1. *Lonchitis minor.* *Baub. pin.* 359. *L. aspera.* *Dod. pempt.* 469. 1. *Ger.* 978. 2. *emac.* 1140. 2. *Raii hist.* 138. *syn.* 118.—minor. *Park. theat.* 1042. 2. *Camer. epit.* 665.

- L. altera.* *Lob. obs.* 475. 2. *ic.* 1. 815. 2.—folio Polypodii. *Baub. hist.* 3. 745. 2. *Mor. hist.* 3. f. 14. t. 2. f. 23.
- Scolopendrium majus.* *Lonic.* 1. 225. 1.
- Fronde lanceolate pinnatifid, segments confluent—quite entire parallel.*
23. *Osmunda crispa.* *Curled Osmunda* or *Stone Fern.*
Lin. spec. 1522. *syft.* 928. *Reich.* 4. 383. *mant.* 505. *Huds. angl.* 450. *Fl. dan.* t. 496. *Bolton* 7.
- Pteris crispa.* *Wither. arr. ed.* 3. 764. *Allion. pedem.* n. 2392.
- Acrostichum crispum.* *Villars dauph.* 3. 838.
- Adiantum foliis minutim in oblongum scissis, pediculo viridi.* *Baub. pin.* 355. *Mor. hist.* 3. 585. f. 14. t. 5. f. 25.
- A. album tenuifolium, Rutæ murariæ accedens.* *Baub. hist.* 3. 743. *Raii hist.* 147.
- A. album crispum alpinum.* *Schwenckf. cat.* 10. *Raii syn.* 2. 49. 3. & 3. 126. 9. *hist.* 147.
- A. album floridum f. Filicula petræa crispa.* *Raii syn.* 2. 51. 10. *hist.* 153. *Pluk. phyt. t.* 3. f. 2, 3.
- Rutæ murariæ forte affinis, A. album crispum alpinum.* *Baub. hist.* 3. 743.
- Filix.* *Hall. helv. n.* 1689.—botryoides f. *Filicula petræa florida anglica, foliis plurifariam divisis.* *Mor. hist.* 3. 593. f. 14. t. 4. f. 4, & 27.
24. *Osmunda japonica.*
Lin. syft. 928. *Thunb. jap.* 330.
Fronde bipinnate, pinnas cordate-lanceolate ferrate.
25. *Osmunda lancea.*
Lin. syft. 928. *Thunb. jap.* 330.
Fronde bipinnate, pinnas lanceolate ferrate.
26. *Osmunda discolor.*
Forst. flor. austral. n. 413.
Fronde pinnate, pinnas oblong sbarpish entire sessile alternate approximating.
27. *Osmunda procera.*
Forst. flor. austral. n. 414.
Fronde pinnate, pinnas remote ovate-oblong acuminate ferrate sessile.

DESCRIPTIONS, &c.

Some of the species (as *Struthiopteris*, *Spicant* and *crispa*) do not belong to this genus, having the elastic ring common to the dorsiferous Ferns, or Ferns properly so called. *O. Spicant* is referred to *Blechnum* by some, to *Acrostichum* by others, to *Struthiopteris* by Haller, Scopoli and Weis. *O. crispa* is referred to *Pteris*; Villars make it an *Acrostichum*; old authors in general name it an *Adiantum*. Till the genera of Ferns are better arranged, I have left the species as I find them in the 14th edition of *Systema Vegetabilium*; though there is no doubt of the species named above being essentially different from the genuine *Osmundas*.

1. Plant a foot high, with a naked stem, terminated commonly by seven, petioled, undivided, lanceolate leaves, placed in a ring, and erect; among them rises a cylindrical, peduncled spike^b. Native of Ceylon and Amboina.

2. Root fibrous. Plant three, four, or five inches high, sometimes a little higher. The stem divides in the middle into two branches, one of which immediately puts forth leaflets on each side; the other supports a naked flowering raceme^c. Pinnas of the frond fleshy, crescent-shaped, semi-circular and halbert-shaped, irregularly scolloped, from three to eight pairs with an odd one. Spike or rather panicle from one to two inches long^d. The branches lean one way; two rows of globular capsules are affixed to them, green at first, but yellow when ripe, and bursting vertically from the top to the base. These capsules are divided by an annular zone, and contain numerous, oval, dust-like seeds^e.

Weis thus describes the fructification.—About the origin of the leaf, comes out a single floral scape, which is a continuation of the stem; it is from an inch to two inches in length, branched, the branches commonly opposite, three, four, to six or seven and even more on each side, simple or somewhat branched, to which roundish capsules are fixed in a sort of raceme,

^b Linn. zeyl.^c Scopoli.^d Woodw. and Wither.^e Lightfoot.

closely heaped in a double row, green at first, but turning yellow, and gaping widely from the top towards the base.

Linneus observes, that within the base of the stem, early in the spring, we may find a complete rudiment of the next year's plant.

Mr. Woodward remarks, that Moon-wort so exactly resembles *Ophioglossum vulgatum* in habit and structure, that they ought by no means to be separated.

The difficulty, says Mons. Villars, of meeting with this plant, which is not common, and lies concealed among grass, the singularity of its leaves, the superstitious reveries of Matthiolus, who has attributed supernatural virtues to it, all conspire to make it sought after by philosophers, herbarists, and those who hunt after wonderful secrets and the philosopher's stone. After all, it is merely vulnerary, astringent, and a little mucilaginous.—Native of most parts of Europe in dry pastures; flowering from may to july.—With us, near Linton and Chippenham in Cambridgeshire; Colchester in Essex; Bury in Suffolk; Stratton-heath in Norfolk; Shotover-hill, and North-Leigh-heath in Oxfordshire; Scadbury-park, Maidstone, Blackheath and Chesselhurst-common in Kent; north side of Bredon-hill and near Stourbridge in Worcestershire; near Bath in Somersetshire; Nottinghamshire; Lancashire; near Settle and Ingleton in Yorkshire; in mountainous pastures of Westmoreland; in Scotland, on Ardath-hill, to the north of Linlithgow; near Dundonald's, two miles from Little Loch Broom, on the western coast of Ross-shire, in the isle of Skye, &c. In Ireland, on the rising ground of a meadow two hundred yards north of the second Lock of Lagan canal, found by Mr. John Templeton of Orangegroove near Belfast.

There are several varieties of this curious little plant, with several leaves and spikes, and with the leaves cloven.

3. Native of North America.

4. Root composed of numerous filiform fibres in bundles, with few fibrils. Stipe simple at bottom, an inch high, and then dividing into a frond and a floriferous scape. Frond solitary, petioled, super-decom-pound-ternate, smooth: petiole compressed a little, a finger's length, triternate below, naked, leafy above, bipinnate. Pinnas and pinnules alternate, gashed, very finely ferrate. Scape from the base of the petiole, roundish, striated, erect, naked, smooth, twice as long as the frond, drooping and flowering at top. Spike branched: spikelets alternate, with globular capsules.

Native of Japan, about Nagasaki, flowering in october and november^f.

5. Native of South America.

6. Root a bundle of small fibres. Stems six or seven, a foot high, brittle, green with brown hairs. On the upper part of these are two opposite fronds, an inch and half long, and half an inch wide, mucronate, toothed on the edge, green and smooth on the upper surface, but loaded with white hairs on the under. From the base of the fronds arise two scapes, half a foot long, slender, covered with a silky lanugo, and terminated by erect, pyramidal racemes, two inches long^g.

Found by Plumier in the island of Martinico.

7. This rises a foot or more, and is higher than the next species. In its higher spikes, which are double, it exactly agrees with it, only the pinnules are longer, narrower, not cut quite into the midrib, and of a paler green colour, something in their divisions, like the leaves of *Matricaria*.

8. This is sometimes about a foot, but mostly six or seven inches high, having a very slender green stalk, at first coming out of the earth of a dark colour. At about four inches from the ground, out of one side of the stalk arises one branch, on which twigs are set alternately, having several broad irregularly figured roundish pinnules, sometimes deeply cut, at other times a little indented on the edges, of a pale green colour, like *Adiantum album*, and having many furrows ap-

^f Thunberg.^g Plumier, amer. 18. t. 26. and Morison.

pearing radiated. From the axil of this branch rise two round, small, green stalks, two inches long, towards the tops of which are several small bunches of capsules, at first green, afterwards ferruginous. The root is covered with blackish hair, having several fibrils.

Both natives of Jamaica, by the banks of Rio Cobre ^h.

9, 10, 11. Found in South America by Plumier.

12. This also is a native of Jamaica, where it was found by Swartz.—According to the President of the Linnæan Society, it is a species of *Acrostichum*.

13. Native of Jamaica, where it was found by Swartz.

14. Found in South America by Plumier.

15. Root thick, externally fibrous, and covered with thin brown scales. Plant from two to four feet high, of a pleasant transparent green. Pinnules of the frond from six to ten pairs with an odd one at the end, each about two inches long, lanceolate or linear-lanceolate, blunt, finely but indistinctly serrated, divided by a midrib, from both sides of which arise numerous fine bifid dichotomous nerves, their ramifications capillary and parallel; the lower and younger ones often lobed at the base. The central leaves are terminated by a bipinnate branch of fructifications; the pinnules awl-shaped, and crowded with sessile clusters of globular capsules, green when young, but reddish brown when ripe, and bursting vertically. The external leaves are barren ⁱ.

Native of several parts of Europe, and also of Virginia, in watery places and bogs; it is the largest and handsomest of our British Ferns, and is found near Yarmouth and St. Faith's Newton bogs near Norwich; in the New Forest; in Cornwall; in the isle of Anglesea; in several parts of Scotland; in Ireland, where it is called *Bog Onion*, in Kirkistown bog ^{*}. In Gerard, the names are Water Fern, Osmund the Waterman, St. Christopher's herb.

This is the only species of *Osmunda* which is noticed by Mr. Miller.

16. Linneus remarks, that *O. regalis* connects the preceding with this, and that this connects the following species with that.—Native of North America. Introduced in 1772, by Samuel Martin, M. D. It flowers in august ^k.

17. Frond leafy, more than a foot high, simply pinnate, with a chaffy stock. Pinnas sessile, ensiform, transversely striated, ferrulate, approximating, cordate at the base, embracing, even. Scape formed of the fructifying frond. Pinnas linear, distich, alternate, remote, a finger's length, the thickness of a goose-quill, rolled back at the edge, covering at first the fructification, and afterwards the disk between the margins, as in *Acrostichum*.—Native of the Cape of Good Hope ^l.

18. Native of North America. Introduced in 1772, by Samuel Martin, M. D. It flowers in june ^m.

19. The fronds grow in a ring, forming a hollow disk, as in *Asplenium Nidus* and *Scrophularia nodosa*, and thus affording an asylum to some of the Amphibia and the nest of Birds ⁿ.—Native of the north of Europe. Cultivated in 1760, by Peter Collinson, Esq. ^o

20, 21. Natives of Jamaica ^p.

22. Several barren leaves proceed from one fibrous root, disposed in a ring, half upright or reclining, from a span to a foot in length, resembling those of Common Polypody, simple and pinnatifid; the pinnas close, alternate, lanceolate, oblong, about two lines broad, quite entire, curved upwards; the middle ones largest, an inch or an inch and half in length; the upper and lower ones shorter, ribbed, the edge cartilaginous, very slightly notched, and bent backwards. Stipe or midrib beset on the lower part with small brown scales. From the centre of these leaves arise others bearing the fructifications; these are also pinnated, but twice as long, and more slender; the pinnas loosely set and alternate, a line in breadth; the middle ones longest, the upper and lower ones gradually decreasing ^q. The

narrow segments of these fertile leaves are remote from each other, the confluence however may almost always be traced, and towards the bottom of the leaf gives a waved appearance to the midrib ^r. Capsules closely crowded together, forming two distinct lines, parallel with the edges of the leaf, at first of a yellowish colour, becoming brown as they ripen ^s. Fructifications covered at first with a thin membrane. Capsule one-celled, two-valved, connected by an annular elastic cord, containing many minute seeds ^t.

Dr. Withering, who in his second edition had made this Fern an *Acrostichum*, in his third introduces it as a *Blechnum*, in compliance with the opinion of Dr. Smith and Mr. Robson, though from the narrowness of the leaflets it is not easy to determine whether the rows of capsules may more properly be considered as contiguous and parallel to the midrib, which is the character of that genus, or as disposed along the edge of the leaf, which would refer it to the *Pteris*. It appears however from Hedwig's microscopical dissections, that the anthers are found upon the midrib; and that circumstance seems sufficient to determine that the rows of capsules more properly belong to that than to the edge of the leaf, notwithstanding Hedwig himself has determined it to belong to the genus *Acrostichum*.

Wherever botanists may at length agree to fix this Fern, it is clear that it cannot be an *Osmunda*.

Rough Spleenwort is native of several parts of Europe, in woods and on moist heaths; producing its fructifications from july to september. It is not uncommon in Britain.

23. Leaf-stalks from two to seven inches long, waved, green. Leaf from an inch and half to three inches long. Leaflets of the barren leaves wedge-shaped and snipt at the edge; those of the fertile leaves much narrower, linear or linear-lanceolate, and entire ^u. Fructifications in lines along the under margin of the leaflets, which is rolled back upon them, as in *Pteris aquilina*: after the discharge of the seeds increasing in breadth so as to cover the whole disk, except the midrib ^v. Capsules surrounded with an elastic ring: and therefore this Fern is not an *Osmunda* ^w.

Mr. Lightfoot remarks, that the outer barren leaves are smooth; the extreme pinnules of an obtuse rhomboidal figure, plane, and toothed on the edges: the central fertile ones have the outer pinnules oval, convex, peduncled, their edges contracted, and the under sides covered with yellow dust-like fructifications.

Native of several parts of Europe, as Switzerland, Denmark, the South of France, Italy and Britain. With us in the county of Rutland; Cader Idris in Wales; Shap, near Kendall, &c. in the northern counties, on rocks, heaths and old walls, common. On rocks and stones upon the highland mountains of Scotland. The fructifications are ripe in september.

24. Stipe of the frond round, yellow, smooth. Frond bipinnate, with an odd leaflet. Pinnas opposite and alternate, oblique at the base, cordate, oblong, blunt, ferrulate with a reflex margin, marked with lines, smooth, green above, pale beneath, an inch and half long. Fertile fronds distinct, bipinnate: pinnas opposite and alternate, linear-lanceolate. It differs from *O. regalis*, which it resembles very much, in having the fertile fronds distinct.—Native of Japan, flowering in april and may.

25. This also has the fertile fronds distinct, with the flowering spikes superdecompound ternate. Pinnas generally opposite, the upper ones quite so: pinnules alternate, seldom nearly opposite, lanceolate, very finely serrate, attenuated both ways, smooth, an inch or an inch and half long.—Native of Japan, flowering in april and may ^z.

26, 27. Natives of New Zealand ^a.

PROPAGATION AND CULTURE.

Osmund Royal and the other European sorts, except Moonwort, will grow in a moist shady situation in gardens: but will not thrive very well without bog earth. Moonwort must have a dry situation.

^h Sloane. ⁱ Lightfoot and Withering.

^{*} Mr. Templeton.

^k Hort. kew.

^l Linn. mant.

^m Hort. kew.

ⁿ Linn. suec.

^o Hort. kew.

^p Swartz.

^q Weis.

^r Woodward.

^s Weis.

^t Hedwig.

^u Withering.

^v Bolton.

^w Withering.

^z Thunberg.

^a Forster.

OSMUNDA. See *Blechnum*, *Onoclea*, *Pteris*.]

OSSIFRAGA. See *Euphorbia*.

OSTEOSPERMUM. (ὀστεον σπέρμα, bony seed.)

Lin. gen. n. 992. Reich. n. 1075. Schreb. n. 1341.

Gært. t. 168. Juss. 183. Monilifera. Vaill.

mem. par. 1720. f. 28. Chrysanthemoides.

Tournef. mem. par. 1705. f. 4. Dill. gen. 9. elth. 68.

Class. 19. 4. Syngenesia Polygamia Necessaria.

Nat. order of *Compositæ Discoideæ*. *Corymbifera*, Juss.

GENERIC CHARACTER.

CAL. Common simple, hemispherical, many-leaved: leaflets awl-shaped, small.

COR. Compound rayed. Corollæ hermaphrodite very many, in the disk. Females about ten in the ray.

Proper, of the hermaphrodite tubular, five-toothed, the length of the calyx:—of the female ligulate, linear, three-toothed, very long.

STAM. in the hermaphrodites, Filaments five, capillary, very short. Anther cylindrical, tubulous.

PIST. in the hermaphrodites, Germ very small. Style filiform, scarcely the length of the stamens. Stigma obsolete.—In the females, Germ globular. Style filiform, the length of the stamens. Stigma emarginate.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites none:—in the females foliary, subglobular, coloured, at length hardened, inclosing a kernel of the same shape. Pappus none.

REC. naked, flat.

ESSENTIAL CHARACTER.

Cal. simple or in two rows many-leaved, almost equal.

Seeds globular, coloured, bony, (berried or nucamentaceous, G.) Down none. Recept. naked.

SPECIES.

1. *Osteospermum spinosum*. Prickly *Osteospermum*.

Lin. spec. 1308. Juss. 792. Reich. 3. 930. hort. cliff. 404. mant. 480. Berg. cap. 331.

Chrysanthemoides osteospermum africanum odoratum spinosum & viscosum. Comm. hort. 2. 85. t. 43.

Chrysanthemum africanum frutescens spinosum. Volk. norib. t. 105. Mor. hist. 3. f. 6. t. 3. f. 56.

Spines branched.

2. *Osteospermum piliferum*. Smooth *Osteospermum*.

Lin. spec. 1308. Juss. 792. Reich. 3. 930. Mill. fig. 129. t. 194. f. 1. Berg. cap. 330. Burm. afr. 171. t. 61. f. 2.

Leaves lanceolate mucronate subpetioled smooth serrate, branchlets angular-toothletted.

3. *Osteospermum moniliferum*. Poplar-leaved *Osteospermum*.

Lin. spec. 1308. Reich. 3. 931. hort. cliff. 423. Berg. cap. 331. Gært. fruct. 2. 424. Dill. elth. 80. t. 68. f. 79. (*Chrysanthemoides*). Pluk. amalib. t. 382. f. 4. Breyn. cent. 155. t. 76. (*Chrysanthemum*). Vaill. aët. 1720. p. 573. (*Monilifera*).

Leaves obovate serrate petioled subdecurrent.

4. *Osteospermum ilicifolium*. Holm-leaved *Osteospermum*.

Lin. spec. 1308. Reich. 3. 931. Burm. zeyl. 172. t. 62.

Leaves oblong tooth-angulate rugged half-embracing, branches grooved.

5. *Osteospermum ciliatum*. Fringe-leaved *Osteospermum*.

Lin. Juss. 793. Reich. 3. 932. Berg. cap. 332. Burm. afr. 171. t. 61. f. 2.

Leaves elliptic-lanceolate crenate ciliate.

6. *Osteospermum junceum*. Reedy *Osteospermum*.

Lin. Juss. 793. Reich. 3. 932. mant. 291. Berg. cap. 334.

Leaves linear acute keeled distant, panicle terminating.

7. *Osteospermum triquetrum*.

Lin. Juss. 793. suppl. 385.

Leaves linear three-sided.

8. *Osteospermum corymbosum*.

Lin. Juss. 793. Reich. 3. 932. mant. 290.

Leaves lanceolate smooth, flowers panicled.

9. *Osteospermum imbricatum*.

Lin. Juss. 793. Reich. 3. 932. mant. 290.

Leaves ovate blunt imbricate.

10. *Osteospermum herbaceum*.

Lin. Juss. 793. suppl. 385.

Leaves ovate subsessile spatulate serrate, stem herbaceous.

11. *Osteospermum niveum*.

Lin. Juss. 793. suppl. 386.

Leaves ovate petioled toothed woolly.

12. *Osteospermum perfoliatum*.

Lin. Juss. 793. suppl. 386.

Leaves ovate petioled angular-toothed tomentose underneath, petioles perfoliate-embracing.]

13. *Osteospermum polygaloides*.

Lin. spec. 1308. Juss. 793. Reich. 3. 933. mant.

480. Berg. cap. 333. Pluk. mant. 47. t. 382.

(*Chrysanthemum*).

Monilifera polygalæ foliis. Vaill. aët. 1720. p. 374.

Leaves lanceolate scattered decurrent smooth quite entire, axils woolly.

[14. *Osteospermum calendulaceum*.

Lin. Juss. 793. suppl. 386.

Leaves lanceolate sessile toothed rugged, stem fleshy lax.

15. *Osteospermum Arctoides*.

Lin. Juss. 793. suppl. 385.

Leaves lyrate petioled, petioles eared at the base half-embracing tomentose.

16. *Osteospermum rigidum*. Rigid *Osteospermum*.

Ait. hort. kew. 3. 275.

Leaves tooth-pinnatifid hairy, branches unarmed.

17. *Osteospermum cæruleum*. Blue-flowered *Osteospermum*.

Jacqu. collect. 1. 78. Ait. hort. kew. 3. 275.

O. pinnatifidum. L'Herit. stirp. nov. p. 11. t. 6.

Leaves pinnate, pinnae toothed.]

DESCRIPTIONS, &c.

1. This is a low shrubby plant, which seldom rises above three feet high, and divides into many branches; the ends of the shoots are beset with green branching spines; the leaves are very clammy, especially in warm weather; they are long and narrow, and set on without any order. The flowers are produced singly at the ends of the shoots; they are yellow, and appear in July and August.

[It is very nearly allied to the next species. The fruit hangs down on an oblong peduncle, and consists of dusky-purple, bony, globular berries disposed in a ring^b.

Native of the Cape of Good Hope. Cultivated in 1700 by Dr. Uvedale. It flowers from February to October^c.

2. The angles of the branches are toothletted by the back of the petioles running down, and are frequently wholly involved in wool, which disappears with age. Leaves wedge-form, erose. Peduncles scaly. Flowers small. Seeds obovate^d.]

Stem four or five feet high, dividing into many branches towards the top, which spread out flat on every side; they have a purplish bark. Leaves of a thick consistence and succulent, alternate, of a light green colour, from two to three inches long, and one inch broad in the middle. The flowers stand single upon long axillary peduncles, which have a few very small leaves growing alternately their whole length. Berry oval, at first green, then red, but when fully ripe of a dark-purple colour, having a thin pulp, which covers one hard seed^e. The leaves are more pointed than in *O. moniliferum*, of a green colour, and acutely serrate; the petioles are bordered, and the leaves are deeply veined. It produces tufts of yellow flowers at the extremity of the shoots, from spring to autumn, and frequently ripens seeds. [It was cultivated in 1757, by Mr. Miller^f.]

3. This rises with a shrubby stalk seven or eight feet high, covered with a smooth gray bark, and dividing into several branches. Leaves alternate, of a thick consistence, covered with a hoary down, which goes off from the older leaves, unequally indented on their edges. Flowers in clusters at the ends of the branches, six or eight coming out together on petioles an inch and half long; they are yellow, and shaped like those of Ragwort (*Senecio Jacobæa*) having about ten ligulate florets in the ray.

[Receptacle flat, in the elevated middle dotted, towards the circumference hollowed out in small pits for the reception of the fertile seeds; naked, smooth.

^b Linn. mant.

^c Hort. kew.

^d Linn. spec.

^e Mill. fig.

^f Hort. kew.

Seeds ovate-globular, berried, dark-purple, smooth, bald; covered with three integuments, the outer fleshy, thin, the middle crustaceous, thick, hard, the inner membranaceous, pale rufset: the fleshy integument is wanting in most of the species, and thus the seed from being berried becomes nucamentaceous^g. Linneus remarks, that the petioles have a knob under their base.]

This plant flowers but seldom in England. The time of its flowering is July or August. [It was cultivated here in 1714^h.

4. Leaves sessile, almost embracing, angular with three teeth on each side, rolled in at the edge, mucronate at the angles, above rugged, beneath villose and almost woollyⁱ.

5. This is a woolly shrub, with oblong toothed or notched and ciliate leaves^k.

6. Stem five feet high, upright, stiff and straight, even. Leaves awl-shaped or linear, stiff, even, sessile, very remote. Peduncles one-flowered, thin, stiff, with awl-shaped remote leaflets scattered over them^l.

7. Stem suffruticose. Leaves even, a finger's length, abundant. Flowers from the uppermost axils, solitary, peduncled, yellow. Calyx like that of *Geropogon*, imbricated, with few, sharp leaflets^m.

8. Stem upright, determinately branched, even, the thickness of a finger. Leaves alternate, sessile, veinless, stiff, a finger's length, on the flowering branches smaller, rugged at the edge. Panicle terminating, corymbose, with clammy-villose peduncles. Flowers yellow. Seeds berried, oblong, larger than grains of wheatⁿ.

9. Stem determinately branched, two feet high, scarred. Leaves clustered, sessile, ovate or obovate, subimbricate, quite entire, even, embracing, clammy about the edge with very short hairs, and the axils villose. Peduncle terminating, filiform, the length of the flower, one-flowered, pubescent, leafless. Calyx simple. Corolla yellow.

It differs from *O. polygaloides*, in not having the leaves lanceolate, or acute, or keeled; and the peduncles without a linear leaflet^o.

10. This resembles a *Verbesina*. Leaves exactly spatulate; the spatule ovate, acutely ferrate.

11. The whole herb is covered with a thick and very white lanugo.

12. This is singular in having the petiole dilated at the insertion, like a little wheel round the stem^p.]

13. Stalk about four feet high, dividing into many small branches. Leaves small, oblong, sessile, on some of the upper branches imbricate. The flowers come out at the end of the branches, standing singly on peduncles about an inch long.

[The stem between the leaves has frequently villose hairs on it like those on the bag of the silk-worm. Leaves sessile, erect, mucronate, keeled. Peduncles and calyxes muricated with very soft spines^q. Cultivated by Mr. Miller, in 1759.

14. This resembles *Calendula arvensis* very much, and thence has its name; but it differs in the seeds not being winged, but cylindrical, bony and smooth.

15. In the surface, the figure of the herb, and leaves, and almost in the flower, this species resembles an *Arctotis*, but in the smoothness of its seeds an *Osteospermum*^r.

16. Introduced by Mr. Francis Masson in 1744. It flowers from April to July^s.

17. This is an undershrub, three feet high, with a strong smell. Root woody, branching, fibrous. Stem somewhat woody, erect, round, regularly branched, gray. Leaves alternate, spreading: segments alternate, (some almost opposite,) oblong, acute, ferrate; the lower sinuses wider, deeper, parallel to the midrib; the upper ones rounded; they are without veins, and have only one nerve prominent beneath; they are of the same colour on both sides, and fragrant, from an inch and half to two inches in length, and fifteen lines in breadth. Petioles half the length of the leaves,

broadish, gibbous on one side, channelled on the other, widened at the base, with two teeth on each side, almost half embracing, scarcely pubescent. Flowers terminating, very loosely corymbed, peduncled, erect, blue, an inch wide. Peduncles from the upper leaflets, alternate, very long, from upright divaricated, one-flowered, somewhat rugged and viscid; having one or two linear bractes on them. Calycine leaflets linear, acute, erect, almost equal. Female florets above twenty in the ray, scarce visibly three-toothed, slightly two-grooved, ending in a filiform villose-glandular tube, twice as long as the hermaphrodites, which are longer than the calyx, with the tube narrowing at bottom like a pedicel and villose, the border sharp, erect. Seeds obovate, somewhat angular and rugged, not at all bony^t.

Introduced by Mr. Francis Masson in 1774^u.

All these shrubs are natives of the Cape of Good Hope.]

PROPAGATION AND CULTURE.

These plants being too tender to live in the open air in England, are placed in the green-house in October, and may be treated in the same manner as Myrtles, and other hardy green-house plants, which require a large share of air in mild weather; and in the beginning of May the plants may be removed into the open air, and placed in a sheltered situation during the summer season. The first and second sorts must have plenty of water, being very thirsty plants.

They are propagated by cuttings, which may be planted in any of the summer months, upon a bed of light earth, and should be watered and shaded until they have taken root, which they will in five or six weeks, when they must be taken up and planted in pots; for if they are suffered to stand long, they will make strong vigorous shoots, and will be difficult to transplant afterward, especially the second and third sorts; but there is not so much danger of the first, which is not so vigorous, nor so easy in taking root as the other. During the summer season the pots should be frequently removed, to prevent the plants from rooting through the holes in the bottom of the pots into the ground, which they are very apt to do when they continue long undisturbed, and then they shoot very luxuriantly; and, on their being removed, these shoots, and sometimes the whole plants, will decay.

[*OSTEOSPERMUM*. See *Polymnia*.

OSTRUTHIUM. See *Imperatoria*.

OSTRYA. See *Carpinus*.

OSWEGO TEA. See *Monarda*.]

OSYRIS (of Pliny, *Osyris* of Dioscorides; *q. οζυρίς*, branched.)

Lin. gen. n. 1101. Reich. n. 1203. Schreb. n. 1497.

Juss. 75. Cassia. Tournef. t. 488.

Class. 22. 3. Dioecia Triandria.

Nat. order of Calycifloræ. Elæagni, Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth one-leafed, trifid, turbinate: segments equal, ovate, acute.

COR. none, except a triple nectariferous rim.

STAM. Filaments three, very short. *Antbers* roundish, small.

* Female.

CAL. Perianth as in the male, superior, permanent, very small.

COR. none, as in the male.

PIST. Germ turbinate, inferior. *Style* the length of the stamens. *Stigma* three-parted, spreading, (roundish, *Syst.*)

PER. Berry globular, one-celled, umbilicated.

SEEDS bony, globular, filling the pericarp.

ESSENTIAL CHARACTER.

Cal. trifid. *Cor.* none.

FEM. Stigma roundish. *Drupe* one-celled. (*Berry* dry, umbilicated, *Scop.*)

^t L'Heritier.

^u Hort. kew.

^g Gartner. ^h Hort. kew. ⁱ Linn. spec. ^k Burm.

^l Linn. mant. ^m Linn. suppl. ⁿ Linn. mant.

^o Ibid. ^p Linn. suppl. ^q Linn. mant. ^r Linn. suppl.

^s Hort. kew.

OTH

SPECIES.

1. *Osyris alba*. *Poet's Casia*.
Lin. spec. 1450. *syft.* 881. *Reich.* 4. 236. *Sauv.*
monsp. 56. *Gouan monsp.* 502. *Gron. orient.* 308.
Scop. carn. n. 1215. *Loefl. it.* 169. *Allion. pedem.*
n. 2119.
O. frutescens baccifera. *Bauh. pin.* 212.
Casia poetica monspeliensium. *Camer. epit.* 26. *Park.*
theat. 452. *Lob. ic.* 432. *Ger.* 1110. *emac.* 1293.
Raii hist. 1489. *Tournef. inst.* 664.
C. lignea monsp. *Bauh. hist.*
C. latinorum. *Alp. exot.* 41.
C. monspelii dicta. *Gesn. epit.* 50.
Leaves linear.

- [2. *Osyris japonica*.
Lin. syft. 881. *Thunb. jap.* 31.
Leaves ovate floriferous.]

DESCRIPTIONS, &c.

1. This is a very low shrub, seldom rising above two feet high, having woody branches. Leaves long, narrow, of a bright colour. Flowers of a yellowish colour; succeeded by berries, which at first are green, and afterwards turn to a bright red colour, like those of *Asparagus*.

[According to Scopoli, it is from a foot to two feet in height. He observed rudiments of styles and a germ in the male plant: and asks why it has the epithet of *alba* or white, when the calyxes and almost the whole plant are yellow. He calls the fruit a dry umbilicated berry; and joins the *Hippophae* with it.

Linneus remarks, that the female should rather be called an hermaphrodite, since it has stamens, although it is barren without the male.

Native of France, Spain, Italy, Carniola and mount Libanus. Cultivated in 1739, by Mr. Miller *.

2. Stem shrubby, tubercled, a fathom high. Branches alternate, bending, round, upright, smooth. Leaves alternate, frequent at the ends of the branches, acuminate, serrate with setaceous notches, nerved, paler underneath, smooth on both sides, unequal, an inch long and more. Petioles one-third of the length of the leaves. Flowers from the midrib of the upper surface of the leaves in umbels, male and female on distinct shrubs. Umbels simple, with about eight flowers without an involucre. Peduncles capillary, unequal, smooth, a line in length. Perhaps it may form a new genus, but the female flowers being yet unknown, it cannot be settled satisfactorily. The leaves are said to be eaten in Japan, where it is a native *.]

PROPAGATION AND CULTURE.

This plant grows by the side of roads, as also between rocks, is with great difficulty transplanted into gardens; nor does it thrive after being removed, so that the only method to obtain this plant is, to sow the berries where they are to remain. These berries commonly remain a year in the ground before the plants appear, and sometimes they will lie two or three years, so that the ground should not be disturbed under three years, if the plants do not come up sooner. These seeds must be procured from the places where the plants naturally grow, for those which have been brought into gardens never produce any, and it is with great difficulty they are preserved alive.

[*OSYRIS*. See *Antirrhinum*, *Chenopodium*, *Chrysocoma*, *Hippophae*, *Nitraria*.

OTHERA.

Thunb. nov. gen. 56. *fl. jap.* 4. *Lin. gen.* Schreb. *n.* 201. *Juss.* 288.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Berberides*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, permanent, four-parted, with ovate segments.

COR. Petals four, ovate, blunt.

STAM. Filaments four, inserted at the very bottom of the petals, shorter by half than the corolla. Anthers twin, four-grooved.

PIST. Germ superior, smooth. Style none. Stigma sessile.

PER. Capsule?

* Hort. kew

† Thunberg.

OTH

ESSENTIAL CHARACTER.

Cal. four-parted. Pet. four, ovate, flat. Stigma sessile. Capsule?

SPECIES.

1. *Othera japonica*.
Lin. syft. 158. *Thunb. jap.* 61.

DESCRIPTION, &c.

Stem shrubby. Branches round, striated, purple. Leaves alternate, ovate, blunt, entire, smooth, coriaceous, spreading, an inch and half long. Petioles semicylindric, smooth, a line in length. Flowers axillary, aggregate, peduncled. Peduncles half a line in length.—Native of Japan, where it is named *Mukade Ko*, that is *millepeda* *.]

OTHONNA (of Pliny. Obova of Dioscorides. From obova linteum. On account of the pubescence on the plant.)

Lin. gen. n. 993. *Reich. n.* 1076. *Schreb. n.* 1342. *Gartn. t.* 170. *Juss.* 181. *Jacobæastrum*. *Vaill. mem. par.* 1720. 15.

Class. 19. 4. Syngenesia Polygamia Neceffaria.

Nat. order of *Compositæ Discoideæ*. *Corymbiferae*, Juss.

GENERIC CHARACTER.

CAL. Common quite simple, one-leafed, blunt at the base, sharp at the end, equal, divided into eight or twelve segments.

COR. Compound rayed. Corollets hermaphrodite many, in the disk. Females in the ray, the same number with the segments of the calyx, often eight: (about ten, G.)

Proper of the hermaphrodite tubular, five-toothed, scarcely longer than the calyx: of the female ligulate, lanceolate, longer than the calyx, three-toothed, reflex.

STAM. in the hermaphrodites, Filaments five, capillary, very short. Anther cylindric, tubular, the length of the corollet.

PIST. in the hermaphrodites, Germ oblong. Style filiform, commonly longer than the stamens. Stigma bifid, simple: in the females, Germ oblong. Style filiform, the same length as in the others. Stigma reflex, larger.

PER. none. Calyx unchanged, permanent.

SEEDS in the hermaphrodites none: in the females solitary, oblong, naked or downy.

REC. naked, dotted: (somewhat villose in the middle, excavated about the edge, G.)

OBS. In some species the seeds are crowned with a down; in some the calyx is divided beyond the middle, in others only toothed; but the figure is the same in all.

ESSENTIAL CHARACTER.

Cal. one-leafed, multifid, subcylindrical. Down almost none: (capillary, G.) Recept. naked.

SPECIES.

- [1. *Othonna Cacalioides*. Tuberos *Othonna* or African Ragwort.

Lin. syft. 794: suppl. 388. *Ait. hort. kew.* 3. 276.

Tuber denudated finger-lobed plant-bearing, scapes one-flowered, leaves obovate toothletted.]

2. *Othonna dulbosa*. Bulbous African Ragwort.

Lin. spec. 1309. *Reich.* 3. 933.

Jacobææ affinis planta tuberosa Capitis Bonæ Spei. *Breyn. cent.* 1. t. 66. *Mor. hist.* 3. 111. f. 7. t. 18. f. 33.

β. *O. dentata*, foliis ovato-cuneiformibus dentatis. *Lin. spec.* 1. 926. *Burm. afr.* 164. t. 59. (Solidago).

Leaves oblong naked petioled, stem herbaceous, peduncles one-flowered very long.

- [3. *Othonna denticulata*. Dentated African Ragwort.

Ait. hort. kew. 3. 276.

Leaves oblong toothletted smooth attenuated at the base embracing, flowers panicled.

4. *Othonna Tagetes*.

Lin. spec. 1309. *syft.* 793. *Reich.* 3. 934. *Murr. in comm. gott.* 1780. p. 17. t. 5.

Tagetes minimus tenuiter diviso folio. *Breyn. prodr.* 2. 99.

z Thunberg.

Chrysanthemum

Chrysanthemum africanum pumilum ramosum, foliis tenuissimis. *Raii suppl.* 212.

Leaves linear pinnate somewhat toothed.

5. *Othonna trifida*.

Lin. syst. 793. *suppl.* 387.

Leaves trifid linear, flowers lateral peduncled.

6. *Othonna pectinata*. *Wormwood-leaved African Ragwort.*

Lin. spec. 1309. *syst.* 793. *Reich.* 3. 934. *hort. cliff.*

419. *Mill. fig. t.* 194. *f.* 2. *Curt. magaz.* 306.

Jacobaea africana frutescens, foliis absinthii umbelliferi. incanis. Comm. hort. 2. 137. *t.* 69. *Raii suppl.* 175.

β. J. absinthites, &c. Pluk. alm. 106.

Leaves pinnatifid, segments linear parallel.

7. *Othonna abrotanifolia*. *Southernwood-leaved African Ragwort.*

Lin. spec. 1310. *syst.* 793. *Reich.* 3. 935.

Cineraria abrotanifolia. Berg. cap. 292.

Asteroplatycarpus africana frutescens, crithmi marini foliis. Comm. hort. 2. p. 63. *t.* 32.

Jacobaea africana fruticans, foliis abrotani f. crithmi, major & minor. Volk. norib. 225. *t.* 225. *Raii suppl.* 179. *Pluk. phyt. t.* 323. *f.* 2. *Seba mus.* 2. *t.* 23. *f.* 6.

Leaves multifid pinnate linear, the joints of the stem villose.

[8. *Othonna Athanasia*.

Lin. syst. 794. *suppl.* 386.

Leaves pinnate filiform, calyx hemispherical twelve-toothed.

9. *Othonna ciliata*.

Lin. syst. 794. *suppl.* 386.

Leaves pinnatifid sessile, pinnae ovate ciliate, peduncles terminating elongated one-flowered.

10. *Othonna pinnata*.

Lin. syst. 794. *suppl.* 387.

O. bulbosa β. Lin. spec. ed. 2. 1309.

Leaves pinnatifid, pinnae lanceolate quite entire decurrent.

11. *Othonna trifurcata*.

Lin. syst. 794. *suppl.* 387.

Leaves trifid-pinnatifid, pinnae linear, peduncles lateral fastigiate.

12. *Othonna munita*.

Lin. syst. 794. *suppl.* 388.

Leaves pinnatifid imbricated curved inwards, pinnae three-sided awl-shaped, stem dichotomous, peduncles from the divarications.]

13. *Othonna coronopifolia*. *Buckhorn-leaved African Ragwort.*

Lin. spec. 1310. *Reich.* 3. 935. *hort. cliff.* 419.

Gartn. fruct. 2. 452.

Jacobaea africana frutescens coronopi folio. Comm. hort. 2. 139. *t.* 70. *Raii suppl.* 175.

Lower leaves lanceolate quite entire, upper sinuate-toothed.

14. *Othonna cheirifolia*. *Stock-leaved African Ragwort.*

Lin. spec. 1310. *syst.* 794. *Reich.* 3. 935. *Dubam.*

arb. 2. 94. *t.* 17. *Gouan monsp.* 464. *Mill. fig.*

163. *t.* 245. *f.* 1. *Kniph. cent.* 6. n. 67.

O. calthoides. Mill. dict. n. 2.

Aster fruticosus africanus luteus, foliis thymeleæ. Raii suppl. 167.

Leaves lanceolate three-nerved quite entire, stem suffrutescent creeping.

[15. *Othonna crassifolia*. *Thick-leaved African Ragwort.*

Lin. syst. 794. *Reich.* 3. 935. *mant.* 118. *hort.*

cliff. 419. *Mill. fig.* 163. *t.* 245. *f.* 2.

Jacobaea africana frutescens, crassius & succulentis foliis. Comm. hort. 2. 147. *t.* 74. *Raii suppl.* 174.

Leaves lanceolate quite entire somewhat fleshy, stem upright.

16. *Othonna parviflora*. *Small-flowered African Ragwort.*

Lin. syst. 794. *Reich.* 3. 936. *mant.* 289. *Berg.*

cap. 335.

Senecio rigens. Lin. spec. 1224.

Jacobaea africana frutescens, folio longiore glauco. Comm. hort. 2. 143. *t.* 72.

J. afr. perennis, integro oblongo folio glauco. Volk. norib. *t.* 226. *Raii suppl.* 179.

J. ramosa, folio rigido glauco per limbum aspero. Raii suppl. 176. *n.* 35.

Leaves lanceolate glaucous embracing, flowers panicled.

17. *Othonna tenuissima*. *Fine-leaved African Ragwort.*

Lin. syst. 794. *Reich.* 3. 936. *mant.* 118. *Pluk.*

phyt. t. 319. *f.* 5.]

Crassula fruticosa. Mill. dict. n. 8.

[Leaves filiform fleshy, stem shrubby.]

18. *Othonna linifolia*. *Flax-leaved African Ragwort.*

Lin. syst. 794. *suppl.* 388.

O. bulbosa γ. Lin. spec. 1309.

Herbaceous, leaves linear margined grassy.

19. *Othonna digitata*. *Digitate-leaved African Ragwort.*

Lin. syst. 794. *suppl.* 386.

Leaves oblong undivided or digitate-toothed, peduncles one-flowered.

20. *Othonna Lingua*.

Lin. syst. 794. *suppl.* 387.

Leaves ovate-lanceolate half embracing.

21. *Othonna lateriflora*. *Side-flowering African Ragwort.*

Lin. syst. 794. *suppl.* 387.

Leaves lanceolate, flowers lateral, peduncles the length of the leaves.

22. *Othonna heterophylla*.

Lin. syst. 794. *suppl.* 387.

Root-leaves ovate angular-toothed, stem-leaves lanceolate almost entire.

23. *Othonna Ericoides*. *Heath-like African Ragwort.*

Lin. syst. 795. *suppl.* 388.

Stem dichotomous imbricated, leaflets acerose, peduncle very long solitary from the divarications.

24. *Othonna capillaris*. *Capillary-branched African Ragwort.*

Lin. syst. 795. *suppl.* 388.

Leaves lyrate, branches capillary.

25. *Othonna virginea*.

Lin. syst. 795. *suppl.* 389.

Leaves wedged gashed.

26. *Othonna frutescens*. *Shrubby African Ragwort.*

Lin. syst. 795. *Reich.* 3. 936. *mant.* 288.]

Cineraria othonnites. Lin. spec. 1244. *Mill. dict. n.* 4.

[Jacobaea africana frutescens crassius & succulentis foliis. Comm. hort. 2. 147. *t.* 76. *Raii suppl.* 174.

Leaves oval somewhat toothed, stem frutescent.]

27. *Othonna arborescens*. *Tree African Ragwort.*

Lin. spec. 1310. *Reich.* 3. 957.

Doria africana arborescens, floribus singularibus. Dill. elth. 123. *t.* 103. *f.* 123.

Leaves oblong quite entire, stem arboresecent fleshy, with woolly scars.

DESCRIPTIONS, &c.

1. This is very distinct by its smooth fleshy stalk like the *Cacalias*, and the flower of *Othonna*. The scars of the leaves are round and tomentose^a. Introduced in 1774, by Mr. Francis Masson. It flowers from may to november^b.]

2. This has a thick shrubby stalk, dividing into several branches which rise five or six feet high; the leaves come out in clusters from one point, spread on every side; they are smooth, narrow at their base, enlarging gradually to their points, which are rounded their edges are acutely indented like those of the Holly. From the center of the leaves arise the foot-stalks of the flowers, which are five or six inches long, branching out into several smaller, each sustaining one yellow radiated flower, shaped like the former; these are succeeded by slender seeds crowned with down.

[The floral leaves at the peduncles are often opposite. Peduncles frequently in pairs. Calyxes five-parted. It is one of the most variable plants we have:—being herbaceous, 1. with ovate, quite entire leaves. 2. With the root-leaves pinnate, quite entire. 3. With the leaves linear, very narrow. 4. With the leaves lanceolate, quite entire. 5. With the leaves lanceolate, toothed. 6. With the leaves lanceolate-subelliptic. 7. With the leaves sub lanceolate, three-toothed.—Or shrubby: 8. With the leaves of the top lanceolate, sub sessile. 9. With the leaves alternate, lanceolate, toothed^c.

Introduced in 1774, by Masson. It flowers in may and june^d.

^a Linn. mant.

^b Hort. kew.

^c Linn. spec.

^d Hort. kew.

3. Introduced in 1774, by Masson. It flowers from april to july^c.

4. Root annual. Stem filiform, flexuose. Calyx pitcher-shaped, with about fourteen teeth at the edge. Ray many-flowered^f.

5. Stem shrubby, proliferous, spreading, dusky. Leaves scattered, semitrifid, somewhat fleshy, with a white wool in the axils of the leaves. Peduncles axillary, solitary, one-flowered, much longer than the leaves. Calyxes deeply divided. Seeds white with wool^g.]

6. This rises with a shrubby stalk about the thickness of a man's thumb, two or three feet high, dividing into many branches, covered with a hoary down. Leaves hoary, about three inches long and one broad, cut into many narrow segments almost to the midrib; these segments are equal and parallel, and have two or three teeth at the end. The flowers are produced on long axillary peduncles towards the ends of the branches; they have large yellow rays; and are succeeded by oblong purple seeds crowned with down.

[Linneus remarks that the whole plant is often tomentose. Stem scarred.

It flowers in may and june, and was cultivated in 1731, by Mr. Miller^h: who says that] the seeds were sent to Holland from the Cape, and plants raised from them, in the Amsterdam garden, in 1699.

7. This has a low, shrubby, branching stalk. The leaves are thick, like those of Sampire, and are cut into many narrow segments. The flowers are produced on short peduncles at the ends of the branches; they are yellow, and the seeds are brown.

[Cultivated in 1759, by Mr. Miller. It flowers from january to marchⁱ.

8. Stem shrubby, like that of Athanasia, proliferous, even. Leaves alternate, remote, three-paired with an odd leaflet, naked. Flower rather large, terminating, from the dichotomy; on a one-flowered peduncle, twice as long as the leaves and round. Calyx even. Corolla yellow, both in the ray and disk; the former twice as long as the calyx. Seeds downy.

9, 10, 11. Found at the Cape by Thunberg.

12. This resembles *O. Ericoides* very much, and differs only in having pinnatifid leaves^k.]

13. This rises with a shrubby stalk four or five feet high, dividing into several branches. Leaves grayish, placed without order; those on the lower part narrow and entire, but the others indented on the edges after the manner of Hart's-horn. The flowers are produced in loose umbels at the ends of the branches, and are yellow.

[Receptacle narrow, somewhat convex, with hollows or cells in the middle; the edges of the cells are set with very short, bristly-ciliate hairs, giving the receptacle the appearance of being villose; next the edge are six or eight wider cells, receiving the germs of the female flowers. The seeds, which are the produce of these germs are largish, obovate, somewhat beaked at the base, striated, with a silky hoariness. Down very abundant, capillary, white-silky, three times as long as the seed^l.

Cultivated in 1731 by Mr. Miller. It flowers from july to september^m.]

14. This has a strong fibrous root, which shoots deep in the ground, and sends out many woody stems, which spread on every side, and trail upon the ground. Leaves grayish, sessile, and of a thick consistence, narrow at the base, enlarging upwards, and broad at their points, where they are rounded. The flowers are produced upon long thick succulent peduncles at the ends of the branches, and from the axils; they are yellow, the rays sharp pointed, and not much longer than the calyx, which is cut into eight equal segments at top; the disk is large, and the florets as long as the calyx. The seeds are crowned with long down.

It was discovered by Dr. Shaw growing naturally near Tunis in Africa. [Mr. Miller cultivated it in 1758; and it flowers from april to juneⁿ.

15. This has round stalks, which at first are herbaceous and succulent, but by age become woody: they rise three or four feet high, and divide into many branches from the bottom. Leaves thick and succulent, about two inches long, and one broad in the middle, of a gray colour, placed without order, and sessile. The flowers are produced towards the end of the branches upon succulent peduncles about four inches long, each sustaining one yellow flower, smaller than the preceding. It begins to flower in august, and there is a succession of flowers till the middle of winter^o.—Cultivated by Mr. Miller in 1758.

Linneus remarks that this species resembles *O. cheirifolia*, but is upright and four feet high.

16. Stem shrubby, two feet high, even. Leaves alternate, petioled, broad-lanceolate; the upper ones deltoid, with one tooth on each side, smooth. Peduncles very long, even; stiff and straight; with a few, very small, very remote, lanceolate leaves, having one tooth on each side. Panicle small, with little, yellow flowers, and a simple, even, eight-cleft calyx^p.

17. Stem from a foot to two feet high and more, even. Leaves alternate, even, spreading, declining a little, narrower at the base^q. It did not flower with Linneus, though he cultivated it for a long time, but from the villose hairs at the base of the leaves, as in *O. fruticosa*, he placed it in this genus, till greater certainty could be obtained.

Mr. Miller had made it a *Craffula*, and says that it] rises with a shrubby stalk, four or five feet high, dividing into many branches, which at first are taper and succulent, but by age become woody. The leaves are very slender, taper, succulent, flaccid, generally turning downward, especially in winter, near three inches in length. It did not flower with him. It was sent him from Leyden by Adrian van Royen. [According to the Kew catalogue it flowers in july; and was introduced in 1774, by Mr. Francis Masson.

18. Stem a span high, filiform, even, with one or two one-flowered branches. Root-leaves linear, filiform, almost the length of the stem, woolly at the base: stem-leaves only three or four, similar. Flowers terminating, solitary, the size of peas, yellow. Calyx commonly eight-leaved.

19. Root bulbous. It greatly resembles *O. ciliata*,
n. 9.

20. Root bulbous.

21. This is an upright shrub, with the stem the size of a swan's quill. Leaves scattered, sessile, quite entire, smooth. Peduncles lateral, solitary, one-flowered. Flower roundish. Calyx commonly eight-cleft. Corolla yellow. The peduncles and receptacles of the preceding year remain dried up on the stem.

22. Root bulbous.

23. This is an upright shrub, resembling Heath, commonly dichotomous. Leaves like those of Heath, scattered, somewhat clustered, awl-shaped, short, distant at the side, curved inwards, even. Peduncles axillary, straight, even, one-flowered. Flower roundish, not large.

24. Root fibrous, very slender. Root-leaves, and one or two stem-leaves lyrate, an inch long, even. Stems upright, a palm high, filiform, with the branches finally sericeous and capillaceous, even. Flowers terminating, the size of Hemp seed, yellow. Calyx five-leaved, ovate, acute.

25. Stem shrubby, compound, erect, round. The young shoots quite simple; those of the present and former year leafy. Leaves scattered in clusters, small in proportion to the plant, sessile, almost erect, flat, even, with five or seven erect teeth; the lower ones shorter. Flowers from the upper part of the internodes, lateral, scattered, solitary, small, like those of *Cotula*. Peduncles one-flowered, longer than the leaf. Calyx seven-leaved, simple, acute, permanent. Ray small, yellow, fertile, with a bifid style. Disk yellow, convex. Down simple, sessile^r.

26. This is allied to the next species. Stem of the first year a foot high, upright, simple, round, even,

^c Hort. kew.

^f Linn. spec.

^g Linn. suppl.

^h Hort. kew.

ⁱ Idem.

^k Linn. suppl.

^l Gartner.

^m Hort. kew.

ⁿ Idem.

^o Miller's figures.

^p Linn. mant.

^q Idem.

^r Linn. suppl.

smooth. Leaves alternate, subpetioled, obovate, (the upper ones lanceolate, veinless, oleraceous, glaucous-green, like those of Cabbage, with a minute point; the lower ones quite entire; the middle ones with two teeth at the base; the upper ones toothed at the sides; all somewhat decurrent at the back. From each axil leaflets rudiments of branches. Peduncles from the top of the stem, a palm in length, one-flowered, alternate, few, filiform, erect, with a few minute leaflets. Calyx cylindric, blunt, equal, eight-cleft. Ray eight-petalled, yellow, lanceolate, three-toothed or thereabouts, twice as long as the calyx. Stigmas two, lanceolate, short. Disk yellow. Seeds of the ray very short; with an abundant capillary down, the length of the calyx.

It differs from *O. arborescens* in having remote, toothed leaves, not clustered and quite entire, as in that; the stem without any hairy scars of the leaves; the ray eight-petalled not five-petalled; the stem round with smooth branches; the peduncles somewhat branched.

27. Height (at five years of age) one foot, with a stem the thickness of a human finger, resembling *Sedum arborescens*, and like that fleshy and woody, though never so tall or thick, pliant, covered with a brownish ash-coloured bark, not rough but rather smooth, and having white woolly tubercles scattered over it, which is peculiar to this species: the branches also have them, and are obliquely curved inwards: the ends of the branches and bases of the leaves have a fine wool on them, not conglobated but scattered. The branches are otherwise naked, somewhat woody, covered with a bark like that of the stem, brownish green towards the end, more tender and herbaceous; these leaves come out alternately at short distances; they are oblong, wider towards the top and blunt, contracted towards the base, green on both sides, somewhat glittering and as it were mealy, like those of *Auricula*, flat, thickish, succulent and smooth, veinless, with only a white nerve protuberant underneath, and on the upper part a little hollowed next the base.

Among these leaves spring the peduncles, solitary or in pairs, round, tender, of a pale glaucous colour, having a woolly scale or jag near the middle, terminated each by a single flower. Calyx oblong, with five roundish angles, five-cleft to the middle, glaucous-green, thick and succulent. Corolla yellow; with five florets in the ray, oblong and rather wide, sinuated at the end, slightly crenate in the middle, rolled back soon after they open: these are succeeded by thickish, short, oblong-round seeds, at first whitish, but when ripe brownish, crowned by a copious short brownish down: the seeds in the disk are longer, slender, round and barren with a more slender whitish down.

This plant makes very slow progress here. In august it puts out young leaves, which it keeps all the winter; the heads of flowers appear about the end of november, and do not open till the middle or end of january: in spring the leaves gradually drop off, and the plant appears as if dead till the succeeding autumn. Cultivated in Sherard's garden at Eltham in 1723.

All the species, except the fourteenth, are natives of the Cape of Good Hope.]

PROPAGATION AND CULTURE.

These plants are preserved in the dry stove, or even in the green-house, without any artificial warmth: it is sufficient to protect them well from frost; and in mild weather they must have a large portion of air. In summer place them in a sheltered situation.

They may be increased during the summer months by cuttings, planted upon an old hot-bed, and covered with glasses, shading them from the sun in the heat of the day. When they have taken root, plant each into a separate pot filled with soft loamy earth, and place them in the shade till they have taken new root; then remove them to a sheltered situation, where they may remain till autumn; treating them in the same way as the old plants.

14. The fourteenth will live in the open air, in a warm situation and a dry soil.

[OTHONNA. See *Cineraria*.

OTITES. See *Cucubalus* and *Polypodium*.

OTTEL-AMBEL. See *Stratiotes*.

OVA PISCUM. See *Cox*.

OVIÉDA. (So named by Linneus, in honour of Gonfalo Fernandez d'Oviedo, or de Valde, a Spaniard, who published *Historia de las Indias*, 1535.)

Lin. gen. n. 787. Reich. n. 850. Schreb. n. 1054.

Gærtn. t. 57. Juss. 211. Valdia. Plum. 24.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatae*. *Caprifolia*, Juss. (*Viticibus contermina*.)

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-cleft, bell-shaped, acute, erect, broadish, short, permanent.

COR. one-petalled, ringent: (funnel-form, trifid, G.) Tube very long, narrow, subcylindric. Border short, three-lobed, almost equal.

STAM. *Filaments* four, longer than the corolla. *Anthers* roundish.

PIST. *Germ* inferior, globular. *Style* filiform, the length of the stamens. *Stigma* bifid, acute.

PER. *Berry* globular, one-celled, quadripartile placed upon the calyx enlarged, bell-shaped, erect.

SEEDS four, gibbous on one side, angular on the other, one-celled, G.

ESSENTIAL CHARACTER.

Cal. five-cleft. Cor. tube subcylindric, superior, very long: (border three-lobed or three-cleft.) Berry globular, one-celled, quadripartile, four-seeded.

SPECIES.

1. *Ovieda spinosa*.

Lin. spec. 888. Reich. 3. 196. Swartz obs. 248.

Valdia cardui folio, fructu subcæruleo. Plum. gen. 14. ic. 256.

Leaves oval toothed.

2. *Ovieda mitis*.

Lin. spec. 889. Juss. 577. Reich. 3. 196. Gærtn. fruct. 1. 272. Burm. ind. 136. t. 43. f. 1, 2.

Leaves lanceolate subrepand.

DESCRIPTIONS, &c.

1. A shrub. Leaves opposite, petioled, oblong, toothed; the teeth terminated by spines, rigid. Flowers terminating, corymbed, subsessile among the terminating leaves. Berries black.

Native of South America, in the mountains of Hispaniola. The fruit is ripe in May.

2. This also is a shrub. Leaves opposite, petioled, smooth, very long. Corymbs dichotomous. Tube of the corolla very long. Berry succulent, covered by the acutely triangular segments of the calyx, subglobular, one-celled, having four stones, when ripe drying up and divisible into four parts. Cuticle when ripe somewhat spongy, wrinkled, fastened to the back of the stones; which are regularly four, but two only commonly ripen, coriaceous-crustaceous, gibbous on one side, wrinkled, concave or angular on the other, one-celled. There is one seed in each stone, of the same shape with it, fastened to its base, rufescent.

Gærtner remarks, that the *Valdia* of Plumier is of a quite different genus, if the generic character be right which Adanson attributes to it, in *Familles des plantes*, 2. 157.

OXALIDI AFFINIS. See *Oxalis*.]

OXALIS (of Pliny, *Oxalis* of Dioscorides. From *oxys*, acid.)

Lin. gen. n. 582. Reich. n. 634. Schreb. n. 794.

& p. 831. Gærtn. t. 113. Juss. 270. Oxys.

Tourn. t. 13. Oxyoides. Garc. in philos. trans.

1730. n. 415. t. 2.

Class. 10. 5. Decandria Pentagynia.

Nat. order of *Grinales*. *Gerania*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, acute, very short, permanent.

COR. five-parted, often cohering by the claws, erect, obtuse, emarginate: border spreading.

STAM. *Filaments* ten, capillary, (awl-shaped, Jacqu.) erect; the outer ones shorter. *Anthers* roundish, grooved.

* Linn. mant.

† Dill. elth.

u Linn. spec.

* Swartz obs.

† Gærtner.

PIST. Germ five-cornered, superior. Styles five, filiform, the length of the stamens. Stigmas blunt.
 PER. Capsule five-cornered, five-celled, ten-valved, (five-valved, Jacq.) gaping at the corners longitudinally.
 SEEDS roundish, flying out-covered with a fleshy elastic aril. G.

OBS. Capsule in some short, with solitary seeds: in others long, with many seeds: the filaments of most coalesce at the base.

ESSENTIAL CHARACTER.

Cal. five-parted. Pet. five, often connected at the base. Caps. five-celled, five-cornered, opening at the corners. Seeds arilled.

SPECIES.

I. With many-flowered peduncles.

* Caulescent.

- [1. *Oxalis pentantha*.
Jacqu. monogr. 21. t. 1.
 Stem upright, leaflets obovate, styles very short.
2. *Oxalis rhombifolia*. Rhomb-leaved Wood Sorrel.
Jacqu. monogr. 22. t. 2.
 Stem upright, leaflets rhomboid, styles very long.]
3. *Oxalis Plumieri*.
Jacqu. monogr. 23.
O. frutescens. *Lin. spec.* 624. *syft.* 434. *Reich.* 2. 393.
Thunb. diff. p. 7. *Mill. dict. n.* 7.
Oxys lutea frutescens, trifolii bituminosi facie. *Plum. spec.* 2. ic. 213. f. 1.
 Stem upright, leaflets oblong, peduncles umbelled.
4. *Oxalis Barrelieri*.
Jacqu. monogr. 24. t. 3. *Lin. spec.* 624. *syft.* 434.
Reich. 2. 393. *Thunb. diff. n.* 23. *Mill. dict. n.* 8.
Trifolium acetosum americanum, rubro flore. *Bocc. mus.* 2. 63. t. 51.
 Stem upright, leaflets oblong, peduncles bifid racemed, styles equal.
- [5. *Oxalis rosea*. Rose-flowered Wood Sorrel.
Jacqu. monogr. 25.
Oxys roseo flore, erectior. *Feuill. peruv.* 2. 733. t. 23.
 Stem upright, leaflets obcordate, peduncles divided racemed.
6. *Oxalis conorrhiza*. Conic-rooted Wood Sorrel.
Jacqu. monogr. 26.
Oxys amplissimo flore luteo. *Feuill. peruv.* 2. 733. t. 24.
 Stem upright, leaflets obcordate, peduncles subbiflorous.
7. *Oxalis crenata*. Notch-petalled Wood Sorrel.
Jacqu. monogr. 27.
Oxys lutea annua, floribus dentatis. *Feuill. peruv.* 3. 49. t. 24.
 Stem upright, leaflets obcordate, peduncles umbelliferous, petals crenate.
8. *Oxalis Dillenii*.
Jacqu. monogr. 28.
O. corniculata β. *Lin. spec.* 623. *Reich.* 2. 393.
Oxys lutea americana humilior & annua. *Dill. elth.* 299. t. 221. f. 288.
 Stem upright, leaflets obcordate, peduncles subumbelliferous, petals emarginate.]
9. *Oxalis stricta*. Upright Wood Sorrel.
Lin. spec. 624. *syft.* 434. *Reich.* 2. 393. *Jacqu. monogr.* 29. *Thunb. diff. n.* 21. *Gron. virg.* 161.
Brown. jam. 231. 1. *Swartz obs.* 186. *Mill. dict. n.* 3. *Fl. dan.* t. 873.
O. ambigua. *Salisb. in Lin. transf.* 2. 242. t. 23. f. 4.
Oxys americana elatior. *Tournef. inst.* 88. *Dill. elth.* t. 221. f. 4.
Trifolium acetosum corniculatum luteum majus rectum indicum f. virginicum. *Mor. hist.* 2. 184. f. 2. t. 17. f. 3.
 Stem upright, leaflets obcordate, peduncles umbelliferous, petals quite entire.
10. *Oxalis corniculata*. Yellow Wood Sorrel.
Lin. spec. 623. *syft.* 474. *Reich.* 2. 392. *hort. cliff.* 175. *ups.* 116. *Jacqu. monogr.* 30. t. 5. *Thunb. diff. n.* 20. *Mill. dict. n.* 2. *Wither. arr.* 430.
O. pusilla. *Salisb. in Lin. transf.* 2. 243. t. 23. f. 5.
Oxys flavo flore. *Clus. hist.* 2. 249.

Trifolium acetosum corniculatum. *Baub. pin.* 330.
T. luteum minus repens, etiam procumbens. *Mor. hist.* 2. 153. f. 2. t. 17. f. 2.

Stem prostrate rooting, peduncles two-flowered, styles almost equal.

11. *Oxalis repens*. Creeping Wood Sorrel.

Lin. syft. 433. *Jacqu. monogr.* 32. t. 78. f. 1. *Thunb. diff. n.* 14. t. 1.

Stem prostrate rooting, peduncles subbiflorous, styles nearly middling.

** Stipitated.

12. *Oxalis megalorrhiza*. Great-rooted Wood Sorrel.

Jacqu. monogr. 33.

Oxys luteo flore, radice crassissima. *Feuill. peruv.* 2. 734. t. 25.

Leaves ternate, root many-stumped.

13. *Oxalis fericea*. Silky Wood Sorrel.

Lin. syft. 433. *Jacqu. monogr.* 34. t. 77. f. 1. *Thunb. diff. n.* 13. *prodr. cap.* 82.

Leaves ternate tomentose, styles of middling length.

14. *Oxalis violacea*. Violet-coloured Wood Sorrel.

Lin. spec. 621. *syft.* 433. *Reich.* 2. 390. *Jacqu. monogr.* 35. t. 80. f. 2. *hort.* 2. 84. t. 180. *Thunb. diff. n.* 10. *Gron. virg.* 161. *Pluk. phyt.* t. 102. f. 4. (*Oxys*).

Leaves ternate obsolete villose, styles very short, interior filaments equal, flowers when closed drooping, when expanded upright.

15. *Oxalis caprina*. Goat's-foot Wood Sorrel.

Lin. syft. 433. *Jacqu. monogr.* 36. t. 76. f. 1. *Thunb. diff. n.* 11. *prodr. cap.* 82.

O. Pes caprae. *Lin. spec.* 622. *syft. ed.* 13. 360. *Reich.* 2. 390. *Burm. afr.* 73. t. 28. f. 3. *Curt. magaz.* 237.

Leaves ternate smooth half-two-lobed, styles very short, interior filaments unequal, flowers upright.

16. *Oxalis cernua*. Nodding Wood Sorrel.

Lin. syft. 433. *Jacqu. monogr.* 37. t. 6. *Thunb. diff. n.* 12. t. 2. *prodr. cap.* 82. *Mill. fig.* 130. t. 195. f. 1.

Leaves ternate smooth, styles very short, interior filaments equal, flowers when closed drooping, when expanded upright.

17. *Oxalis dentata*.

Jacqu. monogr. 38. t. 7.

Leaves ternate, petioles round, styles very long.

18. *Oxalis livida*. Livid Wood Sorrel.

Jacqu. monogr. 39. t. 8.

Leaves ternate smoothish, scapes two-flowered, styles middling.

19. *Oxalis compressa*.

Lin. syft. 432. *ed.* 13. 360. *mant.* 389. *Jacqu. monogr.* 40. t. 78. f. 3. *Thunb. diff. n.* 7. *prodr. cap.* 82.

Leaves ternate hirsute underneath, petioles compressed, styles very long.

20. *Oxalis Burmanni*. Digitate-leaved Wood Sorrel.

Jacqu. monogr. 41.

O. bulbosa pentaphylla & heptaphylla, floribus magnis luteis copiosis. *Burm. afr.* 74. t. 29.
 Leaves digitate.

21. *Oxalis sensitiva*. Sensitive Wood Sorrel.

Lin. spec. 622. *syft.* 434. *Reich.* 2. 390. *fl. zeyl.* n. 180. *Jacqu. monogr.* 42. t. 78. f. 4. *Thunb. diff. n.* 26. *Lour. cochinch.* 350.

Oxys indica tamarindi foliis, floribus umbellatis. *Burm. zeyl.* 173.

Oxoides malabarica sensitiva, caule viridi glabro, flore luteo majore. *Garc in phil. transf.* 1730. 379. t. 2.

Mimosa humilis, &c. *Pluk. alm.* 252.

Herba viva. *Clus. exot.* 290.—foliis Polypodii. *Baub. pin.* 259.

Herba mimosa Malabarensium. *Zan. hist.* 199. t. 61.

Herba sentiens. *Rumph. amb.* 5. 301. t. 104. f. 2.

Todda Vaddi. *Rheed. mal.* 9. 33. t. 13.

Leaves pinnate.

II. With one-flowered peduncles.

A. Caulescent.

22. *Oxalis macrostylis*. Long-styled Wood Sorrel.

Jacqu. monogr. 43. t. 9.

Corollas caryophylleous, styles very long.

23. *Oxalis tubiflora*. Tube-flowered Wood Sorrel.
Jacqu. monogr. 44. t. 10.
Corollas caryophylleous, styles very short, filaments unequal.
24. *Oxalis canescens*. Hoary Wood Sorrel.
Jacqu. monogr. 45. t. 11.
Corollas caryophylleous, styles very short, filaments equal.
25. *Oxalis fecunda*.
Jacqu. monogr. 46. t. 12.
Corollas caryophylleous, styles of a middling length.
26. *Oxalis hirta*. Hairy Wood Sorrel.
Lin. spec. 623. syst. 433. Reich. 2. 392. mant. 389.
Jacqu. monogr. 47. t. 13. & 77. f. 3. Thunb. diff. n. 18. prodr. cap. 83. Burm. afr. 70. t. 28. f. 1.
Pluk. amaltb. t. 434. f. 7.
Corollas bell-shaped, styles very long, filaments toothless equal.
27. *Oxalis hirtella*.
Jacqu. monogr. 48. t. 14.
Corollas bell-shaped, styles very long, filaments toothletted unequal.
28. *Oxalis multiflora*. Many-flowered Wood Sorrel.
Jacqu. monogr. 49. t. 15.
O. hirtæ varietas. Jacqu. collect. 3. 223. ic. rar. vol. 3.
Corollas bell-shaped, styles very short, leaflets wedge-shaped.
29. *Oxalis rubella*.
Jacqu. monogr. 50. t. 16.
O. hirta. Jacqu. collect. 3. 232. ic. rar. vol. 3. Burm. afr. 71. t. 28. f. 2.
Corollas bell-shaped, styles middling, filaments toothless.
30. *Oxalis rosacea*.
Jacqu. monogr. 51. t. 17.
Corollas bell-shaped, styles middling, filaments gibbously toothletted.
31. *Oxalis disticha*.
Jacqu. monogr. 52. t. 18.
Corollas bell-shaped, styles middling, petioles wingedly stipuled.
32. *Oxalis tenella*.
Jacqu. monogr. 53. t. 19.
Subcaulescent, corollas bell-shaped, filaments toothless, leaflets obcordate.
33. *Oxalis reptatrix*.
Jacqu. monogr. 54. t. 20.
Subcaulescent, corollas bell-shaped, filaments toothletted, leaflets roundish.

B. Stipitated.

* With simple leaves.

34. *Oxalis lepida*.
Jacqu. monogr. 55. t. 21.
Styles very long.
35. *Oxalis monophylla*. Simple-leaved Wood Sorrel.
Lin. syst. 432. Reich. 2. 388. mant. 241. Jacqu. monogr. 56. t. 79. f. 3. Thunb. diff. n. 1. t. 1. prodr. cap. 82.
Styles of middling length.
36. *Oxalis rostrata*. Beaked Wood Sorrel.
Jacqu. monogr. 57. t. 22.
Styles very short.
37. *Oxalis crispa*. Curled Wood Sorrel.
Jacqu. monogr. 58. t. 23.
Leaflets obovate curled.
38. *Oxalis asinina*.
Jacqu. monogr. 59. t. 24.
Leaflets lanceolate, styles middling.
39. *Oxalis leporina*.
Jacqu. monogr. 60. t. 25.
Leaflets lanceolate, styles very long, filaments toothletted.
40. *Oxalis lanceæfolia*.
Jacqu. monogr. 61. t. 26.
Leaves binate and ternate, styles very long, filaments toothless.
41. *Oxalis fabæfolia*. Bean-leaved Wood Sorrel.
Jacqu. monogr. 62. t. 27.
Leaves obovate flat, petioles winged.
42. *Oxalis laburnifolia*. Laburnum-leaved Wood Sorrel.
Jacqu. monogr. 63. t. 28.

*** With ternate leaves.

- The middle leaflet sub lanceolate, the side ones obliquely oblong, styles very long, filaments toothletted.
43. *Oxalis sanguinea*. Bloody-leaved Wood Sorrel.
Jacqu. monogr. 64. t. 29.
The middle leaflet sub lanceolate, the side ones obliquely oblong, styles middling.
44. *Oxalis minuta*. Small Wood Sorrel.
Lin. syst. 432. Jacqu. monogr. 65. t. 79. f. 2. Thunb. diff. n. 2. t. 2.
Leaflets lanceolate acute, styles very long, filaments toothless.
45. *Oxalis ciliaris*. Ciliate-leaved Wood Sorrel.
Jacqu. monogr. 66. t. 30.
Leaflets oblong blunt, styles very long, filaments toothless.
46. *Oxalis arcuata*. Bending Wood Sorrel.
Jacqu. monogr. 67. t. 31.
Leaflets linear-oblong emarginate, styles very short.
47. *Oxalis linearis*. Linear-leaved Wood Sorrel.
Jacqu. monogr. 68. t. 32.
Filaments toothless, styles very long, corollas caryophylleous, leaflets linear.
48. *Oxalis gracilis*. Slender Wood Sorrel.
Jacqu. monogr. 69. t. 33.
Filaments toothless, styles very long, corollas bell-shaped, leaflets linear.
49. *Oxalis reclinata*. Reclining Wood Sorrel.
Jacqu. monogr. 70. t. 34.
Filaments toothless, styles middling, leaflets linear.
50. *Oxalis miniata*. Vermilion Wood Sorrel.
Jacqu. monogr. 71. t. 35.
Filaments toothless, styles very short, leaflets linear.
51. *Oxalis versicolor*. Striped-flowered Wood Sorrel.
Lin. spec. 622. syst. 434. Reich. 2. 390. Jacqu. monogr. 72. t. 36 & 77. f. 4. Thunb. diff. n. 19. prodr. cap. 83. Curt. magaz. 155. Smith ic. rar. 7. t. 7.
Filaments toothletted, styles very long, stem upright hairy generally simple, leaflets linear callous on the under side at the tip.
52. *Oxalis elongata*.
Jacqu. monogr. 73. t. 37.
Filaments toothletted, styles very short, petals emarginate, leaflets linear.
53. *Oxalis tenuifolia*. Fine-leaved Wood Sorrel.
Jacqu. monogr. 74. t. 38.
Filaments toothletted, styles very short, petals quite entire, leaflets linear.
54. *Oxalis polyphylla*. Many-leaved Wood Sorrel.
Jacqu. monogr. 75. t. 39.
O. versicolor. Jacqu. collect. 3. 225. ic. rar. vol. 3.
Filaments gibbously toothletted, styles middling, leaflets linear.
55. *Oxalis cuneata*.
Jacqu. monogr. 76. t. 40.
Filaments toothless, styles very long, leaflets wedge-shaped.
56. *Oxalis cuneifolia*.
Jacqu. monogr. 77. t. 41.
Filaments toothless, styles very short, leaflets wedge-shaped.
57. *Oxalis glabra*. Smooth Wood Sorrel.
Lin. syst. 433. Jacqu. monogr. 78. t. 76. f. 3. Thunb. diff. n. 17. t. 2. prodr. cap. 83.
Filaments toothletted, styles very long—stipe upright smooth, leaflets oblong or wedge-shaped smooth.
58. *Oxalis pusilla*. Dwarf Wood Sorrel.
Thunb. monogr. 79. t. 24.
Filaments toothletted, styles middling, leaflets wedge-shaped.
59. *Oxalis ambigua*. Doubtful Wood Sorrel.
Jacqu. monogr. 80. t. 43.
Styles very long, leaflets unspotted flat, the middle ones wedge-shaped, the side ones oblong, calycine leaflets equal.
60. *Oxalis undulata*. Wave-leaved Wood Sorrel.
Jacqu. monogr. 81. t. 44.
Styles very long, leaflets unspotted waved, middle wedge-shaped, lateral oblong, one leaflet of the calyx spatulate.
61. *Oxalis fuscata*.
Jacqu. monogr. 82. t. 45.
Styles very long, leaflets spotted on both sides, middle wedge-shaped lateral oblong.
62. *Oxalis glandulosa*. Glandular Wood Sorrel.
Jacqu. monogr. 83. t. 46.

Styles

- Styles middling, leaves and calyxes capitately ciliate, middle leaflet wedgeshaped lateral ones oblong.
63. *Oxalis tricolor*. Three-coloured Wood Sorrel.
Jacqu. monogr. 84. t. 47.
β. Id. 85. t. 48.
Styles middling, ciliae simple, middle leaflet wedge-shaped, lateral ones oblong.
64. *Oxalis exaltata*.
Jacqu. monogr. 86. t. 49.
Styles very short, leaflets dusky-spotted, middle wedge-shaped lateral oblong, scapes upright.
65. *Oxalis rubroflava*.
Jacqu. monogr. 87. t. 50.
Styles very short, leaflets unspotted, middle wedge-shaped lateral oblong, scapes upright.
66. *Oxalis flaccida*.
Jacqu. monogr. 88. t. 51.
Styles very short, leaflets unspotted, middle wedge-shaped lateral oblong, scapes flaccid.
67. *Oxalis variabilis*. Variable Wood Sorrel.
Jacqu. monogr. 89. t. 52.
O. *purpurea* foliis totis viridibus, limbo albo. Thunb. diff. n. 8. 1. β.
β. O. *variabilis* rubra. Jacqu. monogr. 90. t. 53.
Styles very short, leaflets roundish-unspotted very slightly emarginate.
68. *Oxalis grandiflora*. Great-flowered Wood Sorrel.
Jacqu. monogr. 91. t. 54.
Styles very short, leaflets roundish frequently blood-red underneath, scarcely emarginate.
69. *Oxalis convexula*. Convex-leaved Wood Sorrel.
Jacqu. monogr. 92. t. 55.
Styles middling, filaments toothless, leaflets roundish convex.]
70. *Oxalis purpurea*. Purple Wood Sorrel.
Lin. spec. 621. syst. 432. Reich. 2. 389. hort. cliff. 175. Jacqu. monogr. 93. t. 56. Thunb. diff. n. 8. prodr. cap. 82. Kniph. cent. 3. n. 70. Ehret pict. t. 10. f. 2. Breyn. cent. 102. t. 46. Comm. hort. 1. 41. t. 21. (Oxys.)
Styles middling, filaments toothletted, petioles round, leaflets roundish unspotted ciliate.
- [71. *Oxalis laxula*.
Jacqu. monogr. 94. t. 57. Thunb. diff. n. 8. 2. γ.
Styles middling, filaments toothletted, petioles round, leaflets roundish often purple underneath.
72. *Oxalis breviscapa*.
Jacqu. monogr. 95. t. 58.
Styles middling, filaments toothletted, petioles thick compressed, leaflets roundish.
73. *Oxalis rigidula*.
Jacqu. monogr. 96. t. 59.
Styles very long, leaflets roundish unspotted.
74. *Oxalis speciosa*. Handsome Wood Sorrel.
Jacqu. monogr. 97. t. 60. Thunb. diff. n. 8. 2. α.
Styles very long, leaflets roundish, unspotted above, underneath blood red and dotted with gold.
75. *Oxalis fuggillata*.
Jacqu. monogr. 98. t. 61.
Styles very long, leaflets roundish, when adult livid underneath all over and above at the edges.
76. *Oxalis truncatula*. Truncate-leaved Wood Sorrel.
Jacqu. monogr. 99. t. 62.
Styles very long, leaflets roundish truncated.
77. *Oxalis sulphurea*. Sulphur-coloured Wood Sorrel.
Jacqu. monogr. 100. t. 63.
Styles very short, filaments toothless, calyx ciliate, leaflets obcordate.
78. *Oxalis natans*. Floating Wood Sorrel.
Lin. syst. 432. Jacqu. monogr. 101. t. 76. f. 2. Thunb. diff. n. 4.
Styles very short, filaments toothless, calyx smooth at the edges, leaves floating, leaflets obcordate.
79. *Oxalis strumosa*.
Jacqu. monogr. 102. t. 64.
Styles very short, filaments toothletted equal, leaflets spotted on both sides, middle one obcordate, lateral ones roundish.
80. *Oxalis luteola*.
Jacqu. monogr. 103. t. 65.
Styles very short, filaments toothletted equal, leaflets obcordate, unspotted and somewhat villose on both sides.

81. *Oxalis lanata*. Woolly Wood Sorrel.
Lin. syst. 432. Jacqu. monogr. 104. t. 77. f. 2. Thunb. diff. n. 6. β.
Styles very short, filaments gibbously toothletted equal, leaflets obcordate very hirsute on both sides.
82. *Oxalis punctata*. Dotted Wood Sorrel.
Lin. syst. 432. Jacqu. monogr. 105. t. 66. Thunb. diff. n. 3. t. 1.
Styles very short, filaments toothletted unequal, leaflets underneath coloured and dotted with gold, middle one obcordate, lateral ones roundish.
83. *Oxalis obtusa*.
Jacqu. monogr. 106. t. 79. f. 1.
O. *lanata*. Thunb. diff. n. 6. α.
Styles middling, filaments toothletted unequal, calycine leaflets rounded-blunt, leaflets obcordate.
84. *Oxalis fallax*.
Jacqu. monogr. 107. t. 67.
Styles middling, filaments toothletted equal, leaflets obcordate.
85. *Oxalis marginata*.
Jacqu. monogr. 108. t. 68.
Styles middling, filaments toothless equal, leaflets obcordate.
86. *Oxalis pulchella*. Pretty Wood Sorrel.
Jacqu. monogr. 109. t. 69.
Styles very long, filaments toothless, leaflets obcordate.
87. *Oxalis macrogonya*.
Jacqu. monogr. 110. t. 70.
Styles very long, filaments toothletted, stipe subterraneous, leaflets obcordate.]
88. *Oxalis incarnata*. Flesh-coloured Wood Sorrel.
Lin. spec. 622. syst. 433. Reich. 2. 391. hort. cliff. 175. Jacqu. monogr. 111. t. 71. Thunb. diff. n. 15. Comm. hort. 1. 43. t. 22. (Oxys.)
Styles very long, filaments toothletted, stipe standing out very long branched, leaflets obcordate.
- [89. *Oxalis bifida*. Cloven-leaved Wood Sorrel.
Lin. syst. 433. Jacqu. monogr. 112. t. 79. f. 4. Thunb. diff. n. 16. t. 1.
Styles very long, filaments toothletted, stipe standing out commonly branched, leaflets semibifid, corolla bell-shaped.
90. *Oxalis longiflora*. Long-flowered Wood Sorrel.
Lin. syst. 432. Jacqu. monogr. 113. Thunb. diff. n. 9.
Stipe standing out, leaflets semibifid, corolla canyophylleous?]
91. *Oxalis Acetosella*. Common Wood Sorrel.
Lin. spec. 620. syst. 432. Reich. 2. 388. hort. cliff. 175. fl. lapp. 194. suec. n. 406. mat. med. 118. Woodv. med. bot. 56. t. 20. Jacqu. monogr. 114. t. 80. f. 1. Thunb. diff. n. 5. Gartn. fruct. 2. 152. Hudf. angl. 198. Wither. arr. ed. 3. 430. Curt. lond. 2. 31. 111. Lightf. scot. 237. Relb. cant. n. 334. Sibth. oxon. n. 421. Pollich pal. n. 434. Neck. gallob. 200. Krock. files. n. 694. Villars dauph. 3. 585. Fl. dan. 80. Mill. fig. 195. 2. Mill. illustr. Sabb. hort. 1. t. 32. Plenck ic. t. 354. Berg. phyt. t. 41.
Oxys *Acetosella*. Hall. helv. n. 928. Scop. carn. 2. 561. Allion. pedem. n. 1602.
Oxys *pliniani*. Lob. ic. 2. 32.
O. *alba*. Ger. 1030. 1. emac. 1201. Raii syn. *281.
O. *Trifolium acetosum*, flor. lacteis. Tabern. 525.
Oxys. Fench. 567.
Trifolium acetosum. Dod. pempt. 578. 2. Matth. 837.—vulgare. Bank. pin. 330. Park. theat. 746. 1. Raii hist. 1098. Petiv. brit. 63. 7.
Oxys f. *Trifol. acidum* flore albo. Bank. hist. 2. 387. 2. Mor. hist. f. 2. t. 17. f. 1. ord. 4.
Lujula. Blackw. herb. 308.
β. *Trifolium acetosum* vulgare flore purpureo. Bank. pin. 330. Merr. pin. Wither. arr. var. 2. Raii syn. *281. 2.
Styles equal, leaflets obcordate hairy.
- **** With Digitated leaves.
- [92. *Oxalis lupinifolia*. Lupin-leaved Wood Sorrel.
Jacqu. monogr. 115. t. 72.
Styles very short, calyx smooth, leaflets flat.

93. *Oxalis flava*. *Narrow-leaved Wood Sorrel*.
Lin. spec. 621. *fyst.* 434. *Jacqu. monogr.* 116. t.
 73. *Thunb. diff.* n. 24.
Styles very short, calyx capitate ciliate, leaflets chan-
nelled-converging.
94. *Oxalis flabellifolia*. *Fan-leaved Wood Sorrel*.
Jacqu. monogr. 117. t. 74.
Styles of middling length: leaflets linear.
95. *Oxalis pectinata*.
Jacqu. monogr. 118. t. 75, & 78. f. 2.
Styles very long, leaflets smooth.
96. *Oxalis tomentosa*.
Lin. fyst. 434. *Jacqu. monogr.* 119. t. 81. *Thunb.*
diff. n. 25. *Pluk. amaltb.* t. 350. f. 3. (Oxys.)
Styles very long, leaflets very hirsute underneath.

DESCRIPTIONS, &c.

The root in this genus is commonly bulbous; in some species only thick and fleshy; in a few branched: the bulbs consist of fleshy scales, sometimes closely imbricate, sometimes loose and diverging. In a few the subterraneous stipe and the terminating fibre of the bulb produce little dog-toothed bulbs, in such abundance as to fill the whole pot to the very bottom, as in *purpurea*, *cernua*, *reptatrix*. Sometimes the bulb strikes very deep, as in *tomentosa*; the original bulb near the surface striking a radical fibre downright from its base, which puts out from its side a new bulb, producing the next year's plant, whilst the former perishes: if then the young plant be pulled up, the stem under ground is often broken off from the bulb, which has given occasion to a wrong description of the root. Bulbs which have a hard entire coat most easily perish, because perhaps the nucleus is suffocated. Sometimes fusiform, thick and long fibres spring in a monstrous form from the bulbs, as in *glandulosa* and some others.

Some of the species have a proper *Stem* (Caulis), when it bears all the leaves and peduncles alternately, and not in a terminating umbel: this is either branched or quite simple, and that for the most part inconstantly. Others have a *Stipe*; the leaves and flowers being aggregate together at the end of the stalk; this bears none or very few leaves along it, seldom many: this is sometimes *subterraneous* or concealed under ground, when the plant is vulgarly called *stemless*; sometimes it is above ground (*exsertus*), and is upright, reclining or procumbent; in the same plant the stipe is frequently from an inch to half a foot in height, and sometimes there is none, as particularly in *polyphylla*. In some species the stipe is always subterraneous, as in *breviscapa*, *purpurea*, &c.: in others it is always *exsert*, as in *gracilis*, *versicolor*, *tenuifolia*. Stipes are commonly quite simple; some however are branched, the branches terminating in umbels, as *incarnata* and *polyphylla*. Hence the division of the species into *caulescent* and *stipitate*.

The leaves are not perhaps truly sessile in any of the species; they are subsessile in a few, but in most are petioled. They are simple in three species, binate in four, pinnate in one, digitate in six, in the rest ternate. The petiole in a few springs from a widened submembranaceous base; but in most the base itself of the petiole forms a short joint, which is easily distinguished by the surrounding ring; in very few it is winged.—The leaflets are generally subsessile or on very short petioles, very different in their forms, commonly more or less dotted, very seldom quite smooth; in some green on both sides, but in others coloured and frequently very elegantly underneath: almost all of them have an acid taste; whence their names of *Oxalis* or *Oxys*, *Wood Sorrel*, &c.

The partial stem bearing the flower is a *peduncle* in the caulescent; a *scape* in the stipitate species. Each, like the petiole, arises at the base from a joint; very few species being without it.—Most of them have two little bractes; sometimes alternate without any joint, sometimes opposite, and then usually springing from a manifest joint: they are placed at the bottom of the peduncle in some species, about the middle in others, at top or even close under the calyx in others; but always constant in the same species. Very few are destitute of these bractes.

The calyx in most of the species is so slightly united at the base, that it is more properly five-leaved than five-parted: in the common sort (*O. Acetosella*) however it is truly one-leaved: the leaflets vary so much, even in the same flower, in hairiness, colour and breadth, that they are little to be depended on for specific distinctions.

Tournefort, Ray, Rivinus, Ludwig, Magnol, Allioni, Thunberg consider the corolla as monopetalous; Ruppianus and Knauth as pentapetalous; Linneus takes the middle way, in describing it as cohering slightly at the base; in the Kew catalogue the corolla is said to consist of five petals slightly cohering at the base; Dillenius also, to the species he has described, attributes five petals cohering slightly at the claws; Haller likewise considers the corolla as pentapetalous. Certainly the five bases of the claws being distinct in most of the species, but not in all, indicate the corolla to be pentapetalous: nay there are some species in which the petals are entirely distinct, without the least connection; in others the union is so very slight, that they may be separated without tearing them; in others again they are really connected: this distinction therefore is uncertain, but upon the whole the corolla is best considered as pentapetalous. The figure of the corolla is generally campanulate, with almost upright claws, and a spreading wide border. A few have the claws very long, all together forming a cylinder, with the border spreading out very much; this sort of corolla may be named *caryophylleous* from its resemblance to that of a Pink. The colour of the corolla is white, yellow, purple or red, except in very few species, varying only in intensity.

The filaments are commonly united into a cylinder at the base, and therefore are monadelphous: in a very few they are quite separate, they are all placed in the same circle at the base, but as they rise, five of them alternately tend inwards, and are called interior; the other five, being more upright, are said to be exterior. In most species the interior filaments (the exterior never) put forth from the thickened back at bottom a very evident tooth, in others only an obtuse bump, these are said to be *toothletted*; those which have none of this process are called *toothless*. The interior filaments are always longer than the exterior, and are themselves sometimes equal, sometimes unequal in height. The exterior ones are very rarely unequal. The filaments are either smooth or hairy; and the hairs are either simple or capitate. The hairiness or smoothness is not always the same in the filaments of each order; nor do the toothlets always follow the hairiness of the filaments, and when they are hairy, the hairs are only in front. The anthers are yellow, seldom white, incumbent for the most part, but in a few species erect.

The germ is five-cornered, oblong or ovate, somewhat hairy especially at the top, seldom wholly smooth: it is either entirely of a pale green colour, or has a single row of caluses or orange-coloured dots on each side at the corners. Styles seldom smooth: sometimes longer than the interior filaments, or *very long*; sometimes shorter than these, but longer than the exterior filaments, or of a *middling* length; sometimes shorter than the latter, denominated *very short*; or precisely *equal* to the interior filaments, which is very rare. The stigmas are pencilled almost in all; in a very few capitate. This proportion of the styles to the stamens, together with the equality or inequality of the filaments, and the presence or want of the toothlets, being constant, are circumstances fit to make use of in forming *diagnoses* or specific differences.

The fruit in many of the species is unknown, but in those that are known, the capsule is more or less quinquangular seldom five-winged, cylindric or ovate, generally villose, five-celled and longitudinally five-valved. The seeds in some very few, in others many in a longitudinal row lying over each other, roundish, somewhat compressed, and transversely wrinkled. Each seed is inclosed in a white coriaceous pellucid and very shining pellicle, which is a sort of aril. This aril becomes dry in the ripe seed, and then separates with a considerable elastic force into two cohering valves,

lets the seed free, and together with it is violently cast forth at the opening angles of the capsule. The capsules then dry and contract. The aril retains the wrinkles of the seed impressed upon it.

Linneus first gave the name of *Oxalis* to this genus, in his hortus Cliffortianus, and the name has been adopted by most modern botanists. The *Oxalis* of Pliny however seems to be a species of *Rumex*, *Lapathum* or Dock, and probably *Rumex Acetosella* or Common Sorrel. The older botanists, and Haller, Scopoli and Allioni among the moderns, name the genus, with more judgment *Oxys*, Pliny having described the *Oxys* as having ternate leaves: he probably means our *Oxalis corniculata*, which is a native of Italy. In deference however to Linneus and his followers, the name of *Oxalis* is here adopted².

Of the ninety-six species here set down from Jacquin's fine work on this genus, two only are natives of Europe, one of the East Indies, twelve of America, and all the rest of the Cape of Good Hope, that inexhaustible treasury of beautiful plants. Jacquin is here fervently followed, that illustrious author having bestowed great pains in ascertaining and describing the species; some of which however can scarcely be allowed to be any thing more than varieties.

1. Root branched. Stem a foot and half high, round, branched, the thickness of a pigeon's quill; when old brownish, smooth, when young pubescent. Branches the same. Leaves alternate, approximating at the ends of the branches, ternate. Petiole not jointed at the base, slender, hirsute, about an inch in length. Leaves obovate or oval, rounded, villose at the edge, dotted on both sides and rough with very short hairs, petioled; the lateral ones generally emarginate; the middle one larger, on a longer petiole, and for the most part quite entire. Peduncles not jointed at the base, axillary, solitary, filiform, hirsute, the length of the leaves, twice bifid at top, five-flowered; divisions very short and each supported by a little twin linear hirsute bracte: pedicels jointed at bottom. Calycine leaflets lanceolate, acute, villose at the edge, very hirsute, upright. Corolla three times as long as the calyx, bell-shaped, spreading very much at top, rounded, yellow. Filaments connate at the base: interior toothless, equal, hirsute with simple hairs: exterior smooth. Anthers incumbent. Styles smooth. Native of the Caracas in South America.

2. Root branched. Stem round, villose, a foot and half high, the thickness of a pigeon's quill. Branches hirsute. Leaves alternate, or several together from the same point at intervals, ternate. Petiole not jointed at the base, slender, hirsute, spreading, about an inch and half in length. Leaflets subsessile, subovate-rhomboid, bluntish, quite entire, villose at the edge, and minutely villose on both sides; the middle one longer, about an inch in length. Peduncles not jointed at the base, filiform, from the axils of the aggregate leaves, hirsute, umbelliferous, with an involucre of two opposite, linear, hirsute leaflets. Pedicels in pairs or threes, hirsute, commonly simple and one-flowered, more seldom bifid and two-flowered, with a little bracte at the division. Calycine leaflets lanceolate, acute, villose at the edge, hirsute, erect. Corolla three times as long as the calyx, bell-shaped, spreading very much at top, rounded. Filaments connate at the base: interior toothless, equal, hirsute with simple hairs: exterior smooth. Anthers incumbent. Styles hirsute with simple hairs.—Native of the Caracas in South America².

3. Root branched. Stem round, a foot high. Leaves alternate, ternate. Petiole round, spreading, two or three inches long. Leaflets bluntish, quite entire; the middle one longer; often more than an inch in length, petioled. Peduncles axillary, solitary, spreading, about the length of the leaves. Pedicels three or four, simple, short. Calycine leaflets lanceolate, acute. Corolla almost three times as long as the calyx, bell-shaped, yellow^b.

^a Jacquin, monogr. introd.

^b Jacquin from Plumier.

^c Jacquin.

Jacquin has changed Linneus's name of *frutescens*, this species having the appearance perhaps of becoming something shrubby at bottom only in common with the two former and the next succeeding species; but it does not seem that any *Oxalis* is really frutescent.

Native of the Caribbee islands and Guiana.] Discovered by Plumier; and afterwards found growing plentifully at La Vera Cruz by Dr. Houstoun, who sent it to England. Mr. Miller says, it rises with a shrubby stalk a foot and half high, sending out several slender branches. Leaves in pairs or threes, on short petioles. Peduncles near two inches long; each sustaining four or five yellow flowers, with the petals not much longer than the calyx: each flower being on a crooked pedicel hangs down.

4. [Root branched annual. Stem somewhat villose, round, the thickness of a reed at the base, dusky at bottom, a foot and half high, putting forth many alternate branches below. Leaves alternate, ternate. Petiole not jointed at the base, half round, slightly grooved in front, somewhat hirsute, from an inch to two inches in length. Leaflets oblong or ovate, bluntish, quite entire, smooth above, somewhat villose underneath, appearing dotted when examined by a glass or held up to the light, petioled, an inch long, the middle leaflet a little larger and on a longer petiole. Peduncles not jointed at the base, axillary, solitary, generally shorter than the petioles, racemed with a solitary flower at the division; pedicels very short with very minute bractes. Calycine leaflets lanceolate, acuminate, smooth, green, upright. Corolla twice as long as the calyx, spreading very much at top, rounded, smooth, flesh-coloured. Filaments united at the base: interior toothletted, equal, hirsute with capitate hairs, the toothlets smooth; exterior smooth. Anthers incumbent, yellow. Styles the length of the interior filaments, hirsute with simple hairs. Stigmas capitate not pencilled. Capsule ovate, pentagon-winged, acute. Seeds in each cell commonly two, ovate, acute, wrinkled, brown. It flowers in the stove from may to october.—Native of the Caracas, and Guiana^c.]

Mr. Miller says, it grows naturally in the Brazils; plants having come up in plenty, in a tub of earth which came thence. According to him, it seldom rises more than three or four inches high: the leaflets are large and hairy, on long foot-stalks: the flowers rise immediately from the root, on scapes the same length with the leaves, bifid, and supporting two pretty large red flowers. Capsules oblong, filled with brown seeds.

[Jacquin refers Feuillée's synonym, attributed by Murray to this species, to the next.

5. Root branched, annual. Stem half a foot high, the thickness of a reed. Leaves alternate, ternate. Petiole two inches long, spreading. Leaflets sessile, scarcely half an inch long. Peduncles axillary, solitary, erect: pedicels shortish, one-flowered. Calycine leaflets lanceolate, acute, erect. Corolla almost three times as long as the calyx, bell-shaped: claws upright: border obovate, rounded, rose-coloured with six red lines from the base to the middle.—Native of Chili, in moist places^d.

6. Root perennial, turbinate, putting forth capillary fibrils from the side, near an inch thick at top, ending in a sharp point at bottom, fleshy, dusky ash-coloured. Stem round, somewhat scaly, half an inch high, putting forth from the top several leaves and several branches or stems, erect, round, slender, white-villose, pale green, about nine inches long. Leaves alternate, ternate. Petioles about an inch and half in length, spreading. Leaflets sessile, half an inch long. Peduncles axillary, solitary, two-flowered or one-flowered, the length of the leaves; with little bractes to the pedicels opposite and acute. Calycine leaflets lanceolate, acute, erect. Corolla many times longer than the calyx, very wide, rounded, yellow. Capsule membranaceous, five-celled; with many small seeds.

Native of Paraguay, in the vast plain to the north-

^c Jacqu. monogr.

^d Jacqu. from Feuillée.

ward of the river de la Plata. Observed by Feuillée with the preceding and two next species^c.

Jacquin gave this species its trivial name from the shape of the root, like a top: from *καυος*, *turbo*.

7. Root annual, fusiform, putting forth many fibrils, half an inch thick at top, pale green. Stem round, two feet high, branched, half an inch thick at the base, pale green, full of an acid juice. Leaves alternate, ternate. Petiole jointed at the base, round, spreading a little or almost upright, some inches in length. Leaflets sessile. Peduncles axillary, solitary, almost upright, about the same length with the leaves. Pedicels about eight, before flowering drooping, but whilst in flower upright. Calycine leaflets lanceolate, acute. Corolla three times as long as the calyx, bell-shaped, ten lines in diameter, yellow with purple streaks on the inside; borders crenate.

Native of Peru. It seems to be wholly smooth. About Lima it is generally cultivated in gardens, and is used as Sorrel^f.

8. Root annual, branched, fibrous. Stem round, branched, half a foot high, villose. Leaves scattered, ternate. Petiole villose, about an inch and half in length. Leaflets sessile, smooth above, underneath and at the edges villose, slightly tinged with red at the edge, especially at the back, scarcely half an inch long. Peduncles axillary, with appressed hairs. Leaflets of the involucre lanceolate, acute, small. Pedicels commonly in pairs, sometimes three or four together, slender, before flowering drooping, then erect, when fruiting reflex. Calycine leaflets lanceolate, acute, erect. Corolla three times as long as the calyx, yellow: border obovate, emarginate, spreading very much. Capsule narrow-conical, five-grooved, villose, erect, almost an inch long. Seeds roundish, white, shining.

Native of Carolina. It flowers here in June and July^g. Cultivated in Sherard's garden at Eltham before 1732.

9. Root perennial, creeping, round, putting out capillary fibres at the knots, branched. Stems from the root as it creeps along several, roundish, slender, somewhat villose, purplish, finally branched, half a foot high and more, upright but being weak often lying down, annual. Leaves alternate, a few sometimes opposite, ternate. Petiole springing from a joint margined in front, round, villose, spreading, from two to four inches long, flaccid. Leaflets subpetioled, somewhat hirsute on both sides with decumbent hairs and green, ciliate, scarcely half an inch long. Peduncles axillary, jointed at the base, round, villose, upright, about the same length with the leaves, having from two to seven flowers in an umbel, with a pedicel often branched: leaflets of the involucre several, ciliate and somewhat hirsute. Calycine leaflets lanceolate, sharpish, somewhat hirsute, ciliate, pale green, erect. Corolla twice or thrice as long as the calyx, subcampanulate, yellow: claws upright, border obovate, very obscurely emarginate and very spreading. Filaments connate in a cylinder: interior toothless, equal, having a very few capitate hairs at top, in other parts smooth: outer smooth. Anthers oblong, incumbent, yellow. Germ oblong, hirsute, pale green. Styles almost equal, hirsute with simple hairs. Capsule columnar, sharpish, hirsute, five-cornered^h.

Swartz observes, that it varies with a stiffer and weaker stem, upright or declining, so that it is scarcely any thing more than a variety of *O. corniculata*.

Mr. Salisbury describes his *O. ambigua* as having a creeping stem, ternate leaves, on half-round petioles without stipules, emarginate leaflets, the petals obovate quite entire, styles the height of the longer filaments and spreading.

Mr. Salisbury remarks, that though the primary stems in some degree answer to the definition which Linneus has given of the term *striatus*, yet the branches which break out near the root are constantly creeping; there is however an obvious difference to the eye between this and the following.—I have not distinguished

it in a genus perhaps already overloaded with species.

Browne recommends it as a pleasant cooler and diuretic, and says that it was formerly administered in inflammatory cases, but has been little used since the more agreeable acid fruit-trees have been so much cultivated in the West Indies.

Native of North America, Jamaica and Piedmont. Cultivated in the botanic garden at Oxford in 1658. It flowers from June to Octoberⁱ. Mr. Miller remarks, that wherever this plant has been suffered to ripen its seeds, it has become a common weed.

10. [Root branched, fibrous, brownish, annual. Stems several, wholly prostrate, rooting, branched, slender, round, villose, often tinged with purple, growing to half a foot in height or more. Leaves alternate, collected in a small number at the rooting parts of the stems, ternate. Petiole arising from a joint which has two rims in front, round, slender, villose, purplish, almost upright, from an inch to two inches in length. Leaflets subsessile, obcordate, somewhat villose on both sides, and at the edge, dusky green. Peduncles axillary, or on the shorter branches terminating, very shortly jointed at the base, round, somewhat villose, upright, half an inch long, generally two-flowered in a sort of umbel, with an involucre of two or three lanceolate, acute, villose leaflets. Calycine leaflets lanceolate, blunt, villose, ciliate, erect, pale green. Corolla twice as long as the calyx, subcampanulate, yellow: claws erect: borders obovate, blunt, spreading very much. Filaments connected at bottom: interior toothless, equal, having a very few capitate hairs at top, the other parts smooth; exterior smooth. Anthers oblong, incumbent, yellow. Germ oblong, very minutely villose, pale green. Styles almost equal, hirsute with simple hairs. Capsule columnar, acute, somewhat villose, five-cornered with the corners waved^k.]

According to Mr. Miller, the root is long and slender, the trailing stalks spread out eight or nine inches wide on every side, dividing into small branches, the leaves are on pretty long foot-stalks, and the leaflets are more deeply emarginated than in *O. acetosella*. The capsules are near an inch long. [Seeds brown, scored transversely, inclosed in a semitransparent aril or seed-coat, which being pressed, opens with a jerk, and throws out the seed to some distance^l.

Jacquin is of opinion that the *O. corniculata* of Pollich and other Germans is rather his *O. striata*, which he affirms to be always upright, except when it is beat down by the wind or any accident; whereas the former is always procumbent, the very extremities of the stems and branches being close to the ground, like the runners of the Strawberry; the short flowering-branches only being upright: the stem also creeps, but not the root, which is annual: whereas in *striata* the root is perennial, and it is that which creeps, not the stem. Retzius indeed affirms, that *O. corniculata*, protected from frost, is perennial; but that it always continues to be procumbent.

Mr. Salisbury has altered the trivial name to *pusilla*, because it is of much dwarfer growth than the preceding, and the old epithet is applicable to the whole genus. He describes the stem as creeping, the petioles as roundish, and stipuled at the base, with emarginate leaflets; the segments of the corolla obcuneiform, gnawn a little at the tip; and the styles scarcely the height of the longer filaments and fastigate.

Native of Spain, Italy, Sicily, Greece, Austria, Switzerland, England, Japan, China, Cochinchina.—Cultivated in 1656, by Mr. John Tradescant, Junior^m. It was not then known to be a native of England, and perhaps it may have established itself since that time in the mild climate of Devonshire; for it increases very abundantly and with great facility. It is said to have been first discovered here by Mr. J. Turner in the neighbourhood of Exeter. In 1781 it was found near Dawlish in Devonshire, and since that in several other places of the same county.

^c Jacq. from Feuill. ^f Idem. ^g Jacq. from Dillenius.

^h Jacq. monogr.

ⁱ Hort. kew.

^k Jacquin.

^l Hollisear in Withering.

^m Hort. kew.

Mr. Salisbury remarks, that it is a proof of the mildness of the climate there, that this and other southern plants occur in it, as *Pinguicula lusitanica*, *Sibthorpia europæa*, *Lobelia urens*, and *Erica vagans*^a. *O. corniculata* flowers from may to october.

11. Root fibrous, slender, branched. Stems radical, several, herbaceous, filiform, leafy, villose, purplish, some inches in length; branchlets alternate, like the stem. Leaves alternate, ternate. Petiole jointed and widening at the base, half round, villose, green, almost upright, half an inch or more. Leaflets obcordate, sessile, ciliate, smooth above, but having a very few villose hairs underneath, very small. Peduncles axillary, jointed at the base, one-flowered or two-flowered, round, villose, slender, almost upright, green: with a pair of little jointing villose bractes about the middle. Calycine leaflets lanceolate, acute, somewhat hirsute, thinly ciliate, upright. Corolla three times as long as the calyx, bell-shaped: claws upright, pale: borders obovate, rounded, spreading very much, yellow. Filaments connate at the base, smooth: interior toothless, equal. Anthers oblong, incumbent, yellow. Germ linear, hirsute. Styles hirsute with simple hairs. Stigma obscurely pencilled.

Native of the Cape of Good Hope, Madagascar, and Ceylon^o.

12. Root perennial, round, an inch in diameter, about eight inches long, having several heads, divided below into branching legs, full of clefts, covered with a double bark, the outer very thin, brownish ash-coloured, the inner two lines in thickness, red, watery, acrid; the substance of it is white, watery, acrid, having red fibres in it running from the centre to the circumference. Leaves radical, several. Petioles almost upright, three inches long. Leaflets subsessile, obcordate, scarcely half an inch in length, bright green above, beautiful violet underneath. Scapes almost upright, bearing several flowers in umbels, and the same length with the leaves. Calycine leaflets lanceolate, acute, erect. Corolla three times as long as the calyx, bell-shaped, yellow, marked below with three red lines on each petal.

Native of Peru, on mountains. This species is singular for the great size of the root, whence its trivial name. The heads of it resemble so many fruticose stems^p.

13. Bulb deep in the ground. Stipe standing out, villose, having one or two scales, about an inch in length, terminating in an umbel of leaves and scapes. Leaves several. Petiole from a wider base, but not jointed, rough-haired, about an inch in length. Leaflets subsessile, obcordate, greater in breadth than length, a little ciliate, above green with a circle of red, and rough with white hairs, tomentose underneath, purple or silvered, or silvery-purple. Scapes several, rough-haired, umbelliferous, erect, twice as long as the leaves. Peduncles from two to five, one-flowered, the middle ones shorter, drooping, each supported at the origin with two ovate, rough-haired little bractes. Calycine leaflets lanceolate, acute, rough-haired, ciliate. Corolla twice as long as the calyx, yellow. Filaments so very slightly connate at the base as to be almost free, smooth: interior toothletted, equal. Anthers incumbent. Germ long, hirsute. Styles hirsute with simple hairs.—Native of the Cape of Good Hope^q.

14. Bulb roundish-ovate, covered with a black coat, the size of a hazel nut or less, very prolific, consisting of whitish fleshy scales, and having one or two red lines running through them. Stipes several, from the base of the bulb between the scales, subterraneous, round, slender, smooth, white, destitute of scales, each ending in a single leaf or scape. Leaves several. Petiole not jointed, round, thinly hairy, green, frequently purple at bottom, almost upright, weak, from three to six inches in length. Leaflets on very short petioles, very widely obcordate, somewhat villose at the edge; on both sides smoothish, dotted and green, three quarters of an inch in length. Scapes

similar to the petioles, simply umbelliferous, or first bifid with a one-flowered peduncle in the division, and then umbelled on both sides. Involucre one-leaved and bifid; segments lanceolate, acute, opposite, smooth, rose-coloured. Peduncles from three to nine, jointed at the base, round, somewhat hairy, half an inch long or more; with little bractes at bottom almost opposite and somewhat villose. Calycine leaflets lanceolate, sharpish, upright, ciliate, somewhat hirsute, pale green, having two, sometimes, but seldom, only one oblong, orange-coloured callus. Corolla three times as long as the calyx, bell-shaped; claws yellowish; borders obovate, rounded, violet-purple, striated, spreading very much. Filaments united at the base: interior gibbously toothletted equal, very hirsute with simple hairs: outer smooth. Anthers oblong, incumbent, whitish. Germ oblong, pale green, hirsute. Styles somewhat hirsute with simple hairs.—The bulb sometimes produces fleshy roots, the thickness of a finger. The stipes may be considered as nothing but the lower part of the petioles and scapes, and then this species has no stipe.

Native of Virginia^r. Introduced in 1772, by Samuel Martin, M. D. It flowers in may and june^s; Jacquin says, the whole summer.

15. Bulb ovate-triangular, even. Stipe subterraneous, terminated by an umbel of leaves and scapes. Leaves several. Petiole jointed at the base, channelled, smooth, from two to three inches in length. Leaflets obcordate, sessile, green above, bright purple underneath, a third part of an inch in length; lobes oblong, rounded. Scapes several, smooth, erect, slender, half a foot in length, umbelliferous. Leaflets of the involucre few, acute, minute, smooth. Peduncles from two to four, one-flowered, somewhat villose, erect, about an inch in length. Calycine leaflets lanceolate-oblong, sharpish, striated, smooth, ciliated a little towards the tip, green with red edges, and having a yellow callus underneath at the tip. Corolla three times as long as the calyx: borders oblong, blunt, crenulate, spreading, blue or flesh-coloured. Filaments connate at the base: interior gibbously toothletted, unequal, hirsute with simple hairs, but the toothlets are smooth: exterior equal, hirsute as well as the others. Anthers incumbent, yellow. Styles hirsute.

Native of the Cape of Good Hope^t. The next species is considered as the *caprina*, in the generality of the European gardens, and is perhaps the *caprina* of Linneus; but this is the *caprina* of Thunberg and Jacquin.

16. Bulb acuminate-ovate, smooth, covered with a brown coat, the largest nine lines in length. Stipe standing out, sometimes only a very little, sometimes an inch or two, often procumbent, round, the thickness of a pigeon's quill, smooth, having a few scales, terminated by an umbel of leaves and flowers; the longer one putting forth also other umbels that are leafy, and at the same time bulbiferous: then without interruption it proceeds from the bulb, penetrates the ground in various directions, and forms either a radical filiform fibre, or a capillary one, some inches long, with fibrils, and generating little bulbs its whole length. Leaves several. Petiole jointed at the base, round, green, almost upright, from three to seven inches long. Leaflets subsessile, obcordate, wider than they are long, often slightly two-lobed, unspotted, from half to three quarters of an inch in length. Scapes few, jointed at the base, round, green, upright, often even a foot high, umbelliferous. Leaflets of the involucre several, lanceolate-linear, acute, short. Peduncles several, as far as seventeen, round, about half an inch long, somewhat villose. Calycine leaflets lanceolate, sharpish, upright, thinly hirsute, green with white edges. Corolla five times as long as the calyx, bell-shaped: claws upright, pale yellow: borders very wide, obovate, rounded, spreading very much, yellow. Filaments connate at the base: interior toothletted, smooth: exterior smooth.

^a Linn. trans. vol. 2. 243.

^o Jacquin.

^p Jacquin from Feuill.

^q Jacquin from Thunberg.

^r Jacquin.

^s Hort. kew.

^t Jacquin from Thunberg.

Anthers oblong, incumbent. Germ pale greenish yellow, hirsute. Styles hirsute with simple hairs.

Native of the Cape of Good Hope. Thunberg gave it the name of *cernua* from its drooping flowers^a.

17. Bulb oblong, half an inch long, covered with a brown striated coat. Stipe under ground for an inch in length, then rising above ground from one to four inches, round, smoothish, brownish purple, more slender than a pigeon's quill, having a few scales, commonly leafless, except that it has now and then a single leaf at top, almost upright or declining, terminated by an umbel of leaves and flowers. Leaves several, upright and spreading a little. Petiole jointed at the base, obscurely hirsute when examined with a glass, from two to three inches in length. Leaflets subpetioled, two-lobed-obcordate, dotted on both sides, above smooth and green, not ciliate at the edge, beneath of an elegant and very shining violet colour, a little hirsute when viewed with a magnifier, half an inch wide, and not so long. Scapes few, jointed at the base, one-flowered, round, a little hirsute, almost upright, a little longer than the leaves, with a pair of little bractes at the joint above the middle. Calycine leaflets oblong, sharpish, green with red edges, hirsute there and on the back with capitate and simple hairs mixed, some but not all gashed above or below with a toothlet or two, marked below the tip with two oblong orange-coloured calluses, erect. Corolla four times as long as the calyx, of a violet purple colour, more pale on the outside, bell-shaped, spreading very much and wide at the top. Filaments connate at the base: interior toothletted, equal, hirsute with simple and capitate hairs, and having a smooth toothlet: exterior smooth. Anthers incumbent, yellow. Styles hirsute with capitate and simple hairs.

Native of the Cape of Good Hope. It flowers here in november^a.

18. Bulb ovate, half an inch long, covered with a brown striated coat. Stipe partly subterraneous and from one to three inches long; partly standing out two or three inches, round, nearly the thickness of a pigeon's quill, smooth, leafless, upright, terminating in an umbel of many leaves and fewer scapes, then elongated above this, and ending in another leafy umbel. Leaves several, spreading. Petiole jointed at the base, round, grooved in front, slender, sparingly villose, livid with redness, about two inches long. Leaflets on very short petioles, obcordate, almost half-lobed, dotted on both sides, scarcely half an inch in length and breadth, above smooth and livid green, underneath of a very elegant and deep livid violet-colour, somewhat hirsute with very few white decumbent hairs. Scapes very few, frequently only one, very shortly jointed at the base, umbellately two-flowered, round, obscurely villose, thicker and longer than the petioles, livid, spreading, with a pair of lanceolate, acute little bractes under the umbel. Pedicels an inch long, not jointed, somewhat villose, straight, purplish, with two very minute opposite little bractes at the base of each. Calycine leaflets lanceolate, bluntish, green with purple edges, having both simple and capitate hairs at the edges and on the back, marked below the tip underneath with four oblong orange-coloured lines. Corolla four times as long as the calyx: claws erect, yellowish: borders rounded-vedge-shaped, spreading very much, flesh-coloured, with the back on one side somewhat villose. Filaments connate at the base: interior toothletted, equal, hirsute with both simple and capitate hairs, and a few hairs to the toothlets: exterior smooth. Anthers oblong, incumbent, yellow. Germ pale green, somewhat hirsute at top. Styles hirsute with hairs of both sorts.

Native of the Cape of Good Hope. It flowers with us in october and november^a.

19. Stipe subterraneous, terminating in an umbel of leaves and scapes. Leaves very many. Petiole near, compressed-winged, unequal, ciliate, about an inch in length. Leaflets subsessile, obcordate, ciliate, smooth and green above, hirsute and whitish underneath, a third part of an inch in length. Scapes

several, round, hirsute, two-flowered, erect, two inches long. Leaflets of the involucre two, opposite; lanceolate, acute, hirsute. Peduncles scarcely half an inch in length, hirsute, erect. Calycine leaflets lanceolate, acute, erect, hirsute. Corolla four times as long as the calyx, bell-shaped, yellow. Filaments connate at the base, smooth: interior toothletted, equal. Anthers oblong, incumbent. Germ hirsute, the length of the stamens. Styles hirsute with simple hairs.—Native of the Cape of Good Hope^a.

20. Bulb oblong. Stipe subterraneous, terminating in an umbel of leaves and scapes. Leaves very many. Petiole two or three inches long. Leaflets six or five; lanceolate, smooth, thick, succulent, quite entire, sessile, green, disposed in a ring. Scapes several, a span in length, smooth, upright, umbelliferous. Peduncles several, drooping till the flowers open, and then upright. Calycine leaflets lanceolate, acute, erect. Corolla five times as long as the calyx, bell-shaped, yellow.

Native of the Cape of Good Hope^a. Linneus unites it with *cernua*, from which it is very different in the leaves^b.

21. Root fibrous, brown. Stipe standing out, round, about the thickness of a pigeon's quill, from half an inch to six inches in height, obscurely jointed below, variegated with red or brown and green, filled with a white pith, terminating in a close umbel of leaves and flowers. Leaves numerous, abruptly pinnate, spreading. Rib hirsute, often smooth at top, from two to five inches long. Leaflets from eight to fifteen on both sides, sessile, opposite, oblong, very blunt with a small innocuous point, most of them very smooth, but some thinly hairy underneath, quite entire, from two to four inches long, the younger ones yellowish green, the older glaucous above and purple beneath. Scapes very many, somewhat villose, almost upright, a little longer than the leaves, umbelliferous. Leaflets of the involucre several, awl-shaped, villose. Peduncles for the most part seven or eight, one-flowered, short. Calycine leaflets lanceolate-acuminate, villose, upright. Corolla yellow. Filaments distinct, not connate, awl-shaped, toothless, hirsute with simple hairs, upright, five alternately three times as long as the others. Anthers incumbent. Germ ovate, somewhat hirsute at top. Styles of middling length, smooth. Stigmas bifid, not pencilled. The leaves contract on the slightest touch^c: hence the trivial name. Capsule pentagon-ovate, five-celled, five-valved, opening at the angles. It is a very beautiful plant^d.

Native of Malabar, Ceylon, the Molucca islands, and other parts of the East Indies. In China and Cochinchina.

22. Bulb ovate, covered with a ferruginous shining coat, the size of a hazel nut. Stem round, hirsute, purple, slender, somewhat branched, from six to nine inches high, almost upright. Leaves subsessile, scattered, approximating, spreading very much, ternate. Leaflets subsessile, linear-wedge-shaped, blunt, quite entire or very slightly emarginate, dotted on both sides, ciliate at the edges with minute villose hairs, smooth above, somewhat hirsute underneath with pale orange calluses scattered without order, half an inch long. Peduncles not jointed at the base, axillary, solitary, round, villose, almost upright, alternate, two inches long, with little bractes generally alternate a little below the calyx. Calycine leaflets lanceolate, acute, ciliate, somewhat hirsute, pale green, upright. Claws of the corolla yellow within, dirty yellow on the outside, villose when examined by a glass, upright, embracing each other so as to form a cylinder near an inch in length: borders oblong, blunt, spreading very much, red-purple, paler underneath, with one side yellowish, almost three times shorter than the claws. Filaments united at the base: interior toothless, equal. Anthers oblong, twin, erect, yellow. Germ oblong, villose at top, pale greenish yellow, callous. Styles remarkable for their length; whence the trivial name: all these parts are hirsute with simple hairs.

^a Jacq. from Thunb.

^b Jacquin.

^c Idem.

^a Jacq. from Burm.

^d Loureiro.

^a Jacquin.

^a Idem.

^a Idem.

Native of the Cape of Good Hope. It flowers in Europe in october^e.

23. Bulb roundish, covered with a brownish coat, the size of a hazel nut or larger. Stem round, very hirsute, almost all leafy, sometimes but seldom having a single branchlet, half a foot high, almost upright, weak, about half the thickness of a pigeon's quill. Leaves alternate, subsessile, spreading very much, ternate. Leaflets linear-lanceolate, sharpish, quite entire, green on both sides and dotted, ciliate with villose hairs at the edges, smooth above, underneath hirsute and without any conspicuous calluses, scarcely half an inch long. Peduncles not jointed at the base, axillary, solitary, round, hirsute, almost of the same thickness with the stem, two inches long, almost upright, alternate, pale, with little bractes approximately alternate below the calyx. Calycine leaflets lanceolate, sharpish, ciliate, villose, pale green with blood-red edges, erect. Claws of the corolla yellow within, dirty without and villose, erect, forming a cylindric tube an inch long: borders obovate, sharpish, spreading very much, less than half the length of the claws, red-purple within, a little paler on the outside, with one side dirty yellow and somewhat villose. Filaments united, capillary, somewhat hirsute with simple hairs: interior toothless, unequal, very long: exterior also generally unequal. Anthers incumbent, yellow. Styles smooth.

Native of the Cape of Good Hope. It flowers in Europe in october and november^f.

24. Bulb roundish or ovate, from the size of a pea to that of a hazel nut, with the scales a little loose, the outer ones brown, the inner whitish dotted with red. Stem round, villose, half the thickness of a pigeon's quill, upright, half a foot high, scaly at the base, either quite simple or branched from the axils of the leaves. Leaves alternate, on very short petioles, approximating, ternate. Leaflets subsessile, wedge-shaped, rounded, emarginate, ciliated with villose hairs, smooth and dotted above, underneath hirsute with many scattered calluses not very conspicuous, half an inch long. Peduncles not jointed at the base, axillary, solitary, erect, alternate, villose, pale green, half an inch long, with alternate, approximating bractes below the calyx. Calycine leaflets oblong, sharpish, erect, ciliate, hirsute, green with two orange-coloured lines descending from the tip. Claws of the corolla three times as long as the calyx, erect, yellow within, of a pale dirty yellow and villose on the outside, forming a cylindric tube: borders obovate, rounded, spreading very much, about half the length of the claws, purplish-rose-colour within, paler on the outside, and a little villose on one side. Filaments connate, hirsute with a few short villose hairs: the interior ones toothless and equal. Anthers incumbent, yellow. Germ oblong, pale greenish yellow with orange streaks, hirsute at top. Styles somewhat villose.

Native of the Cape of Good Hope. In Europe it flowers in september and october^g.

25. Bulb roundish, covered with a brown coat, larger than a hazel nut. Stem round, the thickness of a pigeon's quill, extremely villose, brownish, only at bottom scaly and leafless, weak, about a foot high, upright for some inches and then more or less reclining, from most of the leaves below the flowers increased by axillary erect branchlets, that grow to half a foot in length, but scarcely ever bear flowers. Leaves alternate, approximating, on very short petioles, ternate. Leaflets subsessile, wedge-shaped, blunt, on account of their reflex tip seeming to be emarginate, green on both sides, and appearing dotted by a magnifier, ciliated with villose hairs at the edge, smooth above, beneath somewhat hirsute and having very many scattered calluses of a dirty orange colour, hardly visible without a glass, scarcely half an inch in length. Peduncles not jointed at the base, axillary, solitary, round, villose, the length of the leaves, erect, with opposite bractes immediately under the calyx. Calycine leaflets lanceolate, acute, ciliate, villose, pale

green, erect. Corolla red-violet: claws erect, villose on the outside, forming a cylindric tube an inch in length: borders obovate, rounded, smooth, spreading very much, one third only of the length of the claws. Filaments connate, smooth: interior toothless, unequal. Anthers oblong, bifid at the base, erect, yellow. Germ slender, smooth, pale greenish yellow, callous. Styles hirsute with simple hairs thinly set.

Native of the Cape of Good Hope. It flowers in Europe in october and november^h.

26. Bulb roundish, covered with a brown coat, the size of a hazel nut. Stem round, slender, smooth at bottom, the rest villose, about eight inches in length, purplish brown, weak, flaccid, hence it is sometimes almost upright, sometimes decumbent or ascending, putting forth from the axils branchlets that seldom flower. Leaves alternate, on very short petioles or subsessile, ternate. Leaflets wedge-shaped, subsessile, blunt, quite entire or very slightly emarginate, villose at the edges, smooth on the upper surface, hirsute at the back, having very many scattered yellowish calluses visible with a glass, about half an inch in length. Peduncles not jointed at the base, axillary, solitary, alternate, filiform, somewhat villose, pale purple, two inches long, spreading, flaccid; with alternate bractes above the middle. Calycine leaflets lanceolate, acuminate, somewhat villose, erect, pale purple. Corolla several times larger than the calyx: claws erect, yellow: borders wedge-shaped, rounded, longer than the claws, spreading very much, smooth, pale purple. Filaments connate: interior toothless, equal, somewhat hirsute with little capitate hairs: exterior smooth. Anthers incumbent, yellow. Germ very short, pale greenish yellow, hirsute at top, callous. Styles very hirsute with simple hairs.

Native of the Cape of Good Hope. It flowers in Europe in september and october.—This species is remarkably rough in its wild state, but puts off much of its roughness when cultivatedⁱ.

27. Bulb roundish, with a brown skin, the size of a hazel nut. Stem round, hirsute, commonly undivided, almost upright, weak, slender, greenish, about eight inches long, scaly at the base. Leaves alternate, on very short petioles, ternate. Leaflets narrow lanceolate, sharpish, quite entire, scarcely dotted, green on both sides, smooth above, somewhat hirsute underneath and having numerous minute yellowish-brown calluses discoverable with the microscope, villose at the edges, subsessile, reflex and spreading very much, half an inch long or a little more. Peduncles not jointed at the base, axillary, solitary, alternate, roundish, villose, pale, flaccid, four inches long, having alternate bractes at top. Calycine leaflets lanceolate, bluntish, hirsute, ciliate, almost upright, pale green, sometimes without any spots, sometimes having orange-coloured spots both above and below, and a single brownish spot on each side at the edges. Corolla four or five times as long as the calyx: claws erect, yellowish, the length of the calyx: borders obovate, rounded, wide, spreading very much, very pale violet within, on the outside pale with one side dirty yellow and somewhat villose. Filaments connate: interior gibbous-toothletted, thinly hirsute with capitate hairs: exterior also hirsute. Anthers incumbent, yellow. Styles hirsute with simple hairs.

Native of the Cape of Good Hope. In Europe it flowers in october and november^k.

28. Bulb roundish, larger than a hazel nut, with a brownish skin, composed of fleshy, very thick, ovate-acuminate, loose scales, forming as it were so many bulbs; hence lobed. Stem round, almost upright, weak, somewhat villose, brownish purple, from the thickness of a pigeon's quill to only half the size, from six inches to a foot in height, branched. Leaves alternate, ternate, spreading very much, numerous, subsessile. Leaflets also subsessile, blunt, quite entire, appearing to be emarginate on account of the middle tip being reflexed, hirsute underneath and at the edges, smooth above, half an inch long to a quarter. Peduncles axillary, solitary, jointed at the base, round,

^e Jacquin.

^f Idem.

^g Idem.

^h Idem.

ⁱ Idem.

^k Idem.

villose, flaccid, from two to three inches long, slender, pale, with alternate bractes at top. Calycine leaflets lanceolate, acute, hirsute, ciliate; erect, green with white edges. Corolla five times as long as the calyx: claws erect, yellow, twice as long as the calyx: borders obovate, blunt, wide, spreading very much, violet verging either to purple or blue, with the back on one side yellow and villose. Filaments united at the base: interior toothless, unequal; exterior equal. Anthers oblong, incumbent, yellow. Germ pale green, very hirsute at top, callous. All these parts hirsute with simple hairs.

Native of the Cape of Good Hope. In Europe it flowers in october and november.—A very large specimen is figured in Jacquin's rare plants, as a variety of *O. hirta*; in his *Monographia* it is represented smaller and more branched¹.

29. Bulb ovate, acute, the size of a hazel nut, with a ferruginous skin, loose. Stem round, slender, somewhat hirsute, fleshy, weak so that it is seldom really upright, scaly at the base, brownish purple, about half a foot high. Leaves alternate, ternate, the lower on short petioles, the rest subsessile. Leaflets subsessile, subcuneiform, rounded, quite entire, a little converging, smooth above, underneath and at the edges somewhat rough-haired, half an inch long. Peduncles axillary, solitary, very shortly jointed at the base, round, somewhat villose, flaccid, pale, about two inches long; with alternate bractes at top. Calycine leaflets lanceolate, acute, ciliate, hirsute, erect, green with the edges purple at bottom: Corolla several times longer than the calyx: claws erect, twice as long as the calyx, yellow: borders obovate, rounded, spreading very much, purple above, underneath pale purple with one side yellow and somewhat villose. Filaments connate at the base: interior toothless, unequal, hirsute with capitate hairs; exterior smooth. Anthers oblong, incumbent, yellow. Germ pale green; hirsute at top, callous. Styles hirsute with simple hairs.

Native of the Cape of Good Hope. In Europe it flowers from october to december^m.

Jacquin at first took this for *O. hirta*, and it is figured under that name in his rare plants, with larger leaves and flowers. Another specimen is figured in his *monographia*.

30. Bulb roundish or ovate, with a brown skin, less than a hazel nut. Stem round, slender, very hirsute, leaflets to the middle, with minute wandering scales, sometimes but very seldom having an axillary flowering branchlet at top, weak, prostrate, rising up towards the top, from six inches to near a foot in height. Leaves on very short petioles, alternate, ternate, the upper ones collected into a close hoary rose. Leaflets subsessile, lanceolate, acute, quite entire, from reflex spreading very much, green, ciliate at the edges with villose hairs, smooth above, underneath dotted, rough-haired, having many obscure calluses visible by a glass, half an inch long, but in some individuals scarcely three lines in length. Peduncles not jointed at the base, axillary, solitary, very villose, flaccid, an inch and half long, with alternate, approximating bractes at top. Calycine leaflets lanceolate, acute, ciliate, villose, pale green, erect. Corolla several times longer than the calyx. Claws upright, almost twice as long as the calyx, yellow: borders wide, obovate, rounded with a small point stretched out, spreading very much, deep red within, on the outside paler red, with one side at the back yellow and somewhat villose. Filaments united at the base: interior unequal, hirsute with simple hairs; the toothlets smooth: exterior hirsute also with simple hairs. Anthers incumbent, yellow. Styles hirsute with simple hairs.

Native of the Cape of Good Hope. In Europe it flowers from september to november. This species is easily distinguished from all the rest by having its leaves at the ends of the stem and branches very closely collected into a form like a double rose, spreading and very hoaryⁿ.

31. Bulb elongated ovate, half an inch long or more, covered with a brown skin, putting forth a long

thick fibre from the base. Stem round, the thickness of a pigeon's quill, smooth, pale green or dirty purple, half a foot long or more, almost upright at the base, then reclining and ascending, branched at the base, having distant scales at bottom, in other parts leafy, at all the scales and leaves jointed. Leaves alternate, distich, smooth, ternate. Petiole jointed at the base, round, very slender, spreading, from one to two inches in length, each joint winged with a large embracing white pellucid very converging stipule, a little connate above, perforated, obcordate if it burst so as to be expanded. Leaflets obcordate, appearing dotted on both sides when examined by a glass, green, on very short petioles, scarcely half an inch in length, all equal. Peduncles jointed at the base, axillary, solitary, alternate, round, smooth, spreading, about the same length with the leaves, with opposite bractes directly under the calyx. Calycine leaflets smooth, oblong, blunt, pale green with white edges, spreading. Corolla smooth, three times as long as the calyx, dirty yellow within, pale yellow on the outside: petals obovate, rounded, wide, spreading very much at top. Filaments connate at the base, smooth: interior toothletted, equal, converging at top. Anthers oblong, incumbent at their origin, upright, yellow. Germ ovate, five-grooved, smooth at bottom, hirsute with club-shaped hairs at top. Styles smooth. Seeds solitary.

Native of the Cape of Good Hope. In Europe it flowers in december and january^o.

32. Bulb ovate, acute, the size of a pea, often several inclosed in one brown skin. Stem filiform, weak, an inch or a little more in length, round, appearing villose when magnified. Leaves alternate, ternate, almost upright, at bottom few, at top several approximating. Petiole jointed at the base, round, slender, somewhat villose, one or two inches in length. Leaflets subsessile, villose at the edges, smoothish on both sides with minute dots appearing pellucid in the light, three or four inches long. Peduncles axillary, solitary, jointed at the base, round, somewhat villose, upright, longer than the leaves, with bractes alternate at top. Calycine leaflets lanceolate, acute, ciliate, hirsute, erect, green with white edges, and oblong orange-coloured calluses below the tip. Corolla five times as long as the calyx, smooth: claws short, upright, yellow: borders obovate, rounded, spreading very much, very pale violet on both sides. Filaments united at the base: interior unequal, somewhat hirsute with a few capitate hairs: exterior equal, hirsute in like manner. Anthers oblong, incumbent, yellow. Germ oblong, pale yellowish green, with hairs and orange calluses at top. Styles very short, densely hirsute with capitate hairs.

Native of the Cape of Good Hope. In Europe flowering in november and december. This and the following species connect the caulescent with the stemless *Oxalides*^p.

33. Bulb roundish, about the size of a hazel nut, with a black hard skin, and commonly a double nucleus, putting forth a slender white jointed root, with a scale at each joint, having fibres on every side, here and there bulbiferous, creeping horizontally, from one to six inches in length. Stem round, the thickness of a pigeon's quill, somewhat villose, upright, below the leaves scaly and about an inch long, and then two or three inches more in length. Leaves alternate, ternate. Petiole jointed at the base, round, villose; weak, red or green, from three to six inches long. Leaflets sessile, slightly emarginate, appearing dotted with a magnifier on both sides, somewhat villose at the edges and along the dorsal nerve, in other parts smooth, green, but when old variegated with red and yellow. Scapes axillary, jointed at the base, round; somewhat villose, red, flaccid, the length of the leaves, with alternate green bractes below the middle. Calycine leaflets oblong, sharpish, ciliate, hirsute, erect, green. Corolla six times as long as the calyx: claws upright, twice as long as the calyx, yellowish: borders obovate, rounded, wide, spreading very much, pale

¹ Jacquin monogr.

^m Idem.

ⁿ Idem.

^o Jacquin.

^p Idem.

with a blush of purple, somewhat villose at the back on one side. Filaments united at the base: interior equal, with capitate hairs thinly scattered over them, and the toothlets also hirsute; as are likewise the exterior ones. Anthers oblong, incumbent, yellow. Germ oblong, pale green, villose at top. Styles very short, very hirsute with simple hairs.

Native of the Cape of Good Hope. In Europe it flowers in november and december.

This species increases abundantly by its creeping roots generating many bulbs in their course, so that the pots are in a short time full of plants, all thus caulescent. These numerous plants have flowered only once in four years that they have been cultivated^a.

34. Bulb roundish, twice as large as a pea, half loose, with a soft compressible skin, lanuginose as it were, and of a brownish straw-colour. Stipe subterranean, from a line to an inch in length, having a few scales at top, terminating in an umbel of a few leaves and flowers. Leaves few, upright or decumbent, ovate, obovate or oblong, emarginate or quite entire, green on both sides, and appearing dotted in the microscope, hirsute at the edges and on the midrib with capitate hairs, in other parts smooth, about an inch long; on a petiole of the same length, hirsute with capitate hairs, shortly jointed below the leaf, as it is at the base. Scapes from one to four, not jointed at the base, weak, hirsute with capitate hairs, longer than the leaves, yellowish green, without bractes. Calycine leaflets oblong, bluntish, erect, hirsute with capitate hairs and ciliate, pale green at bottom, variegated at top with blood-red spots and orange dots, whitish at the edges. Corolla six times as long as the calyx, bell-shaped: claws upright, villose, yellow: borders obovate, rounded, pale purple, with the back on one side villose. Filaments connate: interior gibbously toothletted, unequal, hirsute with capitate hairs: exterior equal, the shortest of all the species, smooth. Anthers oblong, incumbent, yellow. Germ roundish, pale green, capitate hirsute at top. Styles pale, hirsute with capitate hairs.

This and the two next species are so alike in habit, leaves, bulb and flowers, that they can scarcely be distinguished. But the genitals are very different. Besides the length of the styles, in this the interior filaments are gibbously toothletted and unequal, the exterior extremely short. In *O. monophylla* the filaments are toothless and equal. They are so also in *O. rostrata*, but in this they are singularly beaked at the tip, in which it differs from all the other species^c.

35. Bulb roundish. Stipe short. Leaves spreading, from oblong obovate, almost entire, half an inch long, jointed below the leaf, but not at the base. Scapes few, rather longly jointed at the base. Filaments very shortly connate at the base, smooth. In other respects it agrees with the preceding, except in the differences pointed out above^d.

36. Stipe from a line to an inch in length. Leaves erect or decumbent, as in n. 34. jointed below the leaf, not at the base. Scapes from one to four, rather longly jointed at the base, weak. Calycine leaflets as in n. 34. Corolla also as in that. Interior filaments at the top blunt and club-shaped, on the side at top putting forth a beak, which is smooth, the other parts hirsute with capitate hairs: exterior, awl-shaped, almost smooth. Anthers fastened to the beaks of the interior and tips of the exterior filaments. Styles very smooth. In other respects it agrees with the two preceding, except in the differences pointed out above^e.

37. Bulb roundish, with a brown skin, the size of a hazel nut, often loose. Stipe partly subterranean, about an inch long, and then standing out, shorter, scaly, leafless, brownish, the thickness of a pigeon's quill, upright, terminated by a thin umbel of leaves and flowers. Leaves few, generally three, upright, wholly smooth. Petiole jointed at the base, thick, half round, more or less purple, an inch and half long, widely winged. Leaflets sessile, erect, very blunt, emarginated, dotted on both sides, on the edges

and along the wings cartilaginous-crenulate, curled and rigid, underneath sometimes blood-red, from two to three inches long. Scapes few, jointed at the base, compressed a little, shining, thick, pale green, almost upright, half a foot high, with alternate, approximating bractes a little below the flower. Calycine leaflets ovate, sharpish, smooth, green, upright with the tips spreading. Corolla five times as large as the calyx: claws erect, yellow: borders wide, rounded, spreading very much, the length of the claws, white with the back on one side obscurely yellowish red. Filaments connate at the base: interior toothletted, equal, hirsute with capitate hairs; the toothlets smooth: exterior wholly smooth. Anthers incumbent, yellow. Germ ovate, smooth, pale green. Styles very long, hirsute with capitate hairs. This has sometimes one or two simple leaves, but they are never ternate. In some individuals the leaflets are much smaller, and scarcely an inch in length^f.

38. Bulb ovate, with a brown skin, the size of a hazel nut. Stipe partly subterranean, about an inch long, scaly, then standing out, shorter, scaly, leafless, almost upright, terminated by an umbel of leaves and flowers. Leaves several, erect, smooth, very seldom simple, never ternate. Petiole jointed at the base, half round, about two inches long, winged. Leaflets bluntish, quite entire, or very seldom slightly emarginate, from two to three inches long, green on both sides, appearing dotted in the microscope, along the edges together with the wings cartilaginous-crenulate, erect. Scapes few, jointed at the base, roundish, longer than the leaves, pale green, smooth, almost upright but weak, with alternate bractes above the middle. Calycine leaflets lanceolate, sharpish, smooth, erect, green. Corolla four times as long as the calyx: claws erect, yellow; borders wide, obovate, rounded, spreading very much, yellow on both sides. Filaments united at the base: interior toothletted, equal, hirsute with capitate hairs, with smooth toothlets: exterior smooth. Anthers incumbent, yellow. Germ oblong, pale greenish yellow, very smooth. Styles hirsute with capitate hairs^g. It has the trivial name from its long binate leaflets, resembling asses ears.

39. Bulb roundish, pale flesh-colour, with a brown skin, the size of a hazel nut. Stipe, the part underground about an inch, above shorter, scaly, leafless, brownish, almost upright, terminated by a thin umbel of leaves and flowers. Leaves few, commonly two only, upright, smooth, very seldom simple, never ternate. Petiole jointed at the base, half round, about two inches long, always winged, but the wings sometimes so narrow as to be scarcely conspicuous. Leaflets blunt, quite entire or slightly emarginate, from one to two inches in length, appearing in the microscope dotted on both sides, green, cartilaginous-crenate on the edges and wings, erect. Scapes few, jointed at the base, longer than the leaves, roundish, pale green, almost upright, smooth, with approximately alternate bractes a little below the flower. Calycine leaflets ovate, sharpish, smooth, erect with the tips slightly spreading, green. Corolla four times as long as the calyx: claws erect, yellow: borders wide, rounded, spreading very much, the length of the claws, white with the back on one side reddish. Filaments connate at the base: interior equal, hirsute with capitate hairs; toothlets smooth: exterior smooth. Anthers incumbent, whitish. Germ ovate, pale green, very smooth. Styles hirsute with capitate hairs^h. It has the trivial name from the binate leaves resembling a hare's ear.

40. Bulb ovate, smaller than a hazel nut; covered with a brown skin. Stipe subterranean, one or two inches long, almost the thickness of a pigeon's quill, having a few scales at top, and being bulb-bearing at bottom, terminating in an umbel of leaves and a few flowers. Leaves several, the lower ones binate, the rest ternate, almost upright. Petiole jointed at the base and purplish, half round, smooth, more or less winged, about two inches long, with the wings cartilaginous-scabrous at the edges. Leaflets lanceolate,

^a Jacquin.^c Idem.^d Idem.^e Idem.^f Idem.^g Idem.^h Idem.

sharpish, sessile, cartilaginous-scabrous at the edges, smooth on both sides, glaucous green, blood-red underneath on the midrib, an inch and half or two inches long. Scapes few, not jointed at the base, round, smooth, weak, almost as long as the leaves, pale green, with a single bracte at bottom not jointed. Calycine leaflets lanceolate, acute, smooth, upright, pale green with a tinge of red. Corolla four times as long as the calyx, bell-shaped, yellow: claws erect, a little longer than the calyx: borders obovate, rounded, quite entire, spreading very much. Filaments very slightly united at the base, smooth, membranaceous-compressed: interior toothless, equal. Anthers oval, incumbent, pale. Germ ovate, smooth, pale green, red at top. Styles somewhat villose with very short thin-spread hairs².

41. Bulb roundish, with a brown skin, the size of a hazel nut, often loose. Stipe about an inch, partly under ground, partly above, scaly, leafless, nearly as thick as a reed at top, almost upright, terminated by a thin umbel of leaves and flowers. Leaves few, upright, wholly smooth. Petiole jointed at the base, thick, half-round, purplish, an inch and half long. Leaflets sessile, erect, obovate or almost oblong, blunt, often emarginate, flat not waved, cartilaginous-toothed at the edges, appearing dotted on both sides in the microscope, green, two inches and a half long, and almost an inch and half wide. Scapes few, jointed at the base, compressed, thickish, longer than the leaves, almost erect, with approximately alternate bractes. Calycine leaflets ovate, bluntish, green with purplish edges, smooth, erect with the tips spreading a little. Corolla several times longer than the calyx: claws erect, pale yellow: borders wide, rounded, spreading very much, yellow within, pale yellow on the outside. Filaments connate at the base: interior toothletted, equal, very hirsute with capitate hairs, but the toothlets smooth: exterior hirsute in the same manner. Anthers incumbent, yellow. Germ ovate, smooth, pale green. Styles of a middling length, very hirsute with capitate hairs².

42. Bulb ovate, with a blackish-brown skin the size of a hazel nut. Stipe subterranean, round, white, almost as thick as a pigeon's quill, about an inch in length, terminated by a thin umbel of leaves and flowers. Leaves few, spreading. Petiole jointed at the base, half round, thick, hirsute, blood-red, about two inches long. Leaflets blunt, villose at the edges, green and somewhat villose on the upper surface, dotted at the back, smooth except the nerve, which is hirsute, paler green or else more or less blood-red, about an inch and half in length, sessile, quite entire. Scapes few, jointed at the base, compressed, erect, whitish, somewhat villose, the length of the petioles or sometimes much longer, with bractes approximately alternate below the middle. Calycine leaflets lanceolate, acute, somewhat hirsute, ciliate with capitate and simple hairs mixed, pale green with blood-red edges, and the tip foot-coloured, erect. Corolla several times longer than the calyx, yellow on both sides, but paler without: claws erect, somewhat villose: borders wedge-shaped, rounded, the length of the claws, spreading very much, a little villose on one side of the back. Filaments connate at the base: interior toothletted, equal, hirsute with capitate hairs, but the toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ oblong, hirsute at top, pale green, callous. Styles very hirsute with the upper hairs capitate and the rest simple^b.

43. Bulb ovate, minute, with a blackish brown skin, loose. Stipe subterranean, an inch long, of a dirty whitish colour, nearly as thick as a pigeon's quill, terminated by a thin umbel of leaves and flowers. Leaflets few, sometimes no more than two, almost upright or spreading a little. Petiole jointed at the base, compressed a little, from two to three inches in length, somewhat hirsute, blood-red. Leaflets sessile, bluntish, villose at the edges, dotted on both sides, green and somewhat hirsute above, underneath smooth with the nerve only a little rough-haired, shining and of a dark

blood-red colour, the lateral ones an inch long. Scapes few, jointed at the base, roundish, villose, white, almost upright, the length of the leaves, with bractes approximately alternate below the middle. Calycine leaflets lanceolate-ovate, sharpish, ciliate, hirsute, upright, purple. Corolla several times larger than the calyx; yellow, paler on the outside: claws upright, three times as long as the calyx, villose: borders rounded, broad-wedge-shaped, spreading very much, the length of the claws, villose at the back on one side. Filaments united at the base: interior toothletted, equal, hirsute with very short simple hairs; toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ oblong, pale green, hirsute at top, callous. Styles hirsute with simple hairs^c.

44. Stipe subterranean, terminating in a poor umbel of leaves and flowers. Leaves few, minute, wholly smooth. Petiole filiform, the third part of an inch in length. Leaflets quite entire. Scape single, half an inch long, smooth, upright, with very small smooth bractes, approximately alternate below the flower. Calycine leaflets lanceolate, sharpish, smooth, upright. Corolla five times as long as the calyx, bell-shaped, smooth: claws upright, yellowish: borders obovate, rounded, white. Filaments united at the base, smooth: interior equal. Anthers oblong, incumbent. Germ oblong, smooth, short. Styles hirsute with simple hairs^d.

45. Bulb ovate, the size of a hazel nut, with a black skin. Stipe out of the ground, having a few scales and one or two leaves, round, villose, often smooth at bottom, slender, weak, almost upright, terminated by a dense umbel of leaves and flowers. Leaves several, upright and spreading very much. Petiole widening at the base, ciliate, orange-spotted at the edges underneath, not jointed, slender, hirsute, from two lines to two inches and a half in length. All the leaflets exactly oblong, on very short petioles, quite entire or slightly emarginate, green and in the microscope appearing dotted on both sides, somewhat villose at the edges and underneath, smooth above, about half an inch in length. Scapes several, not jointed at the base, slender, upright, somewhat hirsute, longer than the leaves; bractes subalternate, directly under the calyx. Calycine leaflets long lanceolate, sharp, villose, ciliate, green, upright. Corolla four times as long as the calyx: claws upright, yellow, tubular: borders wedge-shaped, rounded, spreading very much, almost the length of the claws, red with one side of the back paler and somewhat villose. Filaments connate at the base: interior equal. Anthers incumbent, yellow. Germ oval, pale green, hirsute all over, callous. All these parts are hirsute with very minute capitate hairs^e.

46. Bulb ovate, slender, with a blackish-brown skin, almost an inch in length. Stipe out of ground, round, almost half the thickness of a pigeon's quill, having a few scales but no leaves, hirsute, brownish-green, three or four inches long, procumbent, terminated by an umbel of leaves and flowers. Leaves very many, spreading. Petiole jointed at the base, slender, dirty purple, round, hirsute, about an inch long. Leaflets subsessile, flat, villosely ciliate at the edges, smooth above, villose underneath, appearing in the microscope dotted on both sides, recurved, an inch long. Scapes several, jointed at the base, round, villose, upright, purplish, about the same length with the petioles, with bractes extremely minute, and directly under the calyx. Calycine leaflets lanceolate-acute, hirsute, ciliate, upright, pale green. Corolla four times as long as the calyx: claws forming a long tube, upright, somewhat villose, dirty yellow: borders lanceolate, bluntish, somewhat villose on the outside, shorter than the claws, spreading very much, red. Filaments united at the base: interior toothless, unequal, a little hirsute with a few slightly capitated hairs: exterior unequal, hirsute in like manner. Anthers twin, oval, upright, yellow. Germ pale green, thinly hirsute at top. Styles wholly smooth^f.

^c Idem.^d Jacquin from Thunberg.^e Jacquin.^f Idem.² Jacquin.^a Idem.^b Idem.

47. Bulb ovate, with a blackish-brown skin, smaller than a hazel nut. Stipe out of the ground, round, slender, having a few scales but seldom any leaves, sometimes a single leaflet at top, hirsute, brown, from four to seven inches long, at first upright, but by age becoming wholly procumbent, terminated by a clofish umbel of leaves and flowers, and sometimes, but rarely, lengthened out into another umbel. Leaves several, almost upright. Petiole widened at the base, not jointed, slender, purplish, hirsute, about an inch long. Leaflets subsessile, quite entire or slightly emarginate, villose at the edges, appearing in the microscope dotted on both sides, green, smooth above, somewhat villose underneath, three quarters of an inch long. Scapes several, not jointed at the base, round, villose, upright, purplish, about the same length with the petioles; bractes approximately alternate a little way below the calyx. Calycine leaflets lanceolate, acute, erect, ciliate, villose, purplish. Corolla several times longer than the calyx: claws somewhat villose, dirty yellow, upright, forming long tubes: borders lanceolate, bluntish, shorter than the claws, somewhat villose on the outside, spreading very much, purplish. Filaments connate at the base: interior unequal, smooth: exterior smooth. Anthers upright, yellow. Germ oblong, yellowish green, somewhat hirsute at top. Styles standing out as far as the middle of the borders of the corolla, hirsute at the base and towards the tip with a very few simple hairs^a.

48. Bulb roundish, the size of a hazel nut, covered with a brown skin, sometimes loose. Stipe standing out, filiform, brownish, smooth, about half a foot long, very weak and wholly prostrate, at bottom leaflets with a few scales, above having solitary leaves and frequently an umbel, terminating in a thin umbel of leaves and flowers. Petiole jointed at the base, filiform, smoothish, from an inch to an inch and half in length, loose. Leaflets subpetioled, blunt, slightly emarginate, smooth above, obscurely villose underneath and at the edges, green, without any conspicuous callus, from half an inch to an inch in length. Scapes few from all the umbels, and sometimes also one from the axil of the upper leaf, jointed at the base, longer than the leaves, thicker than the petioles, appearing villose when magnified, loose; bractes approximately alternate at top. Calycine leaflets lanceolate, acute, somewhat ciliate and villose, green with the tips and edges of the base ferruginous, upright. Corolla several times longer than the calyx: claws upright, yellowish: borders wide, rounded with a little point, spreading very much, pale red within, whitish red on the outside. Filaments connate at the base: interior equal, somewhat hirsute with capitate and simple hairs mixed: exterior very thinly hirsute in the same manner. Anthers incumbent, yellow. Germ pyramidal, yellowish green, hirsute at top. Styles very closely hirsute like the filaments^b.

49. Bulb roundish, often an inch in diameter, covered with a brown skin, loose. Stipe standing out, a foot or eighteen inches long, round, smaller than a pigeon's quill, minutely and densely villose, brown, below the middle having a few scales but no leaves, above the middle leafy and sometimes having a branchlet; when young wholly upright, but afterwards more or less reclining, and even entirely procumbent on account of its weakness and the weight of the umbel; terminated by a denser loose umbel of leaves and flowers. Leaves several. Petiole jointed at the base, filiform, from one to two inches long, villose, brownish purple, loose. Leaflets on very short petioles, emarginate, smooth above, very shortly pubescent underneath and at the edges when examined by a glass, and having yellow calluses scattered over the whole back, about half an inch in length. Scapes several, jointed at the base, somewhat villose, loose, thicker and longer than the petioles; bractes approximately alternate at top. Calycine leaflets linear-lanceolate, blunt, thinly ciliate and villose, green with brown tips, upright. Corolla four times as long as the calyx: claws upright, yellowish: borders wide, rounded, very blunt,

smooth, spreading very much, pale red within, and still paler on the outside. Filaments united at the base: interior unequal, hirsute with simple hairs: exterior somewhat hirsute in the same manner. Anthers incumbent, yellow. Germ oblong, yellowish green, extremely villose above the middle. Styles hirsute with simple hairs^c.

50. Bulb roundish, the size of a hazel nut, covered with a brown skin, sometimes loose. Stipe above ground, filiform, brownish, smooth, from one to four inches long, very weak, and always wholly prostrate from its extreme slenderness, mostly leafless and having only a few minute scales, except at top, where there is a leaf or one or two umbels; it is terminated also by a denser loose umbel of leaves and flowers. Leaves several. Petiole jointed at the base, filiform, smoothish, from one to two inches long, loose. Leaflets subsessile, blunt, often emarginate, smooth above, underneath and at the edges scarcely villose when magnified, green, without any conspicuous callus, from half an inch to an inch in length. Scapes several, jointed at the base, longer than the leaves, thicker than the petioles, appearing villose when magnified, loose; bractes approximately alternate at top. Calycine leaflets lanceolate, acute, somewhat villose and ciliate, green with the tips ferruginous, upright. Corolla four times as long as the calyx and longer: claws upright, somewhat yellowish: borders wide, rounded with a little point, deep red within, very pale red on the outside, spreading very much. Filaments connate at the base: interior unequal. Anthers incumbent, yellow. Germ ovate, smooth, pale green^d.

51. Bulb ovate, half an inch long, covered with a black skin, within which are frequently several bulbs, hence when cultivated it has almost always many stipes: these are out of the ground, have a few scales on them, are round, slender, have a very few hairs scattered over them, are six inches long, sometimes leafless, sometimes having a single leaf at top, when young almost upright, but afterwards wholly procumbent, terminated by a dense umbel of leaves and flowers. Leaves several, upright and spreading a little. Petiole jointed at the base, filiform, villose, from one to two inches in length. Leaflets subsessile, wedge-form-linear, emarginate, at the edges and underneath appearing somewhat villose when magnified, above smooth and dotted, underneath having two orange-coloured calluses below the tip, about half an inch in length. Scapes several, jointed at the base, round, a little hirsute at top with capitate hairs, in other parts with simple ones, almost upright, longer than the petioles and twice as thick; bractes alternate, approximating, and ciliated at top with capitate hairs. Calycine leaflets lanceolate, acute, erect, ciliate and hirsute with capitate or simple hairs, green with the edges blood-red and two oblong orange-coloured calluses below the tip connected at top. Corolla four times as long as the calyx: claws erect, yellow: borders obovate, rounded, quite entire, wide, spreading very much, white with one side of the back blood-red. Filaments connate at the base: interior unequal, hirsute with simple and capitate hairs: the toothlets smooth: exterior very sparingly hirsute in the same manner. Anthers incumbent, sulphur-coloured. Germen yellowish green, somewhat hirsute at top. Styles hirsute with simple and capitate hairs^e.

Dr. Smith, whose description does not in general differ materially from the above, remarks, that the flowers are expanded in the sunshine only, have no scent, but are beautiful and extremely elegant even when closed; that the petals are separate at the base, but a little above it united into a tube, then again separated, folded over each other to the left, white with an exquisite red border; that the five longest filaments are but half the length of the corolla, with didymous anthers; and five other very short filaments, without anthers, are attached to the longer ones, and stand between the shorter; that the germ is smooth and pellucid, full of little protuberances occasioned by

^a Jacquin.^b Idem.^c Idem.^d Idem.^e Idem.

the prominent rudiments of the seeds, the styles the length of the longer stamens.

Introduced in 1774, by Mr. Francis Masson^m. It flowers abundantly in the hot-houses of the botanic garden at Chelsea in the winterⁿ.

52. Bulb ovate, covered with a footy skin, smaller than a hazel nut. Stipe appearing somewhat hirsute when examined by a glass, having a few scales, and often one or two leaves, extremely weak so as to be wholly procumbent. Petiole round, slender, appearing villose when magnified, about an inch long. Leaflets underneath somewhat hirsute, and having generally two ferruginous spots below the tip, for they are sometimes wanting, half an inch long or a little more. Scapes somewhat villose, nearly twice as long as the leaves, almost upright, but weak. Calycine leaflets hirsute with capitate hairs, green with two linear orange-coloured calluses on the back at the tip. Corolla bell-shaped: borders white with one margin of the back yellow tinged with purple. Interior filaments hirsute with capitate hairs: exterior smooth. Styles hirsute with simple hairs.

53. Bulb ovate, with a black skin, half the size of a hazel nut. Stipe almost upright, smooth or somewhat villose, purple at bottom, from two to four inches long, scaly at the base, sometimes leafless, sometimes leafy all over; and even having barren branchlets; the umbel of leaves and flowers that terminates it being elongated, but barren. Petiole an inch in length, or much shorter. Leaflets blunt or retuse, very thinly hairy on both sides, converging, underneath below the tip and at the edges having from three to nine orange-coloured calluses, scarcely half an inch in length. Scapes shortly jointed at the base, purplish, two inches long and more: bractes minute, somewhat villose, orange-coloured at top, above the middle. Calycine leaflets oblong, sharpish, villose, purple mixed with green, ciliate, with two oblong, orange-coloured calluses at the tip underneath. Borders of the corolla rounded-wedge-shaped, pale with a tinge of flesh-colour, outwardly on one side red-purple and somewhat villose. Interior filaments hirsute with capitate hairs: exterior smooth. Anthers pale yellow or whitish. Styles hirsute with simple hairs.

54. Bulb roundish, the size of a hazel nut or even of a walnut, covered with a brown skin, having ovate acuminate loose scales, flesh-coloured or pale and fleshy. Stipe from half an inch to six inches in height, upright but weak, appearing somewhat villose in the microscope, purplish or brownish, the thickness of a pigeon's quill, sometimes leafless and having only distant scales, sometimes leafy, commonly quite simple but sometimes having a single branchlet or two, terminated by a closely leafy and many-flowered umbel. Leaves very many. Petiole very slightly jointed at the base, purple and green, from half an inch to three or four inches in length. Leaflets emarginate, appearing in the microscope dotted on both sides, smooth above, having a very few hairs underneath and two orbicular orange-coloured calluses below the tip, channelled and converging, from half an inch to two inches in length. Scapes much thicker than the petioles, greenish brown or purple: bractes at top alternate or nearly opposite, blunt, having two oblong tawny calluses underneath below the tip. Calycine leaflets lanceolate-oblong, blunt, somewhat hirsute, green with the edges purple below, having two calluses like the bractes, upright in the flower, afterwards half bent back. Corolla three times as long as the calyx: borders obovate, rounded, spreading very much, within pale purple rose-colour, on the outside dirty whitish with one side yellowish and somewhat villose. Anthers sulphur-coloured. Style hirsute at bottom with simple, at top with capitate hairs. Stigma very pale yellow. This is described by Jacquin in his collections, and figured in his *Icones rariores*, under the name of *O. versicolor*. The three last indeed are probably considered by Linneus and Thunberg as varieties of *O. versicolor*^o.

55. Bulb ovate, almost the size of a hazel nut, with

a blackish-brown skin, often loose at top. Stipe standing out, round, scaly, brown, villose, procumbent, leafless, slender, two or three inches long, terminated by a dense umbel of leaves and flowers. Leaves very many, spreading a little. Petiole jointed at the base, round, slender, villose, purplish, from one to three inches in length. Leaflets subsessile, emarginate, villose on both sides and at the edges, soft, underneath dotted and having roundish yellowish scattered spots visible in the microscope, half an inch long. Scapes several, jointed at the base, almost the length of the leaves, round, hirsute, purplish, upright; bractes alternate, approximating at top. Calycine leaflets linear-lanceolate, acute, hirsute, ciliate, erect, purplish. Corolla several times as long as the calyx: claws erect, yellow: borders obovate, rounded, wide, spreading very much, snow-white within, whitish without. Filaments connate at the base: interior equal, hirsute with capitate hairs thinly set: exterior smooth. Anthers incumbent, yellow. Germ very short, pale greenish yellow, hirsute at top. Styles hirsute with simple hairs^p.

56. Stipe about three inches long, frequently with a leaf or two on it. Petiole about three inches long. Leaflets somewhat of a hoary green. Calycine leaflets green, with the ends often spreading. Corolla five times as long as the calyx, yellowish at bottom, the rest white: claws twice as long as the calyx. Interior filaments shorter than the claws of the corolla. Germ oblong, very hirsute at top and obscurely callous.

It differs from the preceding in having the interior filaments unequal, and the exterior filaments not smooth, but hirsute with capitate hairs, and the styles very short^q.

57. Stipe standing out, round, filiform, appearing somewhat villose in the microscope, angular-grooved, one or two inches in length, having frequently a leaflet on it, terminated by an umbel of leaves and flowers. Leaves several. Petiole wide at the base, embracing, striated, appearing villose in the magnifier. Leaflets subsessile, emarginate, converging, ciliate at the edges with distant hairs, underneath towards the edges having one row of roundish calluses, a third part of an inch in length. Scapes few, obscurely villose in the microscope, erect, an inch and half long; with alternate, lanceolate, acute, erect bractes at top. Calycine leaflets lanceolate, acute, ciliate with a few hairs above, in other parts smooth, pale, underneath below the tip having two oblong yellow calluses. Corolla three times as long as the calyx, subcampanulate; claws yellow: borders obovate, rounded, purple, spreading. Filaments connate at the base, wholly smooth: interior equal. Anthers oblong, incumbent, yellow. Germ streaked with red. Styles hirsute with simple hairs below and capitate hairs above^r.

58. Bulb ovate, with a brown skin, less than a pea. Stipe partly under and partly above ground, from half an inch to two inches in length, filiform, smooth, the shorter upright, the longer procumbent, sometimes leafless, sometimes having a few leaves at the base or at top, terminated by a denser umbel of leaves. Leaves several, spreading and erect. Petiole not jointed at the base, filiform, smooth, about an inch long. Leaflets subsessile, emarginate, dotted and green on both sides, smooth except that they have sometimes a hair or two at the back, about four lines in length, without any callus. Scape single, jointed at the base, round, smooth, the length of the leaves, weak, green, with bractes at top, alternate, pale, having orange-coloured calluses near the tip of the back. Calycine leaflets lanceolate-oblong, blunt, smooth, concave, upright, pale green, with two oblong orange calluses on the tip of the back. Corolla three times as long as the calyx, bell-shaped: claws erect, yellowish: borders obovate, rounded, spreading very much, whitish violet. Filaments united at the base, smooth: interior unequal: exterior equal. Anthers oblong, incumbent, yellow. Germ oblong, smooth, pale. Styles smooth^s.

^m Hort. kew.

ⁿ Smith ic. rar.

^o Jacquin.

^p Idem.

^q Idem.

^r Idem.

^s Idem.

59. Bulb oval, an inch long, covered with a black hard skin. Stipe standing out, one or two inches in length, scaly, round, the thickness of a pigeon's quill, purplish, somewhat villose, erect, terminated by a dense umbel of leaves and flowers. Leaves very many, spreading out in a ring. Petiole jointed at the base, round, about two inches in length, villose, greenish or reddish. Leaflets subsessile, hirsute on both sides and at the edges, dotted and green on both sides, half an inch long or more, the middle one often emarginate, the side ones quite entire. Scapes several, jointed at the base, round, somewhat villose, pale, almost upright, sometimes longer, sometimes shorter than the leaves, with opposite jointed bractes above the middle. Calycine leaflets lanceolate, bluntish, hirsute, ciliate, pale green with whitish edges, having generally below the tip one or two roundish orange spots, upright. Corolla several times longer than the calyx: claws upright, sulphur-coloured; borders wide, rounded, snow-white within, somewhat sulphur-coloured without, one side being variegated with red dots, spreading very much. Filaments connate at the base: interior toothletted, equal, hirsute with capitate hairs; the toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ oblong, pale yellowish green, hirsute at top, callous. Styles hirsute with short capitate hairs mixed with a few long simple ones.

Jacquin doubted a long time whether this was any thing more than a variety of the next species: but the constant difference in the equal calycine leaflets, and the leaves never being waved, induced him at length to consider it as a distinct species¹.

60. Bulb equal, an inch long, with a blackish-brown skin. Stipe from one to three inches long, almost upright, green or brownish, slightly pubescent, leafless but having lanceolate, acuminate, ferruginous, ciliate scales, terminated by an umbel of leaves and flowers. Leaves several, almost upright or spreading a little. Petiole hirsute, from one to three inches long. Leaflets more or less waved, very seldom wholly flat, an inch long, rounded at the tip, having roundish dirty yellow dots scattered over them underneath, scarcely visible even with a magnifying glass: the middle one slightly emarginate, and somewhat longer than the lateral ones, which are quite entire. Scapes longer than the leaves, pale or purplish: bractes below the middle. Calycine leaflets oblong, blunt, green above, below having blood-red spots, variegated on the back with roundish, yellow, scattered spots; one of them is larger and spatulate. Corolla five times as long as the calyx: claws short, yellow: borders very wide, long, white with one side of the back dotted with purple. In other circumstances it agrees with the preceding, except in those pointed out before².

61. Bulb oval, covered with a black hard skin, an inch long. Stipe subterranean, scaly above, an inch and more in length, terminated by a dense umbel of leaves and flowers, under which is frequently another umbel or two that is less dense. Leaves very many, spreading. Petiole jointed at the base, round, hirsute, two or three inches long. Leaflets subsessile, dotted, villose at the edges; the upper surface also villose, and green with dusky blood-red spots; the lower surface smooth and almost wholly blood-red; about half an inch long, rounded; the middle one wedgeform-obovate or rather roundish, quite entire or slightly emarginate, the lateral ones oblong and quite entire. Scapes several, jointed at the base, round, somewhat villose, erect, pale, slender, four inches long, with opposite jointed bractes above the middle. Calycine leaflets lanceolate, blunt, hirsute, ciliate, erect, green with a rose-coloured base, spotted along the middle of the back in two orange-coloured interrupted lines, sometimes entirely wanting. Corolla large: claws erect, twice as long as the calyx, yellow within: borders white with one side of the back flesh-coloured, rounded, wide, spreading very much. Filaments connate at the base: interior toothletted, equal, smooth at top, in the other parts hirsute with capitate hairs, except the

toothlets which are smooth: exterior smooth. Anthers incumbent, yellow. Germ hirsute at top, callous. Styles hirsute with hairs that are sometimes all capitate or all simple, sometimes mixed but always short³.

62. Bulb ovate, covered with a black hard skin, twice as large as a hazel nut. Stipe one or two, standing out, round, the thickness of a pigeon's quill, from one to three inches long, erect or procumbent, villose, scaly, leafless, purplish, weak, terminated by a dense umbel of leaves and flowers. Leaves very many, spreading in a ring. Petiole jointed at the base, round, pale green or purplish, one or two inches long, hirsute with capitate hairs. Leaflets subsessile, dotted, villose at the edges and on the back with capitate hairs, on the upper surface green with a few simple hairs, underneath commonly blood-red, blunt, quite entire, from half an inch to an inch in length, the middle one wedge-obovate, the side ones oblong. Scapes several, jointed at the base, the length of the leaves or much longer, round, whitish, villose with capitate hairs, almost upright or spreading; bractes opposite, jointed, below the middle. Calycine leaflets lanceolate, bluntish, pale green, villose with capitate hairs at the edges and a few on the back, erect, often purplish at the base, below the tip frequently having one or two roundish yellow spots, but these are not seldom wanting. Corolla several times longer than the calyx, smooth, wide, dirty white on the outside, within yellow and upright at the base, the rest white, blunt and spreading very much. Filaments connate at the base; interior toothletted, equal, hirsute with capitate hairs, as are also the toothlets: exterior smooth. Anthers incumbent, yellow. Germ hirsute at top, callous. Styles very hirsute with simple blunt hairs⁴.

63. Bulb ovate-roundish, covered with a black skin, larger than a hazel nut. Stipe commonly wholly subterranean, having one or two scales at top, short, leafless, round, almost as thick as a pigeon's quill, terminated by a denser umbel of leaves and flowers. Leaves several, erect or spreading. Petiole jointed at the base, grooved in front, compressed a little, hirsute, one or two inches long. Leaflets sessile, quite entire or slightly emarginate, about an inch long, villose at the edges, green on both sides, hirsute and slightly dotted above, paler, much dotted, and less hirsute above. Scapes several, jointed at the base, roundish, villose, pale, longer than the leaves, almost upright; bractes opposite, jointed, about the middle. Calycine leaflets lanceolate, acute, hirsute, pale green, ciliate, erect. Corolla several times longer than the calyx: claws erect, three times as long as the calyx, dirty yellow: borders very wide, rounded, spreading very much, yellow within, very pale yellow on the outside, with one side of the back having blood-red dots. Filaments united at the base: interior toothletted, equal, thinly hirsute with capitate hairs; the toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ oblong, pale yellowish green, closely hirsute at top, callous. Styles very hirsute with capitate hairs.

β. Bulb oval, an inch long, covered with a black hard skin. Stipe either wholly subterranean or standing out a little, scaly, leafless, round, whitish, about an inch long, upright, thinner than a pigeon's quill. Leaves very many, spreading out in a ring. Petiole round, villose. Leaflets subsessile, dotted, villose and green on both sides, ciliate, about half an inch long; the middle one subemarginate, the side ones rounded and quite entire, appearing to have many obscure caluses when examined by a magnifier. Scapes whitish, upright, twice as long as the leaves. Calycine leaflets villose, erect except that they are sometimes spreading at the tips, pale green with the lower edges having dark blood-red dots, deeper green above with yellow caluses more or less scattered over them. Corolla five times as long as the calyx: claws yellow, twice as long as the calyx: borders white with one side of the back blood-red dotted and somewhat villose. Filaments connate at the base: interior smooth above, in other parts very hirsute with capitate hairs; the

¹ Jacquin.² Idem.³ Idem.⁴ Idem.

toothlets also hirsute: exterior smooth. In other respects agreeing with the other².

64. Bulb oval, an inch and half long, covered with a black hard skin. Stipe partly under, partly above ground, scaly, round, about an inch high, upright, leafless, terminated by a dense umbel of leaves and flowers. Leaves very many, erect or spreading a little. Petiole jointed at the base, round, slender, green, hirsute, about two inches in length. Leaflets subsessile, hirsute at the edges and on the upper surface, dotted and smooth on the back, rounded at the end, half an inch long, sometimes all unspotted, sometimes dusky spots scattered over the face of some of them, or even of all; the middle one obovate, emarginate, the side ones oblong and quite entire. Scapes several, jointed at the base, round, slender, whitish, somewhat villose, double the length of the leaves; with opposite, jointed bractes about the middle. Calycine leaflets lanceolate, bluntish, hirsute, ciliate, pale green, with from one to four roundish orange spots below the tip, upright. Corolla five times as long as the calyx: claws erect, pale yellow: borders rounded, spreading very much, white with one side of the back purplish. Filaments connate at the base: interior toothletted, equal, smooth above, in other parts very minutely hirsute, as are also the toothlets: exterior smooth. Anthers incumbent, yellow. Germ pale greenish yellow, hirsute at top, callous. Styles hirsute with simple hairs².

65. Bulb subovate, with a blackish-brown skin, less than an inch in length. Stipe standing out, scaly, leafless, round, the thickness of a pigeon's quill, villose, almost upright, about an inch in length, terminated by a denser umbel of leaves and flowers. Leaves several, erect or spreading a little. Petiole jointed at the base, round, grooved in front, hirsute, about two inches long. Leaflets blunt, generally quite entire, villose at the edges, on both sides green, villose, and appearing dotted in the magnifier, subsessile. Scapes several, jointed at the base, hirsute, round, pale, higher than the leaves; with opposite jointed bractes below the middle. Calycine leaflets lanceolate, acute, pale green, ciliate, hirsute, erect. Corolla several times longer than the calyx: claws erect, twice as long as the calyx, pale yellow: borders wide, rounded, spreading very much, yellow within, pale whitish yellow without, with one side of the back blood-red dotted. Filaments connate at the base; interior toothletted, equal, thinly and very minutely hirsute with capitate hairs; the toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ pale greenish yellow, hirsute above, callous. Styles hirsute with simple hairs².

66. Bulb ovate-acuminate, with a blackish-brown skin, about an inch in length. Stipe partly under, partly above ground, round, villose, the thickness of a pigeon's quill, green, procumbent, somewhat scaly, an inch and half long, leafless, terminated by a dense umbel of leaves and flowers. Leaves very many, almost upright and somewhat spreading. Petiole jointed at the base, roundish, villose, two inches long. Leaflets sessile, very villose and soft on both sides and at the edges, blunt, quite entire, almost an inch long, having roundish yellowish dots visible only with a glass, scattered over the under surface. Scapes many, jointed at the base, roundish, villose, whitish, from four to six inches in length, upright at bottom, the rest flaccid: bractes opposite, jointed, above the middle. Calycine leaflets inversely wedge-shaped, blunt, ciliate, hirsute, upright with spreading tips, green with pale edges, and tinged a little with purple underneath, below the tip marked with from one to four roundish orange spots. Corolla five times as long as the calyx: claws erect, yellow on both sides, twice as long as the calyx: borders very wide, rounded, spreading very much, white on both sides with one side of the back blood-red dotted and obscurely villose. Filaments connate at the base: interior toothletted, equal, smooth above, in other parts hirsute with thinly scattered capitate hairs, except the toothlets, which are smooth: exterior

smooth. Anthers incumbent, yellow. Germ pale yellowish green, hirsute at top, callous. Style hirsute with simple hairs.

O. exaltata has always long slender scapes strictly upright, and spotted leaves. *Rubroflava* and *flaccida* have always green unspotted leaves; and the former of these has yellow flowers on shorter upright scapes; the latter has white flowers on very long flaccid scapes. If these differences be not thought sufficient to distinguish the species, the three last may be considered only as varieties^c.

67. Bulb ovate, with a blackish skin, half the size of a hazel nut. Stipe subterraneous, an inch long, terminated by an umbel of leaves and flowers. Leaves several. Petiole jointed at the base, roundish, villose, purplish green, three or four inches long, erect or spreading a little. Leaflets always green on both sides, subsessile, somewhat veined, villose at the edges, above smooth and manifestly dotted when examined by a magnifier, wholly pubescent underneath. Scapes very many, jointed at the base, red, round, villose, from six to nine inches long, almost upright at bottom, and thence more or less reclining; with alternate bractes below. Calycine leaflets lanceolate, sharpish, green with one or two orange spots at top, which however are often wanting; hirsute, ciliate either with all the hairs simple, or the lower ones capitate and very short. Corolla large: claws upright, yellow on both sides: borders longer than the claw, wide, rounded, spreading very much, white on both sides with a suffusion of flesh-colour within above the claws, and with one side of the back reddish and somewhat villose. Filaments connate at the base: interior toothletted, equal, smooth at the top, the rest very hirsute with capitate hairs; with the toothlets hirsute in the same manner: exterior also hirsute, only more sparingly. Anthers incumbent, yellow. Germ pale green, hirsute at top. Styles hirsute at the base with simple hairs, in other parts quite smooth.

β. The variety with red flowers has the bulb the size of a hazel nut. Stipe partly under, partly above ground and scaly. Leaves very many. Petiole somewhat hirsute, pale green, two or three inches long. Leaflets sometimes emarginate, on both sides green and dotted, underneath pubescent at the midrib and principal veins, half or three quarters of an inch in length. Scapes roundish, pale, very thinly hirsute, almost upright, a little longer than the leaves. Calycine leaflets green with the edges blood-red at bottom. Hairs sometimes capitate, short, and a very few among the lower cilia. Corolla several times longer than the calyx: borders the same length with the claws, red on both sides, except that one side of the back is dirty yellow and somewhat villose. In other respects it agrees with the preceding^d.

68. Bulb ovate, acute, small, loose. Stipe subterraneous, an inch and half long. Leaves several, in a ring. Petiole round, grooved in front, thinly hirsute, blood-red, about two inches in length. Leaflets seldom and slightly emarginate, dotted on both sides, of a darker green on the upper surface, on the lower somewhat hirsute with decumbent hairs thinly spread, shining, sometimes green, sometimes blood-red in whole or in part, about half an inch in length, thickish. Scapes the length of the petioles, pale with a tinge of purple, round, smooth or with very few hairs, upright. Calycine leaflets lanceolate or ovate, green or purplish with dusky-orange lines, thinly villose, ciliate at the edges, with long simple hairs at top, in other parts with short capitate hairs. Corolla very large: claws yellow on both sides and upright: borders wedge-shaped, longer than the claws, truncated, spreading very much, white with one side of the back reddish and villose, together with the claws an inch and half long. Germ conical, the whole quite smooth. Styles hirsute with simple hairs at the base only, in other parts quite smooth.

This bears a great affinity to *O. variabilis*, differing chiefly in having the leaflets commonly blood-red underneath, whereas in that they are always green^e.

² Jacquin.^a Idem.^b Idem.^c Idem.^d Idem.^e Idem.

69. Bulb ovate, with a blackish-brown skin, from the size of a hazel nut to twice that bigness. Stipe shortly subterraneous, then standing out, from three to five inches long, round, purple, smooth, without scales, the thickness of a pigeon's quill or thicker, wholly procumbent, branched, brittle with a central tough fibril, thickened at the tip, and from this terminated by a very close and elegant umbel of leaves and flowers, and finally densely bulb-bearing from the same. Leaves very numerous, spreading every way. Petiole jointed at the base with a two-toothed joint, round, pale green, smooth, three or four inches long. Leaflets subfleshy, quite entire, half an inch long, smooth and dotted on both sides, smooth at the edges, above deep green, underneath paler and shining with silvery dots, some of them, when far advanced, purple with the like dots but of a golden colour, somewhat fleshy. Scapes several, jointed at the base without toothlets, compressed, grooved on one side, smooth, pale purple, longer than the leaves, almost upright, with alternate, distant, oblong, blunt, concave, smooth, erect bractes, frequently purplish, above the middle. Calycine leaflets oblong, blunt, upright, smooth only ciliate at the edges with a very few simple hairs visible in a glass, dirty greenish pale yellow with red edges. Corolla four times as long as the calyx, smooth: claws upright, yellow, a little longer than the calyx; borders very wide, rounded, spreading very much, rose-coloured with one side of the back dirty sulphur-coloured. Filaments connate at the base: interior toothless, equal, smooth at top, in other parts hirsute with capitate hairs: exterior hirsute below with simple long hairs thinly set, above with shorter capitate hairs; or quite smooth. Anthers incumbent, yellow. Styles hirsute with capitate hairs. Stigmas very closely pencilled^f.

70. Bulb ovate, loose, small, loosely inclosed in a skin, from three to six times the size of the bulb. Stipe subterraneous, from one to three inches long, round, slender, often bulbiferous, terminated by a dense umbel of leaves and flowers. Leaves very many, spreading or lying on the ground. Petiole jointed at the base, densely villose, pale green, from one to three inches long. Leaflets sessile, quite entire, villose at the edges, quite smooth above, underneath somewhat hirsute and much dotted, always green on both sides without any other colour, half an inch and more in length. Scapes several, jointed at the base, round, somewhat villose, pale green, almost upright, longer than the leaves; bractes sublinear, sharp, villose, approximately alternate at bottom. Calycine leaflets lanceolate, acute, hirsute, ciliate with simple hairs, green with blood-red spots at the edges, erect. Corolla several times longer than the calyx, bell-shaped: claws erect, yellow: borders obovate, wide, very blunt, generally longer than the claws, very deep purple on both sides, with one side of the back dirty yellow and somewhat villose. Filaments united at the base: interior equal, smooth at top, the rest, with the toothlets, very hirsute with capitate hairs; exterior smooth. Anthers oblong, incumbent, yellow. Germ pale green, the whole smooth. Styles very hirsute all over with capitate hairs^g.

According to Linneus, the leaflets are obcordate, obsoletely emarginate, smooth even underneath, very finely ciliate. Scapes the length of the leaves. This does not agree with Jacquin's figure or description.]

Mr. Miller says, the leaflets are roundish, large, hairy, and but little indented at the top, standing upon long slender foot-stalks, arising from a thick short stalk which adheres to the root. He adds, that some earth that came to England with plants from the Cape of Good Hope was full of it. [In 1690, it was cultivated in the royal garden at Hampton Court^h.

71. Bulb less than a hazel nut, with a blackish-brown skin. Stipe about an inch long, terminated by a loose umbel. Leaves several. Petiole grooved in front, pale purple, thinly villose, three or four inches long, upright or spreading. Leaflets subfleshy, often slightly emarginate, smoothish above, half or

two thirds of an inch in length. Scapes thinly hirsute, purplish, the length of the leaves. Some of the hairs of the calyx towards the bottom are often short and capitate. Borders of the corolla rounded, the length of the claws, spreading very much; white with one side of the back yellow and somewhat villose. Germ hirsute at top. Styles very hirsute with capitate and simple hairs. It is so nearly allied to the preceding, that it may perhaps be nothing more than a varietyⁱ.

72. Bulb oval, with a black hard skin, an inch long. Stipe subterraneous, an inch in height, thick, terminated by a dense umbel of leaves and flowers. Leaves very many, prostrate in a ring. Petiole jointed at the base, villose, very much compressed, white or purple, from one to three inches long. Leaflets subfleshy, sometimes but seldom slightly emarginate, somewhat villose at the edges, otherwise smooth on both sides, above glaucous green and appearing dotted when magnified, underneath manifestly dotted, and usually more or less blood-red, near an inch in length. Scapes successively very many, jointed at the base, compressed a little, somewhat villose, purple, scarcely an inch in height, erect or ascending, after flowering stiffly prostrate; bractes subalternate about the middle. Calycine leaflets, lanceolate, acute, somewhat villose, ciliate, erect, purple. Corolla four times as long as the calyx, smooth: claws upright, yellow: borders white, rounded, spreading very much. Filaments connate at the base: interior equal, spreading a little at the tip, sparingly hirsute, together with the toothlets, with capitate hairs: exterior smooth. Anthers incumbent, yellow. Germ pale green, hirsute above. Styles hirsute with simple hairs at the base^k.

73. Bulb ovate, an inch long, covered with a blackish skin. Stipe subterraneous, an inch in height, terminated by a stiffish umbel of leaves and scapes. Leaves very many, spreading in a ring. Petiole jointed at the base, roundish, somewhat hirsute, pale, two or three inches long. Leaflets subfleshy, sometimes but seldom slightly emarginate, on both sides dotted, green and smooth, underneath thinly hirsute at the midrib only, villose at the edges, veined, about an inch in length. Scapes several, jointed at the base, roundish, thinly hirsute, pale purple, ascending or almost upright, about the same length with the leaves; bractes alternate and hirsute at bottom. Calycine leaflets lanceolate, acute, hirsute, green, unspotted, ciliate with long simple hairs and short capitate hairs mixed, erect, half turned back after the corolla falls. Corolla four times as long as the calyx: claws erect, yellow: borders wide, rounded, the length of the claws, spreading very much, white with one side of the back sulphur-coloured and appearing villose in the magnifier. Filaments connate at the base: interior toothletted, equal, together with the toothlets very hirsute with capitate hairs: exterior smooth. Anthers incumbent, yellow. Germ oblong, pale green, hirsute at top. Styles very hirsute with short capitate hairs and a very few long simple ones among them^l.

74. Bulb oval, with a blackish skin, less than an inch in length. Spike subterraneous, an inch long, scaly at top, terminated by an umbel of leaves and flowers. Leaves very many, spreading in a ring. Petiole jointed at the base, roundish, hirsute, more or less red, from two to four inches in length. Leaflets subfleshy, sometimes but seldom slightly emarginate, densely villose at the edges, the upper surface green, smooth on both sides, the under surface of a very deep blood red and shining from the first, almost an inch in length. Scapes several, jointed at the base, compressed a little, very closely hirsute, pale purple, erect, shorter than the leaves; bractes subalternate below. Calycine leaflets ovate, sharpish, erect, green with a purple base, hirsute, ciliate with simple hairs. Corolla five times as long as the calyx, elegant: claws erect, dirty yellow: borders wide, rounded, spreading very much, of a very deep rose-colour with one side of the back dirty yellow and villose, longer than the claws. Filaments connate at the base: interior toothletted, equal, very

^f Jacquin.^g Idem.^h Hort. kew.ⁱ Jacquin.^k Idem.^l Idem.

hirsute with capitate hairs, and here and there one or two on the toothlets: exterior smooth. Anthers incumbent, yellow. Germ pale green, hirsute at top. Styles very hirsute with short capitate hairs mixed with a very few long simple ones^m.

75. Bulb oval, with a blackish skin, less than an inch in length. Stipe subterraneous, about an inch and half in height, terminated by an umbel of leaves and flowers. Leaves several, in a ring. Petiole jointed at the base, roundish, hirsute, more or less red, from two to three inches long. Leaflets subsessile, sometimes but seldom emarginate, having close and long villose hairs at the edges, above green and smooth, underneath having shining dots and appearing somewhat rough-haired in the magnifier; about an inch in length. Scapes several, jointed at the base, compressed a little, somewhat hirsute, pale purple, upright, shorter than the leaves; having subalternate bractes below. Calycine leaflets ovate, sharpish, erect, green, unspotted, hirsute, ciliate with simple hairs. Corolla four times as long as the calyx: claws erect, yellow, a little exceeding the calyx: borders obovate, rounded, wide, spreading very much, smooth, white with one side of the back rose-coloured. Filaments connate at the base: interior toothletted, equal, very hirsute with capitate hairs; toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ pale green, hirsute above and callous. Styles very hirsute with short capitate hairs and a very few long simple ones mixed with themⁿ.

76. Bulb ovate-roundish, with a black hard skin, almost the size of a walnut. Stipe standing out, extremely short, terminated by an umbel of leaves and flowers. Leaves several, spreading in a ring. Petiole jointed at the base, about an inch and half long, compressed a little, thickish, woolly with white villose hairs. Leaflets subsessile, obversely triangular, half an inch in length and breadth, silky-ciliate at the edges, with veins running over them that are pressed in above and protuberant beneath: on the upper surface appearing dotted in the magnifier, silky and somewhat hoary; on the back violet with pale veins, and closely silky; thickish and soft to the touch like those of Marsh Mallow. Scapes several, jointed at the base, round, densely hirsute with whitish villose hairs, erect, three or four inches in height: with opposite jointed bractes above the middle. Calycine leaflets lanceolate, sharpish, villose, erect, green, ciliate with silky villose hairs. Corolla several times longer than the calyx: claws erect, twice as long as the calyx, yellow: borders broad wedge-form, rounded, the length of the claws, spreading very much, violet-purple, with one side of the back pale and somewhat villose. Filaments connate at the base: interior appendicled, equal, hirsute with capitate hairs; the toothlets smooth; exterior smooth. Anthers incumbent, yellow. Styles hirsute with simple hairs^o.

77. Bulb oval, covered with a blackish hard skin, an inch and more in length. Stipe subterraneous, about an inch long, terminated by a dense umbel of leaves and flowers. Leaves very many, in a ring. Petiole jointed at the base, roundish, hirsute, purple, from one to three inches long. Leaflets subsessile, very much dotted on both sides, villose at the edges, dark green on the upper surface, somewhat netted with hirsute raised veins, in other parts smooth; on the lower surface somewhat villose, blood-red, with golden shining dots scattered over it, about half an inch in length and breadth. Scapes several, jointed at the base, round, pale, somewhat hirsute, almost upright, the length of the leaves; with alternate bractes at bottom. Calycine leaflets ovate, bluntish, ciliate at the edges with club-shaped hairs at bottom mixed with others that are shorter, in other parts smooth or appearing villose only with a magnifier, very pale green with the edges red to the middle, and orange lines at the tip on both sides, erect but turned back at the end. Corolla wholly sulphur-coloured, several times longer than the calyx. Petals wedge-shaped, rounded, erect as far as the middle and yellow within, thence spreading very much. Filaments connate at the base: inte-

rior equal, thinly hirsute with simple hairs: exterior smooth. Anthers incumbent, yellow. Styles hirsute with simple hairs^p.

78. Stipe filiform, submersed, of an indeterminate length, leafless but having a few scales, terminated by an umbel of leaves and flowers floating on the surface of the water. Leaves several. Petiole widening at the base, but not jointed, somewhat villose, scarcely a quarter of an inch in length. Leaflets subsessile, green above, in the magnifier appearing dotted towards the edges, and obscurely villose: underneath glaucous, smooth and undotted; scarcely the length of the petioles. Calycine leaflets oblong, blunt, smooth, the two inner ones shorter. Corolla twice as long as the calyx, white. Filaments connate at the base, wholly smooth: interior equal. Germ a little villose at top. Styles smooth^q.

79. Bulb oval or obovate, with a black hard skin, almost an inch in length. Stipe subterraneous, one or two inches long, terminated by a dense umbel of leaves and flowers. Leaves numerous, villose on both sides and at the edges. Petioles roundish, one or two inches in length, dirty purple, jointed at the base. Leaflets subsessile, dotted on both sides, above dirty deep green with oblong livid spots, underneath commonly all livid, scarcely half an inch in length. Scapes very many, round, somewhat villose, pale purple, of different lengths, jointed at the base; with opposite jointed bractes at bottom. Calycine leaflets oblong, blunt, erect, hirsute with simple hairs on the back and at the edges, blood-red on the back with the middle of the disk green and marked above with two longitudinal orange lines. Corolla six times as long as the calyx: claws upright, short, yellow within, whitish on the outside: borders wide, rounded, spreading very much, white within, dotted with red without on one side. Filaments connate at the base: interior smooth at top, in other parts hirsute with very minutely capitate hairs: exterior smooth. Anthers incumbent, yellow. Germ oblong, very hirsute at top, pale green, callous. Styles hirsute with simple hairs, underneath on the neck or below the stigma having a convex, shining red-orange *struma* or gland^{*}.

80. Bulb ovate or oval, with a blackish skin, half the size of a hazel nut. Stipe subterraneous, about an inch long, terminated by a loose umbel of leaves and flowers. Leaves several, villose all over on both sides and at the edges. Petiole jointed at the base, round, slender, pale, from two to four inches in length. Leaflets subsessile, dirty green on both sides, dotted underneath, never livid, scarcely half an inch long. Scapes several, jointed at the base, almost upright, appearing somewhat villose when magnified, longer than the leaves, whitish; with opposite jointed bractes at top. Calycine leaflets oblong, blunt, upright, densely hirsute on the back and at the edges with simple hairs, green, with two orange lines underneath below the tip. Corolla wholly yellow: claws upright, twice as long as the calyx: borders rounded, wider, spreading very much. Filaments connate at the base: interior hirsute with capitate hairs, except the toothlets, which are smooth: exterior smooth. Anthers oblong, incumbent, yellow. Germ ovate, pale green, subhirsute at top, with a very few yellow calluses. Styles hirsute with simple hairs^r.

81. Bulb deep in the ground. Stipe standing out, closely woolly, with one or two woolly scales, about half an inch in length, terminating in an umbel of flowers and leaves. Leaves several, small. Petiole hirsute, half an inch long. Leaflets sessile, wide, with long thick villose hairs on both sides and at the edges. Scapes several, very hirsute, from half an inch to two inches in length; with opposite, lanceolate-linear, acute, concave, villose, erect, jointed bractes above the middle. Calycine leaflets lanceolate, acute, hirsute, ciliate, erect. Corolla four times as long as the calyx, villose on the outside, bell-shaped: claws erect, yellow: borders obovate, blunt, spreading, white. Filaments united at the base into a hirsute cylinder: interior hirsute with simple hairs: exterior hirsute in like man-

^m Jacquin.ⁿ Idem.^o Idem.^p Idem.^q Idem, from Thunberg.^{*} Jacquin.^r Idem.

ner. Anthers ovate, erect, yellow. Germ hirsute. Styles also hirsute, yellow^{*}.

82. Bulb oval or ovate, half the size of a hazel nut, with a hard blackish variously angular somewhat striated and wrinkled skin. Stipe subterraneous, about half an inch long, terminated by a thinner umbel of leaves and flowers. Leaves several. Petiole jointed at the base, slender, weak, round, somewhat villose, pale green or purple, from one to three inches long. Leaflets subsessile, smooth on both sides and at the edges, dotted on both sides, deep green above, bright purple underneath with shining golden dots, the third part of an inch in length and breadth. Scapes several, jointed at the base, round, somewhat villose with capitate hairs, almost upright, pale, a little longer than the leaves; with alternate bractes at top. Calycine leaflets ovate, sharpish, erect, somewhat hirsute on the back and at the edges with capitate hairs, green with purple edges. Corolla six times as long as the calyx: claws erect, yellow: borders obovate, rounded, spreading very much, very pale flesh-coloured. Filaments connate at the base; all, together with the tips of the teeth, hirsute with capitate hairs thinly set. Anthers incumbent, yellow. Germ pale green, hirsute at top. Styles smooth above, somewhat hirsute with simple hairs below[†].

83. Bulb deep in the ground. Stipe standing out, villose, half an inch long, terminating in an umbel of leaves and flowers. Leaves several. Petiole hirsute, an inch long. Leaflets sessile, hirsute on both sides and at the edges, small. Scapes several, villose, an inch and half long; with bractes at top, opposite, lanceolate, villose, jointed. Calycine leaflets oblong, rounded and blunt, ciliate, hirsute, erect. Corolla four times as long as the calyx, bell-shaped: claws erect, yellow: borders obovate, rounded, spreading very much, smooth, purple or variegated. Filaments connate at the base, smooth. Anthers oblong, incumbent. Germ roundish-ovate, hirsute at top. Styles hirsute with simple hairs[‡].

84. Bulb ovate or oval, with a blackish-brown skin, half the size of a hazel nut. Stipe subterraneous, about an inch in length, terminated by a loose umbel of leaves and flowers. Leaves several, the whole somewhat villose on both sides and at the edges. Petiole jointed at the base, round, slender, from two to four inches in length, pale. Leaflets subsessile, dirty green on both sides, dotted underneath and seldom livid, scarcely half an inch in length. Scapes several, jointed at the base, whitish, almost upright, appearing somewhat hirsute when magnified, longer than the leaves, sometimes marked with red spots below the flower; with opposite jointed bractes at top. Calycine leaflets lanceolate, bluntish, upright, thinly hirsute underneath and at the edges with simple hairs, bloodred spotted below on the disk of the back and marked with two yellow lines below the tip, in other parts pale green. Corolla wholly yellow: claws erect, twice as long as the calyx: borders rounded, wide, spreading very much. Filaments connate at the base: interior hirsute with capitate hairs; the toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ oblong, pale green with a few hairs and a few orange calluses above. Styles hirsute with capitate hairs[§].

85. Bulb oval, with a blackish-brown hard skin, an inch long. Stipe subterraneous, scarcely an inch in length, terminated by a dense umbel of leaves and flowers. Leaves very many, spreading in a ring. Petiole jointed at the base, roundish, thick, very hirsute, purple, from one to two inches in length. Leaflets dotted on both sides, villose at the edges, somewhat firm and veined; above smooth and dark green; underneath blood-red with the upper margin cinereous-green, shining with golden dots, and appearing somewhat villose when magnified; the middle one frequently three quarters of an inch long and an inch wide. Scapes several, jointed at the base, round, pale, hirsute with thick hairs, almost upright or spreading a little, an inch and half long, more slender than the

patioles; with alternate bractes about the middle. Calycine leaflets ovate, sharpish, more closely ciliate at the edges with thick hairs, in other parts smooth or villose only in the magnifier, very pale green, having orange lines on each side at the tip, erect with the tips bent back. Corolla several times as long as the calyx: claws rolled up into a funnel, dirty white on the outside, yellow within: borders wide, rounded, longer than the claws, spreading very much, white on both sides. Filaments connate at the base: interior thinly hirsute with simple hairs: exterior smooth. Anthers incumbent, yellow. Styles very hirsute with simple hairs[¶].

86. Bulb oval or ovate, with a blackish-brown hard skin, about an inch in length. Stipe subterraneous, very short, terminated by an umbel of leaves and flowers. Leaves several, spreading in a ring. Petiole jointed at the base, roundish, very hirsute, purple, one or two inches long. Leaflets dotted on both sides, villose at the edges, somewhat firm and veined, smooth and dark green above, underneath deep bright blood-red, shining with golden dots, and somewhat villose when magnified, about half an inch in length and breadth. Scapes several, very short, scarcely half an inch long, jointed at the base, round, hirsute with thick hairs, almost upright, pale; with alternate bractes above the middle. Calycine leaflets ovate, bluntish, thinly ciliate at the edges with thick hairs, in other parts smooth, or when examined by a glass somewhat villose, very pale green with the edges red below, and orange lines at each side at the tip, upright except at the tips, which are turned back. Corolla several times longer than the calyx: claws rolled up in form of a funnel, whitish on the outside, yellow within: borders obovate, rounded, the length of the claws, spreading very much, white on both sides, with a blush of carnation within above the base. Filaments connate, at the base: interior equal, hirsute with capitate hairs: exterior smooth. Anthers incumbent, yellow. Germ oblong, somewhat villose above, pale green. Styles very hirsute with most minutely capitate hairs[‡].

87. Bulb oval or ovate, with a blackish skin, half the size of a hazel nut. Stipe subterraneous, about an inch in length, terminated by a loose umbel of leaves and flowers. Leaves several. Petiole jointed at the base, round, slender, villose, pale green, from two to three inches in length. Leaflets subsessile, dirty green and dotted on both sides, villose on the back and at the edges, smooth on the upper surface, scarcely half an inch in length and breadth. Scapes several, with a longer joint than ordinary at the base, manifestly villose, almost upright, pale, about the same length with the leaves; with opposite jointed bractes at top. Calycine leaflets oblong, bluntish, erect, thinly hirsute on the back and at the edges with simple hairs, pale green, with two yellow lines underneath below the tip, and sometimes variegated at bottom with bloody spots. Corolla wholly yellow: claws upright, twice as long as the calyx: borders rounded, wider, spreading very much. Filaments connate at the base: interior equal, hirsute with capitate hairs; toothlets smooth: exterior smooth. Anthers incumbent, yellow. Germ pale green, smooth, callous at top. Styles very hirsute with capitate hairs[§].

88. Bulb in the young plant ovate, covered with a brown skin, twice the size of a pea. The root in the mature plant consists of several legs slenderly fusiform, terminating in a long fibre, round, the thickness of a reed and more, some inches in length, fleshy, brittle, pale, somewhat pellucid and sweet. Stipes very many, herbaceous, round, the thickness of a pigeon's quill or even of a reed, thick, green or purplish brown, a foot and half high, upright but so weak as not to be able to support themselves without assistance, at the base and origin of the branches having an ovate-acuminate stipule; both they and the branches terminated by distant umbels of leaves and flowers. Leaves several, at remote distances in whorls. Petiole jointed at the base, round, slender, smoothish, spreading a little,

^{*} Jacquin from Thunberg.

[†] Jacquin from Thunberg.

[‡] Jacquin.

[§] Jacquin.

[¶] Jacquin.

[‡] Idem.

[§] Idem.

about two inches in length, green. Leaflets on short petioles, equal, quite entire, flat, spreading very much, about half an inch in length, above green and smooth, underneath dotted, more or less purple-flesh-coloured, appearing densely villose in the magnifier, with a row of orange dots, becoming black in the dried leaves, and observable only in the microscope with the light thrown on it. Peduncles jointed at the base, axillary, round, pubescent in the magnifier, green, the length of the leaves; with bractes towards the top opposite, erect and jointed: above these they are nodding and purple. Calyx villose: leaflets oblong, blunt with a little point, erect with spreading tips, green, gibbous on the back below the tip with three or four calluses, which are oblong and yellow. Corolla bell-shaped, three times as long as the calyx, smooth: claws yellow, almost upright, a little longer than the calyx: borders wide, rounded, spreading very much and reflex, whitish with a slight blush of purple. Filaments connate at the base: interior equal, hirsute with simple and capitate hairs; the toothlets also hirsute: exterior smooth. Anthers oblong, incumbent, yellow. Germ oblong, five-grooved, pale green, smoothish. Styles hirsute with simple and capitate hairs. Stigmas papillofely muricated, not pencilled^b.

Cultivated in 1739, by Mr. Miller^c.

89. Stipe filiform, smooth, striated, leafless, loose, a foot high and more, together with the branches terminated by a dense umbel of leaves and flowers. Branches alternate, directed one way, striated, upright. Leaves several, smooth. Petiole jointed at the base, striated, about an inch long. Leaflets subsessile, green, having glandular dots thinly scattered over the edges. Scapes several, jointed at the base, hairy, longer than the leaves, with opposite, jointed, bristle-shaped bractes, tawny at the tip, a little above the middle. Calycine leaflets oblong, blunt with a point, rough-haired, somewhat striated, glandular, tawny at the tip. Corolla three times as long as the calyx, yellow at the base, in other parts violet. Filaments united at the base into one hirsute body: interior very short toothletted, equal, hirsute with simple hairs: the toothlets also hirsute: exterior smooth. Germ hirsute. Styles hirsute with simple hairs^d.

These are all natives of the Cape of Good Hope.

90. Stipe scaly, leafless, simple, terminating in a leafy flowering umbel. Leaves several, petioled. Leaflets sessile, cloven beyond the middle, clefts lanceolate. Scape single, with two bractes about the middle. Flower long.—Native of Virginia^e.

91. Root perennial, branched, round, knobbed, creeping, with very fine fibrils on every side, partly white, partly red, having an ovate acute thick rigid scale like a tooth at the knobs. Stipe partly subterraneous, partly standing out, sometimes very little, sometimes several inches, then procumbent and striking roots into the ground, toothletted at the knobs like the root, round, somewhat hirsute, red, closely toothletted above with the permanent joints of decayed leaves, perennial, putting forth from its top several aggregate leaves and scapes. Petiole jointed, round, somewhat hirsute, red especially at bottom, from two to three inches long, almost upright but weak. Leaflets subsessile, near half an inch long, wider, green and hirsute on both sides, shortly ciliate. Scapes one or two, jointed at the base, round, somewhat villose, red, the length of the leaves; with embracing, villose, jointed bractes above the middle. Calycine leaflets oblong, acute, sometimes bifid, somewhat hirsute, ciliate, purple at the tip, upright. Corolla three times as long as the calyx, white, beautifully veined with purple, bell-shaped: claws upright: borders obovate, rounded, spreading very much. Filaments very slightly connate at the base, smooth: interior toothless, equal. Anthers, oblong, incumbent, pale yellow or whitish. Germ ovate, smooth. Styles smooth. Capsule blunt, smooth^f; ovate-oblong, membranaceous, diaphanous, five-cornered, five-lobed, five-celled, ten-valved, opening longitudinally at the external angles. Re-

ceptacle none, except two papillæ, surrounded by a yellow ring, in the central angle of the cells, to each of which one seed is fastened. Seeds regularly two, scarcely ever more, ovate, compressed like a lens, with rugged, raised streaks, russet-yellow: a fleshy white aril invests the whole seed, at first smooth and closed on every side, but at length opening elastically at the tip and rolling back, it wrinkles up and throws off the seed with considerable force^g.

Mr. Curtis remarks, that the leaflets are of a yellowish green colour, frequently purple underneath; that the petiole proceeds from a little bulb, which forms a kind of sheath to it, and that although round at bottom, the upper part is grooved on one side; that the calycine segments are bluntish and membranous at the edges; that the petals adhere together from the base just above the claws, which bend a little inward, that they are slightly crenated and tinged at bottom with yellow; that the anthers are bilocular; that the germ is four-cornered, the styles very slender and a little longer than the stamens, and the stigmas blunt; that there are three heart-shaped seeds in each cell, grooved longitudinally, of a bright reddish brown colour; that like the Violet it continues producing seed-vessels and seeds during the greatest part of the summer, without any appearance of expanded blossoms, which are only observable in april and may; and that as it has done flowering, the flower-stalk, as in many other plants, bends down, and when the seed is ripe, again becomes upright.

Linneus remarks, that the leaflets in wet weather are erected, but hang down in dry weather. They are also said by some authors to manifest a degree of sensibility on being struck.

Villars observes, that this elegant little plant has the leaves of Trefoil, the taste of Sorrel, and the flower of Geranium: from which last genus this is distinct, according to Jussieu, in the number of styles, the form of the capsule and manner of its opening, its straight corcle or heart, without any perisperm or albumen.

Wood-Sorrel is common in Europe in woods, and occurs also among bushes, in hedges and on heaths. It is also found in Japan. It is called, says Gerard, Wood Sour, Sour Trefoil, Stubwort, and Sorell du Bois; by herbarists Alleluya and Cuckow's meat, "by reason when it springeth forth and flowereth, the Cuckow singeth most, at which time also Alleluya was wont to be sung in churches." The names Alleluya and Lujula however are corrupted from the Calabrian name *Juliola*. It is called *Stubwort*, I presume, from its covering the ground among the stubs in coppices, when they are cut down. In French it is *la petite Oseille* or *Surelle*, and *Pain à Coucou*.

A variety is found with purple flowers. It is said to be a less plant and to flower later. In a hollow lane between Ofram and Hallifax.

Wood Sorrel has a grateful acid taste, more agreeable than common Sorrel, and therefore proper to be used in salads: its acid approaches nearly to that of the juice of lemons, or the acid of tartar, with which it also corresponds in its medical effects, being esteemed refrigerant, antiscorbutic and diuretic. An infusion of the leaves, or a whey made by boiling the plant in milk, is useful in ardent fevers, to allay inordinate heat, and to quench thirst^h. The London College directs a conserve of the leaves and petals to be made by beating them with thrice their weight of fine sugar, and orange peel. It is called *Conserva Lujulæ*. The expressed juice depurated, properly evaporated, and set in a cool place, affords a chrystalline acid salt in considerable quantity, which may be used wherever vegetable acids are wanted. It is employed to take iron moulds and ink-stains out of linen, and is sold under the name of essential salt of Lemonsⁱ. This salt, when genuine, which it seldom is, consists of the vegetable alkali and a peculiar acid, which according to Bergman seems more allied to the acid of sugar

^b Jacquin.

^c Hort. Kew.

^d Jacquin. from Thunberg.

^e Jacquin. from Linn.

^f Jacquin.

^g Gartner.

^h Woodville.

ⁱ Withering.

than that of tartar. What is sold for it in this country appears sometimes to consist of C. Tart. with the addition of a small quantity of vitriolic acid^k. For taking out spots in linen, the stained part is dipped in water, sprinkled with a little of the salt powdered, then rubbed on a pewter plate, after which the spot is washed out with warm water^l.

Dr. Beddoes informs us that the leaves and stalks wrapped up in a cabbage leaf, and macerated in warm ashes until reduced to a pulp, have been successfully applied to scrophulous ulcers. This poultice should remain on the sore for twenty-four hours, and be repeated four times. Afterwards the ulcer is to be dressed with a poultice made of the roots of the Meadow-sweet (*Spiræa Ulmaria*) bruised and mixed up with the scum of four butter-milk^m.

Doubtless some of the foreign species may be superior to this in the same way. Thunberg says that *Oxalis cernua* grows to the greatest size and in the greatest abundance of any species at the Cape of Good Hope, and that a good salt was prepared from itⁿ. But he does not inform us in what quantity. Twenty pounds of our Wood Sorrel leaves fresh yield six pounds of juice, from which two ounces, two drams and one scruple of salt have been obtained^o.

92. Bulb ovate, acute, often loose, covered with a brownish skin. Stipe subterraneous, two inches or more in length, terminated by an umbel of leaves and flowers. Leaves several, quite smooth, digitated, spreading out wide in a ring. Petiole jointed at the base, the joint wide, channelled end embracing, compressed a little, thick. Leaflets about eight, oblong or lanceolate-oblong, bluntish, glaucous-green above, frequently dark purple underneath, dotted on both sides, about an inch long. Scapes few, jointed at the base, upright, compressed a little, thick, smooth, almost the same length with the leaves: bractes approximately alternate at top. Calycine leaflets ovate, sharpish, upright, green. Corolla several times as long as the calyx, all yellow. Claws upright. Borders very wide, rounded, spreading very much, smooth, with one side of the back red. Filaments connate at the base: interior toothletted, equal, hirsute with short capitate hairs thinly set; toothlets smooth: exterior also hirsute. Anthers oblong, incumbent, yellow. Germ half-ovate, smooth, pale green. Styles smooth^p.

93. Bulb roundish, the size of a hazel nut, covered with a brown skin. Stipe standing out, scaly, smooth, the size of a pigeon's quill, thickened above, purple, leaflets, almost upright, but through weakness frequently prostrate, from half an inch to three inches in length, terminating in an umbel of leaves and flowers. Leaves about five digitate, smooth. Petiole narrowly and shortly jointed at the base, compressed a little, thick, firm, green or red, one or two inches long. Leaflets from five to nine, sessile, lanceolate-linear, blunt, quite entire, sometimes recurved at the tip, very minutely dotted on both sides, but much more apparently underneath, green, almost upright, from one to two inches in length. Scapes several, narrowly and shortly jointed at the base, almost half round, smooth, almost upright, of the same length and thickness with the petioles: bractes alternate, near the top. Calycine leaflets lanceolate, acute, erect with the tips spreading, pale green, with dirty purple dots scattered over them above, ciliate on the edges with capitate hairs, in other parts smooth. Corolla three times as long as the calyx, subcampanulate, the whole yellow, except the back of the borders, which is purple: borders obovate, rounded, quite entire, wide. Filaments united at the base: interior toothletted, equal, having very short capitate hairs thinly scattered over them, with smooth toothlets: exterior hirsute with capitate hairs. Anthers oblong, incumbent, yellow. Germ ovate-oblong, five-grooved, smooth, pale. Styles somewhat hirsute with capitate hairs underneath, in other parts smooth^q.—Introduced in 1775, by Mr. Francis Masson^r.

^k Woodville.

^l Curtis from Newm. Chem. by Lewis.

^m Faët. Airs. and Wither. arr. 430. n.

ⁿ Travels, 1. 293. engl. edit.

^o Lewis.

^p Jacquin.

^q Llem.

^r Hort. kew.

94. Bulb ovate-roundish, covered with a brown skin, the size of a hazel nut, commonly loose. Stipe subterraneous, standing out above and furnished there with large imbricate scales, about an inch in length, the thickness of a reed, smooth, round, terminated by an umbel of leaves and flowers. Leaves several, smooth, digitate. Petiole jointed at the base, roundish, thick, green, almost upright, weak, three or four inches long. Leaflets from six to nine, blunt, dotted, almost upright, three inches long, and three or four lines wide. Scapes several, having a long joint at the base, almost upright, weak and therefore often reclining, roundish, the same thickness with the petioles, smooth, pale green: with bractes approximately alternate above. Calycine leaflets four, lanceolate, erect with a bluntish reflex tip, smooth, pale green; a fifth double the size of the others, spatulate, rounded, and the whole erect. Corolla three times as long as the calyx, dark yellow within, sulphur-coloured without, bell-shaped, wide, spreading very much above. Filaments connate at the base: interior toothletted, equal, very hirsute with capitate hairs; the toothlets smooth: exterior hirsute in like manner. Anthers incumbent, yellow. Germ oblong, smooth, pale green. Styles hirsute like the filaments^s.

95. Bulb ovate, less than a hazel nut, covered with a brown skin, loose, putting forth a long thick fibre from its base. Stipe partly under, partly above ground, about an inch and half in length, scaly at top, almost upright, round, thicker than a pigeon's quill, smooth, purple, terminated by an umbel of leaves and flowers. Leaves several, almost upright. Petiole jointed at the base, round, dirty purple, almost as thick as a pigeon's quill. Leaflets seven or eight, oblong-linear, blunt, quite entire, green on both sides except the midrib at the back and the base of the upper surface, which are dirty purple, three or four inches long, three or four lines wide. Scapes several, jointed at the base, round, smooth, almost upright, nearly the same length with the leaves: bractes approximately alternate above. Calycine leaflets lanceolate, blunt, smooth, light purple, upright, equal; sometimes but very seldom one of them larger and spatulate. Corolla five times as long as the calyx, smooth, yellow: claws upright, almost twice as long as the calyx: borders rounded, wide, spreading very much, with one side of the back more or less red. Filaments connate at the base: interior toothletted, equal, hirsute with capitate hairs, except the toothlets, which are smooth: exterior hirsute in like manner. Anthers oblong, twin, erect, yellow. Germ ovate, smooth, pale green. Styles hirsute with capitate hairs^t.

Jacquin having figured this species both in its cultivated and wild state, the difference between them may there be seen.

96. Bulb oval, with a brown skin, less than a hazel nut, growing very deep in the ground. Stipe subterraneous, two or three inches long, terminated by an umbel of flowers and leaves. Leaves several, petiolately multidigitate. Petiole from a wide base, not jointed, round, very hirsute, erect, pale green or dirty purple, in the wild plant about an inch, in the cultivated plant from two to four inches in length. Leaflets about twelve, spreading in an umbel, oblong-wedge-shaped, converging, emarginate, dotted on both sides, smooth above, densely hirsute underneath, ciliate with simple hairs in and about the edges, about half an inch in length. Scapes few, not jointed, very hirsute, spreading, about the same length with the leaves. Calycine leaflets lanceolate, acute, hirsute, ciliate, erect. Corolla six times as long as the calyx, bell-shaped, villose on the outside: claws erect: borders obovate, rounded, white. Filaments united at the base: interior toothletted, equal; somewhat hirsute at top with simple hairs, in other parts smooth: exterior smooth. Anthers oblong, incumbent. Germ ovate, hirsute. Styles hirsute with long simple hairs^u. Jacquin has figured the wild and cultivated plant in the same plate; the latter has never flowered in Europe.

^s Jacquin.

^t Idem.

^u Idem.

The five last species are natives of the Cape of Good Hope.

An attention to the general distinctions given above, in the enumeration of the species, and at the head of the descriptions, together with the following circumstances, will much facilitate and abbreviate the discrimination of the species, which are so numerous in this genus.

In n. 1 to 5, 8 to 12 and 91 the root is branched; in n. 6. it is turbinate; in n. 7. fusiform; in n. 21. fibrous; in n. 91. knobbed; in the rest it is bulbous.

The species with ternate leaves being most numerous, it may be useful to observe, that the leaflets are obovate, lanceolate or oblong in n. 41 to 46; linear from n. 47 to 54; all wedge-shaped in n. 55 to 58; the middle leaflet wedge-obovate, and the lateral ones oblong in n. 59 to 66; all roundish and scarcely emarginate in n. 67 to 76; all or the middle leaflet only obcordate in 77 to 91.

The peduncle or scape is not jointed in n. 2. 4. 22 to 27. 30. 34. 40. 47. 78. 96; in the rest it is jointed. Most of the species have two bractes on the flower-stem; but n. 34, 35, 36. have not any. N. 40. has only one bracte; and some of the caulescent species have an involucre of several leaflets.

The two bractes are opposite in n. 11. 13, 14. 17, 18, 19. 25. 31. 46. 59 to 66. 76. 78 to 81. 83, 84. 87 to 91. In the rest they are alternate. In some of the species they are subalternate or subopposite, and cannot therefore very easily be distinguished.

The situation of these bractes on the scape or peduncle is also worth remarking. In the following species they are at or near the bottom; n. 13, 14. 18, 19. 67, 68. 70, 71. 73, 74, 75. 77, 78, 79. In n. 17, 26. 38. 53. 59. 61. 66. 69. 76. 81. 86. 89. 91. above the middle. In n. 11. 63, 64. 72. 85. 90. in or near the middle. In n. 33. 42, 43. 60. 62. 65. below the middle. In n. 22 to 25. 31. 37. 39. 44 to 47. immediately below the calyx. In the rest they are near the top, or higher than those which are above the middle; but lower than those which approximate to the calyx.

The prevailing colour of the Corolla is yellow: in many however it is red, violet purple, red purple or flesh-coloured, as in n. 4. 5. 14. 17. 18. 22 to 30. 32. 33. 34. 36. 45 to 50. 54. 67, b. 69. 70. 74. 76. 82. 83, 89. In n. 15. it is blue or flesh-coloured. In n. 51. 53. 63, b. 67. 68. 75. 88. 91. 96. it is white and red. In n. 58. white and violet. In n. 37. 39. 44. 52. 55. 56. 59. 60. 61. 62. 64. 66. 71. 72. 73. 78. 79. 81. 85. 86. 96. it is white. These have frequently a tinge of yellow, red or purple. In all the rest the corolla is yellow.

The filaments are free or separate in n. 21. and in some, as n. 13. 35. 40. 91. they are very slightly united at the base, so that in n. 13. particularly they may almost be considered as distinct. In the other species they are monadelphous.

Some of these filaments are smooth: as n. 11. 13. 16. 19. 25. 31. 35. 40. 44. 47. 50. 57. 58. 78. 83. 90. The others have the interior filaments hairy, either with simple hairs, as in n. 1. 2. 14. 15. 21 to 24. 28. 30. 43. 49. 64. 77. 81. 85. 89. 96: or capitate hairs, as in n. 4. 9. 10. 26. 27. 29. 32 to 34. 36 to 39. 41. 42. 45. 46. 48. 52 to 56. 59 to 63. 65 to 76. 79. 80. 82: or both, as in n. 17. 18. 51. 88. The following only have the exterior filaments hairy; n. 15. 21 to 24. 27. 28. 30. 32. 33. 41. 45. 46. 48. 49. 51. 56. 57. 58. 67. 68. 69. 81. 82. 84. 92 to 95: in the rest they are smooth.]

PROPAGATION AND CULTURE.

The European and North American sorts require no particular culture. If the roots of the common Wood Sorrel are planted in a moist shady border, they will thrive and multiply, and if kept clean from weeds will require no other care. If the seeds of the other sorts are sown in an open border, the plants will rise freely, and if they are permitted to scatter, there will be a plentiful supply of plants.

The numerous species from the Cape of Good Hope, must be planted in pots, which may be shel-

tered in the dry stove, or under a hot-bed frame in winter, where they may have as much free air as possible in mild weather. Most of them may be easily increased by offsets from the roots, or bulbs which come out from the side of the stalks, generally in great abundance.

[Of *O. reptatrix* in particular Jacquin says that as it runs along it puts forth bulbs in such abundance as in a short time to fill the pots with plants; but that in four years during which he had cultivated it, he had only a single flower; which is common in plants that are suffered to run at the roots.]

The sorts from the East and West Indies being more tender than these, require to be placed in a stove kept to a moderate degree of warmth in winter. They are propagated by seeds, sown in pots, plunged into a moderate hot-bed. When the plants come up, set them singly in pots filled with light sandy earth, and plunged into a fresh hot-bed, shading them from the sun till they have taken new root; after which they must be treated in the same manner as other tender plants from the same countries.

[Jacquin remarks, of *O. Barrelieri* (n. 4.) from South America, that when sowed early in the spring, it grew luxuriantly in the stoves, produced seed abundantly, which from the elasticity of the capsule could not be collected without great difficulty, and that it always perished in the winter: but that when it was sown later in the season, it sometimes continued through the winter, and flowered the next spring, but always continued in a languid state.

OXALIS. See *Portulaca* and *Rumex*.]

Ox-EYE. See *Bupthalmum*, [*Anthemis* and *Chrysanthemum*.]

Ox-SLIP. See *Primula*.

Ox-TONGUE. See *Picris*.]

OXYACANTHA. See *Berberis*, [*Cratægus*, *Mespilus*.]

OXYBAPHUS. (From *ὄξύς* acid, and *βαφύς* tinctor, a dyer, or *βαφὴν* a colour used in dyeing.)

L'Heritier monogr. Willd. Lin. syst.

GENERIC CHARACTER.

Cal. five-cleft, bell-shaped. Cor. funnel-shaped. Nut five-cornered, one-seeded surrounded by the unfolded permanent calyx.

SPECIES.

1. *Oxybaphus viscosus*.

L'Herit. mon. cum ic. Willd. syst. 185.

Mirabilis viscosa. Cavan. ic. 1. n. 17. t. 19.

DESCRIPTION, &c.

This plant, which is a native of Peru, and is very nearly allied to *Mirabilis*, under which genus it is ranged by Cavanilles; is made a distinct genus by L'Heritier, on account of its having only three stamens, and the calyx enlarged and peltate attending the fruit. Cavanilles observed three and four stamens in the cultivated plant. See his description under *Mirabilis viscosa*.

OXYCEDRUS. See *Juniperus*.

OXYCOCCUS. See *Vaccinium*.

OXYLAPATHUM. See *Rumex*.

OXYOIDES. See *Oxalis*.]

OxYS. See *Oxalis*.

OZOPHYLLUM. (So named from the strong unpleasant smell of the leaves when bruised.)

Lin. gen. Schreb. n. 1105. Ticorea. Aubl. 277.

Cavan. diff. 6. 362. t. 206. Juss. 264.

Class. 16. 2. Monadelphia Pentandria.

Nat. order of *Tribilatae*. Meliæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-toothed, acute, very small.

COR. *Petals* five, with long claws converging in form of of a tube: borders oblong, blunt, spreading.

STAM. *Filaments* cylindrical, sheathing the style, five-toothed at top. *Anthems* five, oblong, erect.

PIST. *Germ* five-lobed, surrounded by a gland. *Style* filiform, higher than the corolla. *Stigma* capitate.

PER. five-celled.

ESSENTIAL CHARACTER.

One-styled. Cal. five-toothed. Pet. five, long. Filam. sheathing the style, five-toothed at top; teeth antheriferous. Stigma one. Caps. five-celled.

SPECIES.

SPECIES.

1. *Ozophyllum foetidum*.*Ticorea foetida*.*Aubl. guian. p. 689. t. 277. Lin. Syst. Nat. Gmel. p. 1009. Cavan. diff. p. 362.*

DESCRIPTION, &c.

This is a shrub of ten feet high or more, and often four or six inches in diameter. The bark is green and smooth: the wood white, tender, and fragile. The branches twiggy, and garnished with alternate leaves: each leaf is digitated, having three large lobes, and growing on a footstalk of five or six inches long. The lobes of the leaves are green, smooth, soft, and oval, and terminate in a long point: the middle lobe is larger than the rest, being sometimes more than a foot long and four inches wide: each lobe is divided by a longitudinal nerve, which is prominent beneath. The flowers spring from the bosoms of the leaves, at the extremity of the twigs and branches. Their common footstalk is more than a foot long, and divides at its summit into several smaller ones, on each of which are placed alternate, sessile flowers. The calyx is green: the corolla white, each petal being about an inch long, and as it were glued or united to each other longitudinally by their borders, so as to form a kind of tubular figure, with the upper part spreading: these petals cover a white membranaceous tube, which on its upper part divides into five short filaments supporting at their points the anthers.

This shrub is a native of the forests of Guiana; flowering in february. The leaves, when bruised, emit a disagreeable smell much resembling that of the Stramonium.

P.

[P]ACHIRA. See *Carolinea*.PACHYPHYLLA & PACHYPHYLLUM. See *Nicotiana*.PACIVIRI. See *Canna*.PACO COATINGA. See *Costus*.PACO SEROCA. See *Alpinia*.PACOURIA. See *Willughbeia*.PACTA VALAM. See *Trichosanthes*.PADDOCK-PIPE. See *Equisetum*.PADRI. See *Bignonia*.PADUS. See *Prunus* and *Sideroxylon*.

PÆDERIA.

Lin. gen. Reich. n. 317. Schreb. n. 412. Juss. 205.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*. *Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, turbinate, five-toothed, permanent.COR. one-petalled, funnel-form, hirsute within. *Border* five-parted, small.STAM. *Filaments* five, awl-shaped, very short, from the middle of the tube. *Anthers* oblong, shorter than the corolla.PIST. *Germ* roundish. *Style* capillary, bifid, the length of the corolla. *Stigmas* simple.PER. *Berry* brittle, ovate, inflated.

SEEDS two ovate.

ESSENTIAL CHARACTER.

Contorted. *Berry* void, brittle, two-seeded. *Style* bifid.

SPECIES.

1. *Pæderia foetida*.*Lin. syst. 250. Reich. 1. 589. Willd. 1219. mant.*52. *Retz. obs. 1. 13. Thunb. jap. 106. Kämpf.**ic. select. t. 9. Lamarck. encycl. 2. 257. t. 166.*

f. 1.

*Convolvulus foetidus. Rumph. amb. 5. 436. t. 160.**Stamens* included.2. *Pæderia fragrans*.*Lin. syst. Willd. 1219. Lamarck. encycl. 2. 258.*

t. 166. f. 2.

Stamens standing out.

DESCRIPTIONS, &c.

1. Stem twining, filiform, smooth and even. Leaves opposite, petioled, cordate, acuminate, quite entire, nerved, spreading a little, paler underneath, an inch long, very smooth and even. When the plant is young the leaves are lanceolate, but in its more advanced state they are ovate. Petioles round, grooved above, smooth, a little shorter than the leaf. Flowers axillary, in brachiate panicles, coming out successively. Peduncle round, smooth, the length of the petiole. The lower pedicels opposite, the upper alternate. Calyx superior, smooth; segments acute, erect, several times shorter than the corolla. Tube of the corolla inflated, white-tomentose on the outside, within purple, white villose at top. Border five or six-parted, spreading; segments rounded, curled, white, a line in length; opening of the tube purple, villose, a little closed. Filaments five or six, fastened longitudinally to the base of the corolla, capillary, red, shorter by half than the tube. Anthers inserted into the back, linear, erect, striated, whitish. Germ surrounded by a very short wreath, obtusely six-lobed, smooth, purple. Style erect, the length of the filaments, purple. Stigmas two, capillary, curled, whitish, longer than the anthers. Fruit a berry crowned with the calyx, globular, when unripe green, very smooth and brittle, commonly two-celled, sometimes but rarely three-celled. Seeds two or three.

Frequently the calyx is seven-leaved, and the corolla seven-cleft; sometimes the calyx is six-leaved. It is now and then found with seven stamens. In drying the plant turns black. When fresh it has a very ill smell. It varies with wider, shorter leaves; and with narrower, longer leaves^a.

Retzius informs us, that besides the specimen which he had from Linneus, with a twining stem, and cordate acuminate leaves, tomentose underneath: he had another from Bladh, with the branches stiff and straight, the leaves smooth, oblong, linear-lanceolate, blunt, and the panicle more dense. He does not determine whether they are distinct species or varieties only. Both have the flowers racemed, in a dichotomous or trichotomous panicle.—Native of the East Indies and Japan.

2. This differs from the preceding chiefly in having wider ovate acuminate leaves, many-flowered cymes, and the segments of the corolla narrower and sharper, besides the distinction pointed out in the specific character.—Native of the island of Mauritius^b.

PÆDEROTA.

*Lin. gen. n. 26. Reich. n. 27. Schreb. n. 33.**Juss. 120. Bonarota. Mich. 15.*

Class. 2. 1. Diandria Monogynia.

Nat. order of *Personatæ*. *Scrophulariæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted: *leaflets* linear, equal, spreading, permanent.

COR. one-petalled, somewhat wheel-shaped, four-cleft, blunt; upper lobe wider, generally emarginate.

STAM. *Filaments* two, filiform, ascending, shorter than the corolla. *Anthers* converging, ovate, acute, two-valved.PIST. *Germ* ovate. *Style* awl-shaped, bent down, the length of the stamens, permanent.PER. *Capful* ovate, longer than the calyx, two-celled, opening at top.

SEEDS very many, roundish.

OBS. It is allied to *Veronica*, but differs in having a five-parted calyx.

ESSENTIAL CHARACTER.

Cor. four-cleft. Cal. five-parted. Caps. two-celled.

SPECIES.

1. *Pæderota Ageria*.*Lin. spec. Willd. 77. syst. 61. mant. 171.**P. lutea. Lin. suppl. 84. Scop. ann. 2. 41.**B. Bonarota. Jacqu. hort. 2. t. 121.*^a Thunberg.^b Willdenow.

Bonarota

Bonarota montana italica Chamædryos folio minus crenato. *Mich. gen.* 19. n. 3.

Leaves ovate-acuminate, helmet of the corollas bifid.

2. Pæderota Bonarota.

Lin. spec. Willd. 77. *spec.* 20. *synt.* 61. *Jacqu. austr.* 5. *app.* 1. 39.

P. cærulea. *Lin. suppl.* 84.

Bonarota chamædrifolia. *Scop. carn.* n. 26.

Veronica Bonarota. *Lin. spec. ed.* 1. 11.

Chamædryos montis Sumani. *Baub. hist.* 3. 289.

B. montana italica, Chamædryos folio, flore cæruleo.

Mich. gen. 19. n. 2. t. 15. f. 2.

β. B. fol. rotundiore circinato, spica cærulea habitiore.

Mich. gen. 19. n. 2. t. 15. f. 2.

Leaves roundish-ovate, helmet of the corollas entire.

3. Pæderota? minima.

Lin. spec. Willd. 77. *Retz. obs.* 5. 10.

Leaves oblong entire opposite, flowers axillary opposite, teeth of the calyxes hirsute within.

DESCRIPTIONS, &c.

1. This differs from the second in having simple stems, the lower leaves alternate, dryer, more wrinkled and not at all shining, the helmet bifid and entire, ascending. —Native of Italy and Carniola. It has the trivial name, from Agerius, who first found it near Vicenza.

2. Root branched, fibrous, perennial. Stems round, simple, villose, erect. Leaves opposite, dry, acutely ferrate. Raceme terminating, oblong. Bracte longer than the calyx, linear, placed close to the corolla. Corolla yellow, four lines in length, with the lip equally trifid. Style five lines long, slightly dilated at top and truncated, incumbent on the lower lip. The cells of the capsule separate in such a manner, that they might be taken for two capsules, if it were not for the single receptacle. Seeds rufous, twenty-five at most in a cell^d.

Micheli's n. 2. f. 2. with a rounder leaf, is a variety of this. Scopoli has given eight varieties.—These are natives of the mountains of Austria, Carniola and Italy. Micheli named these plants *Bonarota*, from Filippo Bonarota, Senator of Florence, fellow of the Botanic Academy there, &c.

3. This has the appearance of *Elatine Hydropiper*. Stems an inch and half high, seldom branched, rooting at the base. Leaves blunt, quite entire, naked. Flowers sessile, solitary. Calyx five-cornered, bell-shaped, with the teeth hirsute within. Native of the East Indies, where it was found by Koenig, on whose authority it is placed in this genus^e.

Pæderota racemosa of Houttuyn is *Hemimeris montana*, *Lin. suppl.*^f

PÆONIA (of *Pliny*; Παιωνία of *Hippocrates* and *Dioscorides*: from *Pæon*, a famous physician of antiquity.)

Lin. gen. n. 678. *Reich.* n. 732. *Schreb.* n. 920.

Tournef. t. 146. *Juss.* 234. *Gært.* t. 65.

Class. 13. 2. Polyandria Digynia.

Nat. order of *Multifloræ*. *Ranunculaceæ*, *Juss.*

GENERIC CHARACTER.

CAL. Perianth five-leaved, small, permanent: leaflets roundish, concave, reflex, unequal in size and situation.

COR. Petals five, roundish, concave, narrower at the base, spreading, very large.

STAM. Filaments numerous, (about three hundred) capillary, short. Anthers oblong, quadrangular, erect, four-celled, large.

PIST. Germs two, ovate, erect, tomentose. Styles none. Stigmas compressed, oblong, blunt, coloured.

PER. Capsules as many, ovate-oblong, spreading and reflex, tomentose, one-celled, one-valved, opening longitudinally inwards.

SEEDS several, oval, shining, coloured, fastened to the the opening future.

Obs. The most natural number of the germ seems to be two, but it varies much in the species. It hardly ever amounts to five.

ESSENTIAL CHARACTER.

Cal. five-leaved. Pet. five. Styles none. Caps. many-seeded.

^e Scop. ann. ^d Scop. carn. ^e Retzius. ^f Willdenow.

SPECIES.

[1. Pæonia albiflora. White-flowered Peony.

Pallas roff. 92. t. 84.

P. lacteo flore, foliis utrinque viridantibus et splendentibus. *Gmel. ap. Amman. stirp. ruth.* 77. n. 103.

Flor. sibir. 4. 184. n. 13.

Leaves ternate, leaflets lobed shining, germs in threes smooth.]

2. Pæonia officinalis. Common Peony.

Lin. spec. 747. *synt.* 502. *Reich.* 2. 609. *hort.*

cliff. 212. *hort. upf.* 149. *mat. med.* 137. *Sauv.*

monsp. 307. *Scop. carn.* n. 650. *Pall. roff.*

93. *Krock. files.* n. 830. *Villars dauph.* 3.

701. *Thunb. jap.* 230. *Lour. cochinch.* 343.

Regn. bot. Mill. illustr.

α. P. offic. feminea. *Lin. spec.*

P. foeminea. *Mill. dict.* n. 2. *Kniph. cent.* 6. n. 69.

Knorr. del. 1. t. R. 3. & t. R. 2.

P. communis vel foemina. *Baub. pin.* 323.

P. foemina. *Fuchs. hist.* 202. *Lob. ic.* 602. 1.

Matth. 915. *Cam. epit.* 656. *Ger.* 830. 2. *emac.*

981. 2, 3. *Raii hist.* 694. *Blackw. t.* 65.—vulgaris.

Park. theat. 1380. *parad.* 341. t. 343. f. 3, 4.

P. rubra flore simplici. *Best. eyf. vern. ord.* 6. t. 15.

& t. 10. f. 1. & t. 12. f. 1.

P. radice glandulosa, foliis duplicato-pinnatis, pinnis ellipticis & trilobis. *Hall. helv.* n. 1187.

β. P. offic. mascula. *Lin. spec.*

P. mascula. *Mill. dict.* n. 1.

P. mas. *Lob. ic.* 684. *Matth.* 914. *Ger.* 830. 1.

emac. 980. *Park. parad.* 341. t. 343. f. 1. *theat.*

1381. *Raii hist.* 693.

P. folio nigricante splendido, quæ mas. *Baub. pin.* 323.

P. foliis lobatis ex ovato-lanceolatis. *Hall. helv. ed.* 1. 311. *ed.* 2. vol. 2. p. 82.

γ. P. peregrina. *Mill. dict.* n. 3.

P. peregr. flore saturæ rubente. *Baub. pin.* 324. *Raii hist.* 696.

P. foemina byzantina. *Park. parad.* 342. n. 6. t. 343. f. 2.

P. byzantina. *Ger. emac.* 982. f. 7. *Clus. hist.* 279.

δ. P. hirsuta. *Mill. dict.* n. 4.

P. foemina flore pleno rubro majore. *Baub. pin.* 324.

P. foem. multiplex. *Ger.* 831. 3. *emac.* 981. 3.

P. foem. vulgaris flore pleno purpureo. *Park. theat.* 1380.—rubro. *Park. parad.* 341. n. 3.

P. flore pleno rubro. *Baub. hist.* *Raii hist.* 696.

ε. P. tatarica. *Mill. dict.* n. 5. fig. t. 199.

ζ. P. lusitanica. *Mill. dict.* n. 6.

P. lusit. flore simplici odoro. *Juss.*

Leaves doubly-pinnate sublobed, leaflets oblong, veined underneath.

[3. Pæonia laciniata. Jagged-leaved Peony.

Pallas roff. 93. t. 85. (sibirica).

P. anomala. *Lin. synt.* 502. *Reich.* 2. 609. *mant.* 247. *Gmel. fib.* 4. 184. n. 14. t. 72.

Leaves biternate, leaflets acutely laciniate, germs smooth.

4. Pæonia hybrida. Mule Peony.

Pallas roff. 94. t. 86.

Leaves ternate-multifid, segments linear, germs three pubescent.

5. Pæonia tenuifolia. Slender-leaved Peony.

Lin. spec. 748. *synt.* 502. *Reich.* 2. 610. *dec.* 9.

t. 5. *Gmel. fib.* 4. 185. n. 15. t. 73. *Pallas*

roff. 95. t. 87. *Zinn. goett.* 127. *Gartn. fruct.*

1. 309.

Leaflets linear many-parted, germs two tomentose.

DESCRIPTIONS, &c.

1. Root brown, composed of a few cylindrical or fusiform tubers, a span in length, united at top; the flesh white with little taste. Stem, from a radical leafless sheath, two feet high, the thickness of a reed, slender, round, with scarcely conspicuous grooves descending from each petiole down both sides, green tinged with red, naked at bottom. Leaves alternate on long round petioles, channelled above. Leaflets three-parted; segments ovate-lanceolate, the middle one simple, the middle of the lateral ones three-parted

or two-parted, the outer ones (only in the lowest leaves) bifid. The highest leaf except one has the lateral leaflets simple, and the middle one three-parted; the upper or floral leaf is simply three-parted. The whole plant is very smooth, and shining. The stem in the Daurian plant is often three-flowered, with the axils of the upper leaves putting forth long fastigate peduncles. The calyx is raised above the floral leaf on a very short thick peduncle, and is four-leaved; the two outer leaflets narrow, green, acuminate; the two inner broad-concave, subacuminate, pale red. Petals eight, very large, milk white, oval, concave. Stamens about one hundred and fifty, with the filaments as well as anthers yellow. Anthers oblong, erect, four-grooved. Within the stamens is a fungose, subcontinuous, lobed crown, more slender than in its congeners. The germs are quite smooth, shining, conical, purple at the tip. The stigma is compressed into a comb or crest, and is suborbicularly hooked. Seeds when ripe of a yellowish testaceous colour, and oval-globular.

It differs from the common Peony (*P. officinalis*) remarkably: 1. in having the stem more slender, rounder, scarcely grooved, more rigid; whereas in *P. officinalis* it is torosely six or seven-grooved; 2. in having the leaves larger, biternate, with broader smoother leaflets, shining very much on both surfaces, undivided, with the veins scarcely prominent underneath; whereas in that the leaves are subtriquinate or triternate, with the primary leaflets bifid, the lateral ones frequently accompanied by a smaller accessory leaflet; 3. in having the floral leaf more remote; 4. in the colour of the flower, and especially the pleasant smell like that of *Narcissus*; 5. in the smoothness of the germs; and 6. in having the root and herb more insipid. It also flowers later.

Native of Siberia. Well known among the Daurians and Mongols on account of the root, which they boil in their broth, and the seeds, which they grind and put into their tea: they call the plant *Dschina*; in Russian it is *Marjin koren bjelyi*.²]

2. α. The roots of the Common or Female Peony are composed of several roundish thick knobs or tubers, which hang below each other, fastened with strings; the stalks are green, about two feet and a half high; the leaves are composed of several unequal lobes, which are variously cut into many segments; they are of a paler green than those of the Male Peony, and are hairy on their under side; the flowers are smaller, and of a deeper purple colour.

[According to Haller, the root is glandular: the leaves firm, shining, pinnate, with the pinnae pinnate in two pairs with an odd one at the end; the pinnales ovate-lanceolate, also half-lobed and half three-lobed confluent with the middle nerve. Stem a foot high, branched.

According to Scopoli, the leaves are decomposed; the leaflets lanceolate, acuminate, sessile, decurrent, acuminate, lobed and simple. The first leaves put forth three petioles, one of which bears one leaf, and the others two; all ovate and blunt. Under the calyx a leaf or two. Petals six or seven. Filament purple. Anthers yellow. Stigmas are brown claws with a yellow margin.]

β. The roots of the common Male Peony are composed of several oblong knobs hanging by strings fastened to the main head. Stems the same height with the preceding. Leaves composed of several ovate lobes, some of which are cut into two or three segments; they are of a lucid green on their upper side, but are hoary on their under. The stems are terminated by large single flowers, composed of five or six large roundish red petals. Germs two, three, and sometimes five, joining at the base, and covered with a whitish hairy down; these afterwards spread asunder, and open longitudinally, exposing the roundish seeds, which are first red, then purple, and when ripe perfectly black. The flowers of both appear in May, and the seeds ripen in the autumn.

[Haller remarks, that this differs from the preceding

² Pallas.

in having the leaves less difform, and the root destitute of glands. It is scarcely necessary to observe that the old names of Male and Female have nothing to do here with the sexes, the flowers of both being hermaphrodite.

Native of several parts of Europe, as Switzerland, Dauphiné, Carniola, Piedmont, Silesia; also of Mount Ida, China and Japan. It was cultivated here in 1562, according to Turner^h.]

Several varieties of the Female Peony with double flowers, differing in size and colour, are cultivated in the English gardens. The Male Peony also varies with pale, and white flowers, and with larger lobes to the leaves.

[These plants also vary much in different countries. Pallas informs us that the native plant of Mount Caucasus differs considerably from that which is cultivated in gardens. Loureiro mentions some varieties in China, and says that there are many others. Of the numerous varieties to be found in old authors I shall set down only those which Mr. Miller has given as species.]

γ. Foreign Peony with a deep-red flower. The roots are composed of roundish knobs, like those of the Female Peony. The leaves also are the same, but of a thicker substance. The stalks do not rise so high. The flowers have a greater number of petals, and appear a little later.—It is a native of the Levant. The large double purple Peony is probably a variety of this.

[Parkinson calls this the single red Peony of Constantinople, and says that the flower has eight leaves, of a deeper red colour than either the single or double Peonies, and not purplish at all, but rather of the colour of an ordinary red Tulipa. The roots have longer clogs, and not so short as the ordinary female kind, and of a paler colour on the outside.

Johnson, in his edition of Gerarde's herbal calls it Turkish Peonie, and says that the seed was sent to Clusius from Constantinople. Clusius informs us, that the corolla has eight, ten or more petals, and that he raised plants of it in 1588.]

δ. Hairy Peony, or Female Peony with a larger double red flower, has also roots like the common female Peony: but the stalks are taller, and of a purplish colour; the leaves are much longer, with spear-shaped entire lobes; the flowers are large, and of a deep-red colour.

ε. Roots composed of oblong fleshy tubers of a pale colour. Stalks about two feet high, pale green. Leaves composed of several lobes, irregular in shape and size, some having six, others eight or ten spear-shaped lobes, some cut into two or three segments, and others entire; they are of a pale green, and downy on their under side. The stalks are terminated by one flower of a bright-red colour, a little less than that of the common female Peony, and having fewer petals. Germs two or three, shorter and whiter than in that. It also flowers somewhat later. The seeds were brought from the Levant, and plants were raised from them both with single and double flowers.

Mr. Miller, in his figures, adds, that some of the leaves are composed of eleven, and others of thirteen lobes; that the two side divisions next the stalk are for the most part composed of three lobes, but the middle one, which is extended in length, is commonly composed of seven lobes; the lobes narrow, smooth and entire, smaller than those of the common sort, and covered with a soft down; that the stalks are seldom more than a foot and half in height: that the germs are generally three, sometimes four or five; and that the capsules are oblong, two or three larger than the others.

ζ. Peony of Portugal with a single sweet flower has not roots composed of roundish tubers, but has two or three long taper forked fangs like fingers. The stalk rises little more than a foot high. The leaves are composed of three or four oval lobes, of a pale colour on their upper side, and hoary underneath. The stalk is terminated by a single flower; which is of

^h Hort. kew.

a bright red colour, smaller than the preceding, and of an agreeable sweet scent. The seeds were sent to the Chelsea garden by the elder Jussieu, who brought them from Portugal, where this plant grows naturally.

[3. Root tuberous, difform, very large, descending by cylindrical processes a span in length, yellowish without, white within, both fresh and dry having a very strong smell and taste of bitter almonds or peach kernels. Root-leaves none, but red, awnless sheaths, whence the stems; which are several, from eighteen to twenty-seven inches in height, the thickness of the little finger, round, very smooth, alternately and frequently leafy above, without any stipules at the petioles. Leaves on a flat petiole channelled above, almost ternate, but with the partial petioles so margined with the leaf running along them, that they may be called tripartite. Leaflets soft, bright green, paler underneath, shining, very smooth; the middle one deeply three-parted, and the middle part of these six times, the lateral ones four times deeply gashed: the side leaflets two-parted, one part six times, the outer five times gashed and slightly two-parted. All the segments of the leaflets long and sharp. The upper leaves towards the flower are gradually larger and less gashed; the last are three-cleft, with the middle segment five-cleft. At the calyx itself are two linear leaflets, bifid or trifid at the tip. Flower nodding a little: the calyx has three lanceolate leaflets, equal to the corolla in length, purple at the base, leafy and reflex at the end; and three inner leaflets ovate-acuminate and concave. Corolla handsome, spreading a little, deep rose-coloured, with a slightly virose smell, six-petalled, in gardens frequently seven-petalled: petals oblong-oval, waved, tender, the outer larger, the inner narrower. Stamens about two hundred and fifty: filaments bristle-shaped, weak, twice as long as the anthers: which are large, erect, oblong, curved a little, longitudinally four-grooved, abounding very much in a pale yellow pollen. Germs three or four, very frequently five, conical, smooth, green, with a sessile crescent-shaped reflex purple stigma. The germ has a crown of about fifteen fungose, white, contiguous, subdidymous glands. Capsules five, coriaceous, smooth, ovate-acute, disposed in a star, in cultivation having frequently one or two accessory ones upright in the middle) when ripe opening at top, and exhibiting several oval-globular seeds, first red and then testaceous-black, which commonly do not germinate till they are a year old.

Native of all Siberia in mountainous woods. In the gardens at Petersburg it flowers sooner than the other species, namely about the end of May. The root dried is used by the Mongols and some Tartars as sauce for their meat: and Boetcher, an army surgeon, found it to be useful in intermittent fevers.

4. This has nearly the stature of the last, and is much taller than the next. Stem the thickness of a finger, obscurely channelled (which it is not in *P. laciniata*), more rigid, naked at bottom, as that is, hence up to the flower leafy, rather more copiously than in the preceding. Petioles above concave-channelled, thicker and stiffer than in *P. laciniata*, trifid. Leaves trichotomous-multifid, linear, the middle trifid, divided into 14—24—14; the lateral ones into 14—22—9, or thereabouts. The uppermost leaves smaller, divided into about eighteen clefts. The floral ones five-cleft and ten-cleft. Calyx sessile: the three outer leaflets ovate at the base, with a leafy linear point, longer than the corolla; the three inner large, oval-conchoid, rounded, with a small, bristle-shaped point: green with the edge and middle purple. Petals seven, large, wide, less oblong than in *P. laciniata*, but of a deeper red colour, between that and *P. tenuifolia*, more coriaceous than in that and of a more globular figure. Stamens thirty to forty or more, with smaller anthers, commonly shrivelling and destitute of pollen. Germs three, conical-convex, pubescent, with crescent-shaped very red stigmas. Petals sometimes bifid. The white fungose glands of the receptacle round the germs are about seventeen, and less contiguous than in *P. laciniata*: the taste is a little more virose than in that.

This plant is supposed to have originated in the botanic garden at Petersburg, from the seeds of *P. tenuifolia* sown in the same bed with *P. laciniata*; and it is conjectured to be a mule between them, since it has not ever produced ripe seeds. It occurs of a much smaller size in some parts of Siberia.

5. Root creeping, putting forth tuberous fibres, with tubercles the size of a hazel nut, white, fleshy, of a bitterish taste. Stem scarcely a foot high, and commonly single, but in the garden eighteen inches high, and several from the same root, but fewer than in *P. laciniata*. Root-leaves none. Stem round, very obscurely grooved, smooth as is the whole plant, naked at bottom, having there only a few sheathing scales. Leaves frequent, alternate, the upper ones gradually less, on a round petiole, channelled above, quinate: leaflets cut into very many narrow segments. The upper leaves simply multifid. Flower sessile at the uppermost leaf, subglobular, accompanied by two leaflets, one multifid, the other simple, both dilated at the base. Calyx five-leaved; leaflets concave-gibbous, two of them exterior and acuminate. Petals eight, spreading, oval, very deep red. Stamens about one hundred and twenty, with pale filaments, and erect, oblong, deep yellow anthers. Germs two or three, conical, villose, with a crested, reflex, vertically flat, rose-coloured stigma. Capsules, in the wild plant, commonly two, in the gardens three, ovate-oblong, tomentose, red, when they open reflex and spreading, coriaceous. Seeds oblong, first yellow, then brown, about six in number, fastened to the opening future¹.

According to Gærtner, the capsules are leguminose, from two to five, ovate, ventricose, beaked, from spreading reflex, pubescent, one-celled, opening by the upper or inner side. Seeds several, oblong-spheroidal, smooth, shining, very dark ferruginous, with a prominent, obliquely truncate, compressed navel at bottom, and a filiform hilum or scar on one side: they are fastened alternately in a double row to each margin of the opening future. The number three is most frequent in the capsules, but in the garden it often mounts to five. But Pallas remarks, that two is the most common number in the wild plant.

Native of Ukraine. Introduced in 1765, by Mr. William Malcolm^{*}.]

PROPAGATION AND CULTURE.

The Male Peony is chiefly propagated for the roots, which are used in medicine; for the flowers being single, do not afford near so much pleasure as those with double flowers, nor will they abide near so long in beauty.

All the sorts with double flowers are preserved in gardens for the beauty of their flowers, which, when intermixed with other large growing plants in the borders of large gardens, will add to the variety; and the flowers are very ornamental in basins or flower-pots, when placed in rooms.

They are all extremely hardy, and will grow in almost any soil or situation, which renders them more valuable; for they will thrive under the shade of trees, and in such places they will continue much longer in beauty.

They are propagated by parting their roots, which multiply very fast. The best season for transplanting them is towards the end of August, or the beginning of September; for if they are removed after their roots have shot out new fibres, they seldom flower strong the succeeding summer.

In parting these roots, always observe to preserve a bud upon the crown of each offset, otherwise they will come to nothing; nor should you divide the roots too small (especially if you have regard to their blowing the following year) for when their offsets are weak, they many times do not flower the succeeding summer, or at least produce but one flower upon each root: but where you would multiply them in quantities, you may divide them as small as you please, provided there be a bud to each offset; but then they should be planted in a nursery-bed for a season or two

¹ Pallas.

^{*} Hort. kew.

to get strength, before they are placed in the flower-garden.

The single sorts may be propagated from seeds (which they generally produce in large quantities, where the flowers are permitted to remain) which should be sown in the autumn soon after they are ripe, upon a bed of light fresh earth, covering them over about half an inch thick with the same light earth. The spring following the plants will come up, when they should be carefully cleared from weeds, and in very dry weather refreshed with water, which will greatly forward their growth. In this bed they should remain two years before they are transplanted, observing in autumn, when the leaves are decayed, to spread some fresh rich earth over the beds about an inch thick, and constantly to keep them clear from weeds.

When you transplant them, (which should be done in september) you must prepare some beds of fresh light earth, which should be dug, and well cleaned from the roots of all noxious weeds; then plant the roots therein six inches asunder, and about three inches deep. In these beds they may remain until they flower, after which they may be transplanted where you design they should grow. It is very probable there may be some varieties obtained from the seeds of these plants, as is common in most other flowers; so that those which produce beautiful flowers, may be placed in the flower-garden, but such as continue single or ill-coloured, may be planted in beds to propagate for medicinal use.

The variety from Portugal requires a lighter soil and a warmer situation. The flowers though single are very sweet, which renders this worthy of a place in every good garden.

[PAGAPATE. See *Sonneratia*.

PAINA-SCHYLLI. See *Acanthus*.

PAIANELLI. See *Bignonia*.

PAINTED LADY PEA. See *Lathyrus*.

PAIPARÆA. See *Grewia*.

PALAVIA. (Named in honour of Don Antonio Palau, an eminent Botanist, and a Professor at Madrid.)

Lin. gen. Schreb. n. 1130. Palava. Cavan. diff. 1. 40. t. 11. Juss. 271.

Class. 16. 6. Monadelphia Polyandria.

Nat. order of *Columniferae*. *Malvaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, half-five-cleft, permanent.

COR. *Petals* five, roundish, inserted into the base of the tube of stamens.

STAM. *Filaments* very many, united below into a tube, in the top of the tube free. *Anthems* roundish.

PIST. *Germ* globular. *Style* many-cleft at top, short. *Stigmas* capitate.

PER. *Capsule* roundish, many-celled: cells not opening, placed in a ball on the elevated central receptacle.

SEEDS solitary, roundish, angular.

ESSENTIAL CHARACTER.

Cal. half-five-cleft. Style many-cleft. Caps. many-celled: cells in a ball on the raised central receptacle.

SPECIES.

1. *Palavia malvifolia*.

Cavanilles, diff. 1. p. 40. t. 11. f. 4.

With smooth cordate leaves, either obtusely and deeply crenated, or lobed.

2. *Palavia moschata*.

Cavan. diff. 1. p. 41. t. 11. f. 5.

With tomentose cordate and ovate-crenated leaves.

DESCRIPTIONS, &c.

1. This is an annual, with red, declinate, very branchy stems, scarce a palm long; leaves sublobate, smooth, alternate, with footstalks almost their own length: stipules small blackish, lanceolate, and hispid. Flowers on long single peduncles, which are red, and shorter than the leaves. Corolla rose-coloured.

It is a native of sandy places at Lima in Peru, where it was first observed by Dombey: it flowers in that region in july, august, and september.

2. This, which is the *Sida moschata* of Dombey, is also an annual; growing in sandy places in the neighbourhood of Lima, where it was also first observed by Dombey. The whole plant is downy, and has a musky smell. The stem is upright, branchy, and two feet high: leaves somewhat wrinkled, cordate-ovate, sublobate, or obtusely and widely crenated; they stand alternate. Stipules small, lanceolate, and blackish. Flowers solitary, axillary, and pedunculated: peduncles jointed, and longer than the leaves. Flowers large and of a yellowish purple.

PALEGA PAIANELLI. See *Bignonia*.

PALICOUREA. See *Stephanium*.

PALILIA. See *Heliconia*.

PALIURO AFFINIS. See *Pisonia* and *Volkameria*.

PALIURUS. See *Rhamnus*.

PALLASIA. (So named by Mons. L'Heritier, in honour of Peter Simon Pallas, M. D. Knight of the order of Wladimir, and member of the Imperial Academy of Sciences at Petersburg.)

L'Herit. stirp. nov. 2. Hort. kew. 3. 498.

Class. 19. 3. Syngenesia Polygamia Frustranea.

Nat. order of *Compositae Oppositifoliae*. *Corymbiferae*, Juss.

GENERIC CHARACTER.

CAL. Common imbricate, many-leaved, permanent; leaflets lanceolate, rather acute, flattish, spreading; the interior ones longer.

COR. Compound radiate. Corollules hermaphrodite in the elongated disk numerous. Females about ten in the ray.

Proper in the hermaphrodites long-funnel-form; border five-cleft; divisions lanced, revolute. Female strap-shaped, unequally bifid, trifid, or quadrifid: divisions wide, reflex.

STAM. in the hermaphrodites, Filaments five, capillary, very short. Anther cylindric, tubular, five-toothed.

PIST. Germ inferior, compressed, wedge-shaped, ciliated at the tip and sides. Style filiform, the length of the stamens. Stigma bifid, thickish.

In the females, Germ as in the hermaphrodites. Style none. Stigma none.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites solitary, wedge-shaped, flat-compressed, two-horned, silky.

In the females none.

REC. convex, punctate-tuberculated, chaffy; chaffs concave, acute, shorter than the flower.

ESSENTIAL CHARACTER.

Receptacle chaffy. Down none. Seeds vertical, flat, margin-ciliated. Calyx imbricate.

SPECIES.

1. *Pallasia halimifolia*.

Hort. kewens. 3. p. 498.

Coreopsis limensis. Jacq. ic. vol. 3.

DESCRIPTION, &c.

This is a shrubby plant of about two feet high; the stem is round, downy, of the thickness of a quill or more, and branchy. The leaves are alternate, footstalked, obtuse or a little acute, widely ovate, subtrinnervate, very entire or else obscurely denticulated, downy on both sides, and whitish: footstalks terminal, elongated, upright, round, villose and subdivided. The ray of the corolla is of a deep yellow. The corollules of the disk yellow. The anthers red. The stigmas yellow. The exterior chaffs are greenish; the interior which are harsh, are whitish. The seeds are blackish with white cilia.

Professor Jacquin, who has described this plant in his work entitled Ic. plant. rar. thinks it clearly to be a species of *Coreopsis*.

It is a native of Lima in Peru.

PALLASIA. See *Calligonum* and *Crypsis*.

PALMA and PALM TREE. See *Arecà*, *Baëtris*, *Borassus*, *Caryota*, *Chamerops*, *Cocos*, *Corypha*, *Cycas*, *Dracena*, *Eleis*, *Elate*, *Licuala*, *Mauritia*, *Nipa*, *Phoenix*, *Rhapis*, *Thrinax*, *Zamia*.

PALMATA and PALMA CHRISTI. See *Orchis* and *Ricinus*.

PALMETTO. See *Chamerops*.

PALMIFOLIA. See *Zamia*.

PALMIS AFFINIS. See *Grias*.

PALMJUNCUS. See *Calamus* and *Flagellaria*.
PAL-MODECCA. See *Convolvulus*.
PALQUE. See *Ginannia*.
PALUDAPIUM. See *Apium*.
PANACES. See *Aralia*, *Heracleum*, *Laserpitium*.
PANAMBU-VALLI. See *Flagellaria*.
PANAM-PALCA. See *Myristica*.]
PANAX. (Πανάξ of Theophrastus and Dioscorides.
 Panaces of Pliny. From παν all, and αἶος a medicine.
 Whence our term Panacea, for a medicine pretended to cure
 all diseases.)
 Lin. gen. n. 1166. Reich. n. 1280. Schreb. n. 1604.
 Juss. 218. Araliastrum. Vaill. 6. Aureliana.
 Lafitau. Ninsî. Breyn. diff. Panacea. Mitch.
 26.
 Class. 23. 2. Polygamia Dioecia. Pentandria Digynia.
 Swartz.
 Nat. order of *Hederaceæ*. *Araliæ*, Juss.

GENERIC CHARACTER.

* Hermaphrodite flowers.

CAL. Umbel simple, equal, clustered.
Involucre many-leaved, awl-shaped, very small, per-
 manent.
Perianth proper, very small, five-toothed, permanent.
COR. Universal uniform. Proper, of five oblong equal
 recurved petals.
STAM. Filaments five, very short, caducous. Anthers
 simple.
PIST. Germ roundish, inferior. Styles two, small, up-
 right. Stigmas simple.
PER. Berry cordate, umbilicate, two-celled.
SEEDS solitary, cordate, acute, plano-convex.

* Male flowers on a distinct plant.

CAL. Umbel simple, globular; with very many equal co-
 loured rays.
Involucre composed of lanceolate sessile leaflets, the
 same number with the external rays.
Perianth turbinate, quite entire, coloured.
COR. Petals five, oblong, blunt, narrow, reflex, placed
 on the perianth.
STAM. Filaments five, filiform, longer, inserted into the
 perianth. Anthers simple.

ESSENTIAL CHARACTER.

Umbel. Cor. five-petalled. Stam. five.
 HERM. Cal. five-toothed, superior. Styles two. Berry
 two-seeded.
 MALE. Cal. entire.

SPECIES.

1. *Panax quinquefolia*. Ginseng.
 Lin. spec. 1512. Reich. 4. 362. mat. med. 222.
 Woodv. med. bot. 270. t. 99. Gron. virg. 147.
 Kalm. it. 3. 334. ed. angl. 114. Blackw. t. 513.
 Regn. bot.
 Aureliana canadensis. Lafit. gins. 51. t. 1. & mem.
 par. 1718. 42. Catesb. car. 3. t. 16. Breyn. prodr.
 pl. 2. p. 35. fig. ad p. 52.
 Araliastrum quinquefolii folio majus, Ninsin vocatum.
 Vaill. sex. 43.
 A. foliis ternis quinquepartitis, Ginseng f. Ninsin offi-
 cinarum. Trew Ebret. t. 6. f. 1.
 Ginseng. Pharm. Raii hist. 1338. — Chinenfibus.
 Jartoux in Philos. Transf. 28. 237. Charlevoix, 4.
 308. t. 13. & 5. 24.
 Leaves tern quinate.
- [2. *Panax attenuata*.
 Swartz prodr. 54. descr. 562.
 Leaves ternate or quinate, leaflets ovate attenuated cre-
 nate, trunk arborecent.]
3. *Panax trifolia*. Three-leaved Panax.
 Lin. spec. 1512. Reich. 4. 362. Gron. virg. 35.
 Araliastrum fragariæ folio minus. Vaill. sex. 43.
 A. foliis ternis tripartitis & quadripartitis. Trew Ebret.
 t. 6. f. 2.
 Nasturtium marianum, &c. Pluk. mant. t. 435. f. 7.
 Leaves tern ternate.
- [4. *Panax aculeata*. Prickly Panax.
 L'Herit. stirp. nov. tom. 2. t. 99. Ait. hort. kew. 3.
 448.
 Zanthoxylum trifoliatum. Lin. spec. 1455. Reich. 4.
 248.

- Leaves ternate, the uppermost next the flowers crowded
 and simple, petioles and branchlets prickly, stem shrubby.
5. *Panax spinosa*. Thorny Panax.
 Lin. syst. 920. suppl. 441.
 Leaves quinate alternate, spines solitary below the branches,
 umbels lateral.
 6. *Panax arborea*. Tree Panax.
 Lin. syst. 920. suppl. 441. Forst. flor. austral. n. 398.
 Leaves septenate (quinate-obovate serrate-toothed, Forst.)
 umbels compound.
 7. *Panax chrysophylla*. Golden-leaved Panax.
 Vahl ecl. 33.
 P. morotoni. Aubl. guian. 949. t. 360.
 Jacaranda arbor polyphylla maxime procera. Barrère
 franc. equin. 61.
 Leaves in sevens and nines, leaflets lanceolate quite entire
 tomentose underneath, umbels paniced.
 8. *Panax fruticosa*. Shrubby Panax.
 Lin. spec. 1513. Reich. 4. 363. Lour. cochinch. 656.
 Scutellaria tertia. Rumph. amb. 4. 78. t. 33.
 Leaves superdecompound tooth-ciliate, stem shrubby.
 9. *Panax simplex*. Simple-leaved Panax.
 Forst. flor. austral. n. 399.
 Leaves alternate lanceolate serrate, umbels compound.]

DESCRIPTIONS, &c.

1. Ginseng has a fleshy taper root as large as a
 man's finger, jointed, and frequently divided into two
 branches, [sending off many short slender fibres.] The
 stalk rises near a foot and half high, and is naked at
 the top, where it generally divides into three smaller
 footstalks, each sustaining a leaf composed of five
 spear-shaped leaflets, serrate, pale green and a little
 hairy. [The stalk is erect, smooth, round, simple,
 tinged of a deep purple colour. The leaves arise with
 the flower-stem from a thick joint at the extremity
 of the stalk: they are generally three, but sometimes
 more, the five leaves into which each of these are di-
 vided are of an irregular oval shape, veined, pointed,
 smooth, deep green above, on short footstalks, from
 a common petiole, which is long, round and almost
 erect.] The flowers grow on a slender peduncle just
 at the division of the petioles, and are formed into a
 small umbel at the top; they are of an herbaceous
 yellow colour, and appear at the beginning of june.
 The berries are first green, but afterwards turn red;
 and inclose two hard seeds, which ripen in the begin-
 ning of august.

[Linneus remarks, that the seeds produce a ternate
 leaf, without any seed-leaves, like the monocotyledonous
 plants. Bernard Jussieu sometimes observed three styles
 in the flower, and three seeds.]

Ginseng is a native of Chinese Tartary, from 39 to
 49° of latitude, and also of North America. It is very
 abundant in Canada, in plain parts of the woods; is
 fond of shade, of a deep rich mould, and of land which
 is neither wet nor high. It flowers in may and june,
 and the berries are ripe at the end of august. It is not
 common every where, for in some parts it is not to be
 found for several miles, but in those spots where it
 grows, it is always in great abundance^p. Mr. Cutler
 says that it grows plentifully in New England, and some
 of the neighbouring states^q; and Bartram found it in
 Virginia. It has never been found far north of Mon-
 treal^r. Ginseng has been gathered time immemorial
 in Chinese Tartary. In 1709 the Emperor of China
 gave orders to ten thousand Tartars to go in quest of
 these roots, and to bring as much as they could find;
 every one was to give two pounds of the best to the
 Emperor, and to sell the rest for the same weight of
 fine silver. In this manner the Emperor procured
 twenty thousand katye or Chinese pounds in one years.
 Mons. Sarrafin had before this, namely in 1704, trans-
 mitted specimens of it from Canada to Paris^t. In
 1740, it was introduced here by Peter Collinson, Esq.^u
 In 1748 a pound of Ginseng roots was sold at Quebec
 for six livres, but the common price was five livres.
 About this time the trade which the French carried on

^p The additions are from Woodville.

^q Kalm.

^r Mem. amer. acad. 1.

^s Kalm.

^t Osbeck, 1. 224. engl. edit.

^u Mem. par. for 1718. p. 44.

^v Hort. kew.

with it was very brisk. They gathered great quantities, and sent it to France, whence it was exported to China, and sold there to great advantage at the first outset, but its price afterwards fell considerably, probably by overstocking the Chinese, or because the Chinese discovered or fancied the American Ginseng to be inferior to theirs. The Indians collect the roots in the woods, and sell them to the merchants, who spread them on the floor to dry, for two months or more, according to the season, turning them once or twice every day^x.

Osbeck informs us that the Chinese hang the American roots over a boiling pot, that they may sweat: and dry them afterwards. They are said to dip their own roots in a decoction of the leaves of the plant. Theirs are almost transparent, and look like horn within; the best are heavy and compact in the inside^y.

Others say that the Chinese after having washed the roots, soak them in a decoction of rice or millet-seed, and then expose them to the steam of the liquor, by which they acquire their firmness and clearness.

The Chinese name of *Yan-sam* or *Yansom*, and the American of *Garantouges* or *Garangtosing*, are both derived from the fancied resemblance which the branching root bears to the human figure. The Tartars call it *Orbota*, the most noble or Queen of plants.

Both they and the Chinese ascribe extraordinary virtues to this root, and have long considered it as a sovereign remedy in almost all diseases to which they are liable, having no confidence in any medicine, unless in combination with it. Osbeck says, that he never looked into the apothecaries shops, but they were always selling Ginseng, that both poor people and those of the highest rank made use of it, and that they boil half an ounce in their tea or soup every morning, as a remedy for a consumption and other diseases. Jartoux relates, that the most eminent physicians in China have written volumes on the medicinal powers of this plant, asserting that it gives immediate relief in extreme fatigue, either of body or mind, that it dissolves pituitous humours and renders respiration easy, strengthens the stomach, promotes appetite, stops vomitings, removes hysterical, hypochondriacal and all nervous affections, giving a vigorous tone of body even in extreme old age. Jartoux himself was so biassed by eastern prejudice in favour of Ginseng, that he seems to give their extravagant effects full credit, and confirms them in some measure from his own experience^z. The French in Canada use this root for curing the asthma, as a stomachic, and to promote fertility in women^a.

After all, our physicians say that we have no proofs of the efficacy of Ginseng in Europe, and that from its sensible qualities it seems to possess very little power as a medicine^b. This is no proof, that, after all due allowances are made for popular prejudice, it may not be a good medicine in many cases, in those countries where it grows naturally.—It is commonly used in decoction; a dram of the root being long boiled in a sufficient quantity of water for one dose^c.

The dried root, as imported here, is scarcely the thickness of the little finger, about three or four inches long, frequently forked, transversely wrinkled, of a horny texture, both within and without of a yellowish white colour. To the taste it discovers a mucilaginous sweetness, approaching to that of liquorice, accompanied with some degree of bitterishness, and a slight aromatic warmth, with little or no smell. It is far sweeter and of a more grateful smell than the roots of Fennel, to which it has by some been supposed similar; and differs likewise remarkably from those roots, in the nature and pharmaceutic properties of its active principles; the sweet matter of the Ginseng being preserved entire in the watery as well as the spirituous extract, whereas that of Fennel roots is destroyed or dissipated in the inspissation of the watery tincture. The slight aromatic impregnation of the Ginseng is likewise in good measure retained in the watery extract, and perfectly in the spirituous^d.

^x Kalm.

^y Idem.

^z Philos. trans. vol. 28. p. 239.

^a Kalm.

^b Woodville.

^c Idem.

^d Lewis, mat. med. and Woodville.

Father Loureiro doubts whether the American Ginseng be the same with the precious *Gin sem* of the Chinese. He procured seeds from Tartary, but unfortunately on being sowed they did not germinate. In the Chinese herbariums and figures the plant appears to have quinate leaves, not tern, on long scattered petioles; the leaflets broad-lanceolate and quite entire: the flowers reddish, in a terminating umbel: the fruit containing seven or eight, roundish, umbilicated seeds, a little larger than a pepper-corn, brown and of a horny substance. Loureiro asserts that the efficacy of the Chinese root is very different from that of Canada, that the latter is therefore sold cheaper, and that the shape is so different that neither medical practitioners nor merchants can mistake them.—If therefore our physicians have only used the root which comes from Canada, they have not given the Ginseng a fair trial. Loureiro adds, that *Sium Ninsi* is quite a different plant, and not esteemed.

2. This is a small tree, with round, smooth, unarmed branches. Leaves scattered, alternate, petioled, quinate, very seldom ternate, and still more seldom septenate. Common petioles round, smooth, longer than the leaves, a foot long, sheathing at the base: sheaths half embracing, within the base of the petiole above free and acuminate. Leaflets also petioled, broad-ovate, drawn to a very long point at the end, remotely notched, flat, nerved, veined, very smooth on both sides, paler underneath, somewhat rigid. Petiolets two inches long, smooth and even. Umbels terminating, five-parted, compound, on a very short common peduncle: partial peduncles very long, like racemes; somewhat verticilled or scattered, terminated by eight-rayed umbellets. The last pedicels are half an inch long and one-flowered. Universal involucre scarcely any, but small acute leaflets under the division of the pedicels and deciduous: partial involucre very minute, five-toothed. Flowers hermaphrodite all fertile. Calyx pitcher-shaped, five-toothed, teeth extremely minute. Petals ovate, acute, caducous. Filaments inserted at the edge of the calyx. Anthers ovate, twin, yellow. Germ inferior compressed. Style short, thickish, the length of the stamens, bifid at the top, seldom trifid. Stigmas simple, very short. Fruit a Berry? crowned with the calyx, roundish, compressed, smooth, two-celled or sometimes three-celled. Seeds solitary. Allied very nearly to *P. arboreum*.

Native of the West Indies; in Guadaloupe, and St. Christopher's^e.]

3. Stem single, not more than five inches high, dividing into three foot-stalks, each sustaining a trifoliate leaf, with the leaflets longer, narrower, and more deeply indented on their edges than in the first species. The flower-stalk rises, as in that, from the divisions of the petiole.

Native of North America. Mr. Miller had a single plant of it from Maryland, which he lost by drought before it flowered.

[It is so nearly allied to the first sort, that Linneus doubts whether it be any thing more than a variety of that, only much smaller.

4. This is a shrub with a recurved prickly at the base and at the tip of the petioles. Leaves solitary, ternate, tern at the flowers: with ovate, blunt leaflets. Umbels peduncled, hemispherical, simple. Flowers with three styles.

Native of China^f. Cultivated in 1773, by John Fothergill, M.D.^g

5. Spines stout, very straight, spreading, instead of a leaf, below the abbreviated shoots of the branchlets. The shoots consist of three or four leaves without a branchlet, and among these leaves is a filiform peduncle with a simple umbel; and small white flowers. Leaves wedge-form, produced at the tip, serrate; the lower ones shorter.

Native of Japan, where it was found by Thunberg^h. It is not mentioned in the *Flora Japonica*, or in his Travels.

^e Swartz.

^f Linn. spec.

^g Hort. kew.

^h Linn. suppl.

6. Leaves petioled, digitate. Leaflets seven, of different sizes, oblong, serrate, very smooth and shining. Umbel large, with elongated rays, not simple as in *P. quinquefolium*.—Native of New Zealand¹.

7. This is a lofty tree, with branches the thickness of the thumb at top; these, the leaves underneath, the younger petioles, the branches of the panicle, the calyxes and petals on the outside, are all covered with a fine golden cottony down. Leaves alternate, compound. Leaflets umbelled: the younger ones from three to seven inches in length, the lateral ones gradually less, drawn to a point at each end, especially on the outside, acute, flat, firm, obscurely veined, of a shining golden colour underneath, as in *Chrysophyllum Cainito*, smooth and even above: the full-grown ones a foot long, ovate at the base, nerved, obscurely veined, subcoriaceous, even, glaucescent underneath towards the edge, with a somewhat unequal repand edge, very much attenuated. Petioles round; those of the more advanced leaves a foot long, widening at the base: the partial ones three inches long: both smooth: those of the younger leaves shorter. Panicle terminating, large, diffused: the two lowest branches opposite; the rest, as also the branchlets and peduncles of the umbels, alternate, round. Bractes concave: the lowest on the branches half an inch long and trifid; the lateral segments shorter, lanceolate, the middle one awl-shaped and elongated: of the other branches ovate, small, three-toothed: those on the branchlets minute, ovate, acute, entire. Umbels peduncled: rays commonly eight, sometimes but seldom from nine to thirteen, a quarter of an inch in length, and spreading very much. Involucre, a scalelet at the base of each ray, minute, ovate. Flowers small. Calyx only a very short superior rim, obscurely five-toothed. Petals ovate, acute, a little thicker at the edge, having a longitudinal raised line along the middle of the upper surface, spreading a little at the tip. Nectary, a very short rim, between the petals and the base of the styles, somewhat fleshy. Filaments scarcely any except a very short process from the edge of the nectary. Anthers ovate, half the length of the petals, convex at the back, curved within, terminated by a short point at the tip, visible only with a microscope. Germ roundish, compressed a little at the base. Styles two, very rarely three, linear, thickish, erect, converging, the length of the anthers, permanent. Stigma sharp. Berry compressed, roundish, greater in breadth than length, scarcely cordate at the base, umbilicate, crowned with the two styles bent back, commonly two-celled, very seldom three-celled, triangular. Seed one in each cell adhering to the axis, compressed, nearly semiorbulate, with a cartilaginous shell or cover.

Found by Aublet in Guiana, and Ryan in the island of Trinidad².

8. This is an upright shrub, six feet high, with a thick, juicy, unarmed stem, and oblique branches. Leaves bipinnate, with an odd one: leaflets lacinate-serrate, smooth: primary petioles long, swelling at the base, embracing, purple, even. Flowers red and green, terminating, in a diffused panicle, ending in umbels, on a long, purple, striated peduncle. Calyx cup-shaped, with a very small five-toothed border. Petals oblong, acute, thick, grooved, revolute, sometimes six. Filaments five, (sometimes six) placed on the calyx, shorter than the corolla. Anthers oblong, two-celled, incumbent, before the flower expands inclosed in the grooves of the petals. Germ ovate. Style none. Stigmas three, oblong, erect. Berry calycine, roundish, three-celled, with a few roundish seeds³.—Loureiro did not find any male flower.

According to Linneus, the leaves are bipinnate or tripinnate, with lanceolate, unequal, serrate-ciliate, even leaflets. Peduncle irregularly branched, or dichotomous or brachiate. Umbellets almost naked. Berries two-styled, two-seeded. Seeds somewhat compressed, grooved.

Native of the island of Ternate. Cultivated in China and Cochinchina; where the root and leaves are used in medicine. The plant has a strong smell

¹ Linn. suppl.

² Vahl.

³ Loureiro.

and penetrating taste. It is reputed to be diuretic, and to be of service in the dropsy, dysury, gonorrhæa, &c.^m

9. Native of New Zealandⁿ.]

PROPAGATION AND CULTURE.

1. The Ginseng has been introduced into the English gardens from America, and where it has been planted in a shady situation and a light soil, and the plants have thriven and produced flowers, and ripened their seeds annually, but not one of these seeds have grown. I have sown them several years soon after they were ripe without any success; I have also sown the seeds from America several times in various situations, and have not raised a single plant: and by the accounts which the missionaries have sent from China, it appears that they have had no better success with the seeds of this plant; so that I believe there is a necessity for the hermaphrodite plants to have some male plants near them, to render the seeds prolific; for all those plants which I have seen, or saved seeds from, had hermaphrodite flowers; and though the seeds seemed to ripen perfectly, yet their not growing, though I have waited three years without disturbing the ground, confirms me in the opinion.

[This account agrees with that of Loureiro given above; and shows that the flowers which are apparently hermaphrodite are imperfect. It is a strong confirmation of the sexual system, and would be a proper subject of experiment in the countries where this plant grows naturally. Other species seem to have no male flowers, but perfect hermaphrodites only, and therefore belong to the class Pentandria; where Swartz has placed the genus. These plants are very nearly allied to the *Umbellatae*, which have commonly imperfect flowers mixed with the perfect ones, but on the same plants, and in the same umbel.

Kalm says, that the American Ginseng bears transplanting very well, and will soon thrive in its new ground: and that he was told, that the seeds lie one or two years in the ground before they come up.

PANAX. See *Ferula*, *Heracleum*, *Laserpitium*, *Pastinaca*, *Thapsia*.]

PANACRATIUM (of Pliny. Πανκρατίον of Dioscorides. From παν, all, and κρατος power: an herb of every virtue.)

Lin. gen. n. 404. Reich. n. 437. Schreb. n. 551.

Juss. 55. Dill. elth. 221. f. 289.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Spathaceae*.—*Narcissi*, Juss. *Lilia*, Roy.

GENERIC CHARACTER.

CAL. *Spathe* oblong, obtuse, compressed, opening on the flat side, shrivelling.

COR. *Petals* six, lanceolate, flat, inserted into the tube of the nectary on the outside above the base.

Nectary one-leaved, cylindric-funnel-form, coloured at top, with the mouth spreading and twelve-cleft.

STAM. *Filaments* six, awl-shaped, inserted into the tips of the nectary, and longer than they are. *Anthers* oblong, incumbent.

PIST. *Germ* bluntly three-cornered, inferior. *Style* filiform, longer than the stamens. *Stigma* blunt.

PER. *Capsule* roundish, three-sided, three-celled, three-valved.

SEEDS several, globular.

ESSENTIAL CHARACTER.

Petals six. *Nect.* twelve-cleft. *Stam.* placed on the nectary.

SPECIES.

1. *Panocratium zeylanicum*. *Ceyloneze Panocratium*.

Lin. spec. 417. Syst. 317. Reich. 2. 21. fl. zeyl. n. 126.

Narcissus zeylanicus, flore albo hexagono odorato.

Herm. lugdb. 691. t. 693. Comm. hort. 1. 75. t. 38.

Rudb. elyf. 2. 179. f. 7. Raii hist. 1904.

Lilium indicum. Rumph. amb. 6. 161. t. 70. f. 2.

Catulli-pola. Rheed. mal. 11. t. 40.

Spathe one-flowered, *petals* reflex.

^m Idem.

ⁿ Forster.

- [2. *Pancratium mexicanum*. *Mexican Pancratium*.
Lin. spec. 418. *Reich.* 2. 22. *hort. cliff.* 133.
Dill. elth. 299. t. 222. f. 289.
Spathe two-flowered.]
3. *Pancratium caribæum*. *Caribbean Pancratium*.
Lin. spec. 418. *Reich.* 2. 22. *hort. cliff.* 133.
Brown. jam. 194. n. 1. *Comm. hort.* 2. 173.
t. 87. *Sloan. jam.* 1. 244. *Mart. cent.* 3. t. 27.
(Narcissus).
Spathe many-flowered, leaves lanceolate, segments of the corolla linear and longer than the tube.
4. *Pancratium maritimum*. *Sea Pancratium*.
Lin. spec. 418. *syft.* 317. *Reich.* 2. 22. *Mill. fig.*
132. t. 197. *Cavan. hisp.* 41. t. 56. *Ger.* 136. 2.
emac. 172.
P. monspessulanum, *Scilla alba parva*. *Baub. hist.* 2.
611.
Narcissus maritimus. *Baub. pin.* 54. *Raii hist.* 1140.
Pseudonarcissus marinus albus, *Pancratium vulgo*.
Park. parad. 106.
Lilio-narcissus albus maritimus minor. *Mor. hist.* 2.
365. f. 4. t. 10. f. 28.
Hemerocallis valentina. *Clus. hist.* 1. 167.
Spathe many-flowered, petals flat, leaves tongue-shaped.
- [5. *Pancratium declinatum*.
Lin. syft. 318. *Jacqu. amer. pist.* t. 102.
P. amoenum. *Salisb. in Linn. transf.* 2. 71. t. 10.
Spathe many-flowered, scape compressed ancipital, segments of the corollas a little longer than the tube, leaves tongue-shaped.]
6. *Pancratium carolinianum*. *Carolina Pancratium*.
Lin. spec. 418. *Reich.* 2. 22.
Lilio Narcissus polyanthos flore albo. *Catesb. car.* 3.
t. 5.
Spathe many-flowered, leaves linear, stamens the length of the nectary.
7. *Pancratium illyricum*. *Illyrian Pancratium*.
Lin. spec. 418. *syft.* 318. *Reich.* 2. 22.
Narcissus illyricus liliaceus. *Baub. pin.* 55. *Seba thes.* 1. 17. t. 8. f. 1. *Raii hist.* 1140.
N. marinus f. 3. *Matth. Park. parad.* 95. N. 3. *Matth. Ger. emac.* 173.
Lilionarcissus hemerocallidis facie. *Best. eyf. vern.* 3.
t. 16. f. 1.
L. albus maritimus major. *Mor. hist.* 2. 366. f. 4.
t. 10. f. 29.
Spathe many-flowered, leaves ensiform, stamens longer than the nectary.
- [8. *Pancratium littorale*. *Tall Pancratium*.
Lin. syft. 318. *Jacqu. hort.* 3. 41. t. 75. *amer.* 99.
t. 179. f. 94. *pist.* t. 101. *Ait. hort. kew.* 1.
412. *Trew. Ebret.* 6. t. 27. *Salisb. in Linn. transf.* 2. 74. t. 13.
Spathe many-flowered, leaves lanceolate-linear bifarious, segments of the corolla linear shorter than the tube, nectary almost entire.
9. *Pancratium verecundum*. *Narcissus-leaved Pancratium*.
Ait. hort. kew. 2. 412.
Spathe many-flowered, leaves linear, segments of the corolla lanceolate shorter than the tube, the sinuses of the segments of the nectary staminiferous.]
10. *Pancratium amboinense*. *Broad-leaved Pancratium*.
Lin. spec. 419. *syft.* 318. *Reich.* 2. 23. *Comm. hort.* 1. 77. t. 39. *Rudb. elyf.* 2. 238. f. 17.
β. *Pancratium americanum & latifolium*. *Mill. dict.*
n. 7. & 8. *Trew. Ebret.* t. 28.
Cepa fylvestris. *Rumph. amb.* 6. 160. t. 70. f. 1.
Spathe many-flowered, leaves ovate nerved petioled.

DESCRIPTIONS, &c.

[This genus consists of perennial plants with very large bulbous roots, from whence proceed long leaves, some very narrow, others broad, and a strong straight upright scape from one to three feet high, terminated by a large spathe, bursting on one side, and disclosing in some of the species many, in others only one or two white flowers of great elegance and fragrance.]

1. This has a pretty large bulbous root. Leaves long and narrow, of a grayish colour, and pretty thick, standing upright. The stalk rises among them, a foot and half high, naked, sustaining one flower at the top. Nectary large, cut at the brim into many acute seg-

ments. Stamens long, and turning towards each other at their points, in which it differs from the other species. The flower has a very agreeable scent, but is of short duration.

Native of Ceylon. [Cultivated by Mr. Miller in 1739.

2. Stem or scape a long span in height, round, forked towards the top, or dividing into two peduncles, with two oblong tender membranaceous greenish leaflets, and terminated each with a white flower, divided to the very base into six narrow segments; in the middle of these is a white bell-shaped tube, which Linneus names the nectary, more tender than the petals, the mouth angular, and from each angle putting forth a filament, long, slender and white, terminated by an oblong incurved saffron-coloured anther. The flowers have no smell and shrivel up over the fruit. Leaves four, reclining, smooth; pale green and somewhat glaucous, rigid, slightly grooved in the middle, and with a single streak on each side, otherwise veinless, a long span or a little more in length, an inch or an inch and half in width, produced to a point at the end. It flowers in may, from bulbs brought from Mexico°.]

3. Leaves about a foot long and two inches broad, having three longitudinal furrows. The stalk rises about a foot high, then divides like a fork into two small footstalks or rather tubes, which are narrow, green, and at first encompassed by a thin spathe, which withers, and opens to give way to the flowers: these are white and have no scent.

[Native of the West Indies.—Dr. Browne says, it grows wild in most parts of Jamaica, and the other sugar islands, with large leaves and numerous flowers, seldom rising above sixteen or eighteen inches in height.] Dr. Houstoun brought some of the roots from La Vera Cruz; [and it was cultivated by Mr. Miller in 1730^p.

Mr. Salisbury has figured and described a species which he has often received from Barbadoes, and which he suspects may be the same with that of Sloane and Martyn, but different from that of Commelin; which he refers to his *amoenum*, the *declinatum* of Jacquuin. He names it *Pancratium fragrans*, and gives this specific character.—Petioles wide; tube of the corolla six-cornered, not streaked, segments longer than the tube, recurved, linear, alternately more concave, the sinuses of the crown repand-emarginate.—He thus describes it: Plant a foot and half high. Leaves seven to ten, green, bifarious. Petioles sheathing at the base, spreading, half round. The leaves themselves much longer than the petioles, recurved, lanceolate, quite entire, blunt, a little channelled, smooth especially above, fleshy. Flowers very fragrant, from seven to twelve in a bunch. Peduncle (or scape) pale glaucous, among the inner leaves, a little shorter than they, after flowering bent down towards the ground, compressed, ancipital, smooth with a glaucous bloom, slightly streaked, solid. Germ bright green, shortly pedicelled, oval, three-cornered, smooth with the same glaucous bloom. Tube of the corolla very pale green, two inches and an half long, hexangular with the alternate angles narrower, not striated as in the other species: border snow-white, one-fourth longer than the tube, recurved; segments linear, quite entire, bluntly mucronate, the outer ones a little narrower and much more concave: crown snow-white, shorter than the border by two-thirds, funnel-form, more contracted at the base than the tube, repand-emarginate at the sinuses, but sometimes produced into a bifid ligule, somewhat wrinkled, thin, even, shrivelling. Filaments higher than the crown by one-fourth^q.

Mr. Salisbury affirms that Linneus has made up his *P. caribæum* from the doubtful synonyms of Sloane and Martyn, and that of Commelin, which according to him does not belong to this species.—Miller's plant does not seem to be the same with Mr. Salisbury's, and consequently not Martyn's, which is undoubtedly the same with Miller's.]

° Dillenius.

^p Hort. kew.

^q Linn. transf. 2. 72.

4. This has a large, coated, bulbous root, of an oblong form, covered with a dark skin; the leaves are shaped like a tongue; they are more than a foot long, and one inch broad, of a deep green, six or seven of them rising together from the same root, encompassed at bottom with a sheath; between these arises the stalk, which is a foot and half long, naked, sustaining at the top six or eight white flowers, inclosed in a sheath, which withers and opens on the side, to make way for the flowers to come out. The germs are situated close to the top of the stalk, from these arise the tubes of the flowers which are three inches long; they are very narrow, swelling at the top, where the cup or nectarium is situated, on the outside of which are fastened the six segments or petals of the flower; these are narrow, and extend a great length beyond the nectarium; from the border of the nectarium arise six long slender stamina, terminated by oblong summits which are prostrate, and in the centre arises a style the length of the stamina, terminated by an obtuse stigma.

Mr. Miller, in his figures, has added some particulars. The root resembles that of the Squill, but is less, covered with a brown skin, and white within, the coats pellucid and gently striped, viscid or full of a clammy juice, bitter to the taste without acrimony. Leaves seven or eight from full-grown roots, twelve or fourteen inches long, flat, of a gray colour, rounded at the ends. The sheath divides into two parts, which turn back. The nectarium is cut at top into ten segments, which spread open. The long filaments are incumbent on the petals. The seeds are black.

[Linneus remarks, that the petals are lanceolate, with a green line underneath; the three outer hooked inwards at the tip. The angles of the nectary two-parted, acuminate, the length of the filaments, and divaricating to the breadth of the petals. The middle germs of the umbel sessile. Style declining. Filaments bent in.

Cavanilles thus describes it. Bulb subglobular, three inches in diameter, with a brown skin, composed within of thick white coats full of juice. From the base arise many filiform whitish fibres. Scape a foot and half high, cylindric-compressed, very smooth, green, terminated by an umbel of flowers. Leaves linear and channelled, with a blunt back, embracing at the base, from four to seven in number. Spathe deeply bifid, the divisions concave-lanceolate, almost equal, shrivelling; from their centre proceed from seven to twelve rays, separated by very short acute bractes. Corolla superior, funnel-shaped: tube green, round, three or four inches long: border six-cleft; segments white, lanceolate, spreading, with a green dorsal nerve. At the top of the tube and at the origin of the segments there is a subcylindric white body, an inch long, with a spreading, twelve-cleft mouth, supporting the six stamens. Filaments awl-shaped, yellowish, planted between the segments, and running along the inside to the base. Anthers yellow, oblong, twin. Germ inferior, ovate-three-cornered: style simple, filiform, sheathed by the tube of the corolla, a little longer than the stamens, white, scarcely declining: stigma obscurely three-cornered. Capsule ovate-three-cornered, three-celled, three-valved. Seeds compressed, imbricate in three rows round the base of the style.

Native of the South of Europe, as in Spain about Valencia, &c. on the coast; found by Clusius near Montpellier; by Ray near Naples and in Sicily. Cultivated in 1629, by Mr. John Parkinson¹.

Cavanilles remarks, that the leaves are too broad in Miller's figure, as they might well be in a garden specimen: Clusius's small figure observes the proportion of the parts: but that his own is in due size and proportion both. He informs us also from Clusius, that this plant very seldom flowers, when it is removed from its native soil, and then only when the flower is formed in the bulb.

Mr. Salisbury makes not only the *P. maritimum* of Linneus and Cavanilles (whose figure he condemns) synonymous with his *maritimum*; but also the *caroli-*

nianum of Linneus, and the *verecundum* of the Kew catalogue. He describes it as a plant a foot and half in height. Leaves six or seven, bifarious, sheathing at the base, from upright spreading, more or less twisted, linear, quite entire, blunt, smooth on both sides with a glaucous tinge, a little striated, flattish, fleshy. Flowers sweet, from six to ten in a bunch. Peduncle (or scape) pale glaucous, from one side among the leaves, erect, compressed; blunt not ancipital, even. Germ pedicelled, oval, three-cornered. Tube of the corolla pale green, cylindrical, angular at top: border snow-white, a little shorter than the tube, from spreading-recurved: segments from the disk to the middle fastened to the crown, with the sides reflex at bottom, linear-lanceolate, quite entire, bluntly mucronate. Crown (or nectary) snow-white, a little shorter than the border, funnel-shaped, spreading at the tip, grossly two-toothed at the sinuses, even, shrivelling. Filaments very short, scarcely higher than the teeth of the crown, incurved, awl-shaped.

Mr. Salisbury remarks that it seldom flowers when cultivated, which agrees with what was observed above by Cavanilles from Clusius. He gathered it on the sandy coast below Montpellier in 1786².

5. Leaves tongue-shaped, sharp at both ends, quite entire, shining, erect, three feet long, three or four inches wide. Scape the length of the leaves, very much compressed, ancipital, an inch and half wide, green, the whole always prostrate. Spathe twelve-flowered or thereabouts. Flowers sweet, white, sessile, almost half a foot in diameter, with the segments slightly exceeding the tube; nectary an inch long: filaments the length of the corolla³.

Mr. Salisbury, disliking Jacquin's trivial name, because several other species have a *declinate* scape, when in fruit; and also the younger Linneus's, of *excisum*; has given this species the name of *amoenum*, and refers Commelin's figure in t. 87. to this, which Linneus applied to his *caribæum*. According to him, the plant is two feet high. Leaves nine to twelve, green, bifarious, sheathing at the base, recurved, lanceolate, quite entire, bluntish, smooth on both sides, finely streaked, channelled, keeled at the base, fleshy. Flowers fragrant, from ten to fifteen in a bunch. Peduncle (or scape) pale glaucous, among the inner leaves, a little shorter, at first upright, but after flowering bent down, very much compressed and ancipital, smooth with a bloom, a little streaked, solid. Germ bright green, sessile, oval, three-cornered, smooth. Tube of the corolla pale green, two inches and a half long, roundish, thickly streaked: border snow-white, longer by half than the tube, recurved: segments almost equal, linear, quite entire, bluntly mucronate, when expanded equally concave, the sides a little doubled in at the base. Crown snow-white, a little more than two-thirds shorter than the border, funnel-shaped, more contracted at the base than the tube, with the sinuses generally produced into a bifid ligule, somewhat wrinkled, thin, even, shrivelling. Filaments twice as high as the crown⁴.

Probably native of Cayenne. Cultivated in gardens at Martinico⁵.]

6. This has a roundish bulbous root, covered with a light brown skin, from which arise several narrow dark green leaves, about a foot long: among these comes out a thick stalk (scape) about nine inches high, sustaining six or seven white flowers, with very narrow petals, having large bell-shaped nectariums or cups, deeply indented on their brims. The stamens do not rise far above the nectarium.—Mr. Catesby discovered it in moist boggy soils in Georgia.

[Native of Jamaica and Carolina⁶. Cultivated in 1759, by Mr. Miller⁷.—According to Mr. Salisbury, this is not different from *maritimum*.]

7. This has a large bulb, covered with a dark skin, sending out many thick strong fibres, striking deep in the ground. Leaves a foot and half long and two inches broad, of a grayish colour. Scapes thick, succulent, near two feet high. Flowers six or seven,

¹ Linn. trans. 2. 70.

² Jacq. amer.

³ Linn. trans. 2. 71

⁴ Jacquin.

⁵ Linn.

⁶ Hort. kew.

⁷ Hort. kew.

white, shaped like those of *maritimum*, but with a shorter tube, and much longer stamens. It flowers in June, and frequently produces seeds, which ripen in September.

[Linneus observes, that the leaves are the same size with those of the Snow-drop.

Native of the South of Europe. Cultivated in 1615, by Mr. John Parkinson^a.] Mr. Miller says, it grows naturally in Sclavonia and Sicily.

According to Mr. Salisbury, Linneus confounded this with another species, which Jacquin has named *littorale*. Mr. S. names it *stellare*, and applies the synonyms of Miller in his figures and of Clusius which are given to *maritimum*, and of Seba, which is attributed to *illyricum*. He figures it in t. 14. and thus describes it.—Plant a foot high or more. Leaves commonly six, glaucous, bifarious, sheathing at the base underground, from erect-recurved, narrow spatule-shaped, quite entire, blunt, smooth with a bloom, very finely streaked, concave, somewhat succulent. Flowers sweet, from seven to fifteen in a bunch. Peduncle (scape) pale glaucous, among the leaves on one side, solitary, but sometimes a second from a different axil, erect, very much compressed and ancipital, declining when in fruit. Germ pedicelled, oval, triangular. Tube of the corolla pale green, triangular: border white, longer than the tube, spreading very much: segments lanceolate, flattish, the inner narrower. Crown white with a yellow bottom, spreading out handsomely like a star, more contracted at the base than the tube, much shorter than the border, with the sinuses deeply bifid, even, shrivelling. Filaments double the height of the crown or thereabouts.

It grows wild on the sandy coast of the Isle of Ree near Rochelle, according to Morison. It leafs in April, flowers in June, and the leaves wither at the end of August^b.

8. Bulb the size of the fist, Leaves ensiform, quite entire, acute, shining, spreading, deep green, three or four feet long, scarcely an inch and half in breadth, imbricate at the base and distich, embracing each other. Scape two feet high, very much compressed, an inch wide on one side, ancipital, shining, green with a glaucous bloom, axillary, erect or sometimes declining. Spathe ten-flowered or thereabouts. Flowers handsome, spreading, sessile at the top of the scape, having an agreeable aromatic odour. Tube of the corolla pale green, round, slender, slightly widening at the base, eight inches long: border white; divisions linear, channelled, quite entire, spreading very much, three inches long, with the tips more or less thickened and solid. Nectary bell-shaped, crose-emarginate, one-third of the length of the segments of the corolla, spreading, white. Filaments awl-shaped, spreading, green, shining, not exceeding the border of the corolla. Anthers orange-coloured.

Found abundantly on the sandy coast of the island of Tierra Bomba near Carthage, by Nic. Jos. Jacquin^c.

According to Mr. Salisbury it is three feet high or more. Leaves nine to twelve, from erect-recurved, linear-lanceolate; bluntish, smooth on both sides, convex, keeled towards the base, fleshy. From seven to ten flowers in a bunch. Scape among the lower leaves, and a little shorter, erect in flowering time, afterwards declining, striated, solid. Germ sessile, oblong, three-cornered, smooth. Tube of the corolla obscurely three-cornered, striated a little: border shorter by half than the tube, recurved; divisions almost equal, bluntly mucronate, fastened to the crown at the base, concave. Crown snow-white, shorter by two-thirds than the border, funnel-shaped, about the same diameter with the tube at the base, spreading wide at top, repand or crose in the sinuses, somewhat wrinkled, even, shrivelling. Filaments one and a quarter higher than the crown. In the Species Plantarum it is confounded with the *illyricum*, and hence has sometimes gone under that name^d.

9. Leaves a foot and half long, half an inch wide.

Scape erect, compressed, a foot high. Spathes oblong-lanceolate, acuminate, whitish, shrivelling; the outer larger, an inch and half in length. Flowers fragrant, on three-cornered pedicels, scarcely half an inch long. Corolla one-petalled: tube cylindric-three-cornered, greenish, scarcely two inches long, the thickness of a swan's quill: border bell-shaped, six-parted; segments acute, a little shorter than the tube, snow-white, greenish on the outside in the middle. Nectary bell-shaped, shorter than the segments of the corolla, six-cleft; the segments bifid. Style declining, greenish. Stigma obscurely three-lobed.

Native of the East Indies. Cultivated in 1776, by Mrs. Theobald. It flowers from June to August^e.]

10. Bulb oblong, white, sending out several thick fleshy fibres, which strike downward. Leaves on very long footstalks, some ovate, others heart-shaped, about seven inches long and five broad, ending in points, having many deep longitudinal furrows; they are of a light green, and their borders turn inwards. Stalk thick, round and succulent, rising near two feet high, sustaining at the top several white flowers, shaped like those of the other sorts, but the petals are broader, the tube is shorter, and the stamens are not so long as the petals. There is a thin sheath, which splits open longitudinally.—Native of Amboyna.

P. americanum grows naturally in the islands of the West Indies, where it is called *White Lily*. This has a pretty large bulb, a little flattened at the top, covered with a brown skin. Leaves near a foot and half long, and little more than an inch broad, dark green, and hollowed in the middle like the keel of a boat. Stalks near two feet high, thick, succulent, sustaining at the top eight or ten white flowers, shaped like those of *maritimum*, but of a purer white, and having a strong sweet odour, like that of Balsam of Peru. Stamens very long, spreading out wide each way. Pistil of the same length. The flowers seldom continue longer than three or four days, and in very hot weather not so long. When these fade, the germs, which are at the bottom of the tubes, turn to so many oblong bulbs, which are irregular in form, and when ripe, drop off in the ground, where they put out fibres and become plants.

P. latifolium also grows naturally in the West Indies, where it is not distinguished from the preceding. This however differs from it, in the leaves being much longer and broader than that; for these are near two feet long and more than three inches broad; hollowed like the keel of a boat, like the other. The flowers are larger, the petals longer, and the scent not so strong as that of the former. The roots flower in every season of the year.

Cultivated by Mr. Miller in 1759.

Mr. Miller has added another sort in his last quarto edition of 1771, which he names *P. ovatum*. This also grows naturally in the West Indies, and has a large, roundish bulb, from which arise several ovate leaves, about a foot long, and six inches broad in the middle, drawing to a point at both ends; they are of a deep green, and have many longitudinal furrows. The stalk is thick and succulent, a foot and half high, sustaining at the top six or eight white flowers, of an agreeable sweet scent, smaller than those of the preceding, (*americanum*); the petals are narrower, the tubes shorter, and so are the spathes.

Cultivated by Mr. Miller in 1771.

[Mr. Salisbury's fourth species figured in t. 12. and described in p. 73. is entitled *speciosum*. His specific character is this—petioles narrow, tube of the corolla triangular, thinly striated; segments longer than the tube, spreading and recurved a little, linear, alternately more concave, sinuses of the crown with a bifid ligule or process.—He thus describes it: Plant a foot and half high. Leaves nine to twelve, green, bifarious. Petioles narrow, sheathing with the widened base, recurved, linear, half round, flat above. Leaves three times as long as the petioles, recurved, lanceolate, quite entire, blunt, striated, somewhat concave, keeled

^a Hort. kew.

^b Linn. trans. 2. 74.

^c Jacq. amer.

^e Hort. kew.

^d Linn. trans. 2. 74.

towards the base, smooth above, even beneath, fleshy. Flowers fragrant, from eleven to fifteen in a close bunch. Peduncle or scape pale green, among the lower leaves, than which it is a little shorter, much wider than in the rest, erect in flowering time, but afterwards declining, compressed, with one side flatter, ancipital, smooth, very finely striated, solid. Interior bractes very wide. Germ pedicelled, suboval, triangular, smooth. Tube of the corolla three inches long, cylindrical, triangular, thinly striated, abounding in nectareous juice: border snow-white, longer by half than the tube, spreading and a little recurved; segments nearly equal in breadth, linear, quite entire, the exterior longer and more concave, and also more pointed. Crown snow-white, twice and a half shorter than the border, funnel-shaped, more contracted at the base than the tube, in the middle of the sinuses produced into a wedge-shaped ligule usually bifid, somewhat wrinkled, even, shrivelling. Filaments once and a half higher than the crown. This species is distinguished at first sight by the width of the interior bractes.

Mr. Salisbury does not mention the native country of this species: but says that it has hitherto flowered in his stove only in the month of October^f.]

PROPAGATION AND CULTURE.

The sorts of the East and West Indies are too tender to thrive in England out of a good stove. If the pots be plunged into the bark bed, they will thrive and flower very well. In the dry stove, their flowers will not be so strong, nor will they appear oftener than once a year; whereas in the tan-bed, they will often flower two or three times. They are propagated by offsets from the roots, or by the bulbs which succeed the flowers. If the latter be planted in small pots filled with light earth from a kitchen garden, and plunged into a moderate hot-bed, they will soon put out roots and leaves, and with care will become blowing roots in one year: if these are kept constantly in the tan-bed, they will put out offsets from the roots, and thrive as well as in their native countries.

4. Sea Pancratium must be planted in a very warm border, and screened from severe frost, otherwise it will not live through the winter in England.

7. This sort is hardy, and will thrive through the winter in the full ground; in very severe seasons the surface should be covered with tanner's-bark, sea-coal ashes, straw, or peas-haulm. It is propagated either by offsets from the roots, or from seeds. The offsets will flower very strong the second year, whereas those which are raised from seeds seldom flower in less than five years.

The roots should not be removed oftener than every third year, if they be expected to flower strong. The best time to transplant them is in the beginning of October, soon after their leaves decay. They should not be kept long out of the ground, for as they do not lose their fibres every year, if these are dried, it greatly weakens the roots. It loves a light sandy soil, and a sheltered situation; the roots should be planted nine inches or a foot asunder every way, and five inches deep in the ground.

If the plants are propagated by seeds, they should be sown in pots filled with light earth soon after they are ripe: these pots should be placed under a hot-bed frame in winter, but the glasses must be taken off every day in mild weather. For the other management see NARCISSUS: only the young roots will require a little protection in winter, till they have obtained strength.

[PANDACAQUI: See *Chiococca*.

PANDANUS. (*Pandan* is said to be an Indian name.)

Rumph. *Lin. gen. Schreb. n. 1485. suppl. 64. Juss.*

444. *Athrodactylis. Forst. gen. 75. Keura.*

Thunb. nov. gen. 26. Forst. ægypt.

Class. 22. 1. Dioecia Monandria.

GENERIC CHARACTER.

* *Male.*

CAL. *Spathes* alternate, sessile, serrate-spiny. *Spadix* decomposed, naked. *Perianth* proper none.

^f Linn. *transf. 2. 73.*

COR. none.

STAM. *Filaments* very many, solitary, placed scatteringly on the outer ramifications of the spadix, very short. *Anthers* oblong, acute, erect.

* *Female.*

CAL. *Spathes* four, terminating, converging. *Spadix* globular, covered with numerous fructifications, scarcely included. *Perianth* none.

COR. none.

PIST. *Germes* numerous, aggregate, sessile, five-cornered, convex at top, smooth. *Style* none. *Stigmas* two, cordate, margined.

PER. *Fruit* subglobular, large, consisting of numerous, wedge-shaped drupes, convex at top, angular, farinaceous, one-seeded.

SEED solitary, oval, even, in the centre of the drupe.

ESSENTIAL CHARACTER.

CAL. and COR. none.

MALE. *Anther* sessile, inserted into the ramifications of the spadix.

FEM. *Stigmas* two. *Fruit* compound.

SPECIES.

1. *Pandanus odoratissimus. Sweet-scented Pandanus* or *Screw Pine.*

Lin. syst. 878. suppl. 424. Roxb. corom. 4. 65.

t. 94, 95, 96. Forst. flor. austral. n. 365. escul.

38. n. 10. Lour. cochinch. 603.

Pandanus. Rumph. amb. 4. 139. t. 74—81.

Bromelia. Lin. zeyl. n. 131.

Kaidi. Rheed. mal. 2. 1. t. 1—5. Raii hist. 1441. 3.

Keyra. Forst. ægypt. 172.

Athrodactylis spinosa. Forst. gen. n. 75.

DESCRIPTION, &c.

Now and then a plant may be found with a single and pretty erect trunk of ten feet in height, and a branching round head; but it is generally in form of a very large, branching, spreading bush. From the stems or larger branches issue large carrot-shaped blunt roots, descending till they come to the ground, and then dividing. The substance of the most solid is something like that of a cabbage stalk, and by age acquires a woody hardness on the outside. Leaves confluent, stem-clasping, closely imbricated in three spiral rows, round the extremities of the branches, bowing, from three to five feet long, tapering to a very long fine triangular point, very smooth and glossy, margins and back armed with very fine sharp spines; those on the margins point forward, those of the back point sometimes one way, sometimes the other.

Male flowers are in a large, pendulous, compound, leafy raceme, the leaves of which are white, linear-oblong, pointed and concave; in the axil of each, there is a single thyrse of simple small racemes of long-pointed depending anthers; they are not sessile, but raised from the rachis of the raceme by tapering filaments.

Female flowers, on a different plant, terminating and solitary, having no other calyx or corolla than the termination of the three rows of leaves forming three imbricated fascicles of white floral leaves, like those of the male raceme, which stand at equal distances round the base of the young fruit. Germs numerous, collected in firm wedge-shaped angular bundles of from six to ten or more, forming the compound germs of the future drupes, closely impacted round the receptacle. Style none. Stigma single, oval, grooved lengthwise, yellow, affixed to the outside of a two-lipped umbilicus on the apex of the germ. Fruit compound, oval, from five to eight inches in diameter, and from six to ten in length, weighing from four to eight pounds, rough, of a rich orange colour composed of numerous wedge-shaped angular drupes; when ripe, their large or exterior ends are detached from one another, and covered with a firm deeper orange-coloured skin; apices flat, consisting of as many angular somewhat convex tubercles as there are cells in the drupe, each crowned with the withered stigma internally; the exterior half of these drupes, next the apex, consists of dry spongy cavities, their lower part next the core or common receptacle is yellow, consisting of a rich-looking yellow pulp, intermixed with strong fibres; here the nut is lodged.

This

This is compound, top-shaped, exceedingly hard, angular, containing as many cells as there are divisions on the apex of the drupe; each cell is perforated above and below. Seed single, oblong, smooth, adhering lengthwise to a small fascicle of strong white fibres, which pass through the perforation of the cell. By far the greater number of these cells are barren.

It is a native of the warmer parts of Asia. All soils and situations seem to suit it equally well: it flowers chiefly during the rainy season.

This plant is much employed there for hedges, and answers well, but takes much room. It grows readily from branches, whence it is rare to find the full-grown ripe fruit.

The tender white leaves of the flowers, chiefly those of the male, yield that most delightful fragrance, for which they are so generally esteemed; and of all the perfumes it is by far the richest and most powerful.

The lower yellow pulpy part of the drupe is sometimes eaten by the natives in times of scarcity and famine. The tender white base of the leaves is also eaten raw or boiled at such melancholy times. The taste of the pulpy part of the drupe is very disagreeable.

The roots are composed of tough fibres, which basket-makers use to tie their work with; they are so soft and spongy as to serve the natives for corks: the leaves also are composed of longitudinal, tough, useful fibres.

It is not cultivated in the East Indies with any other view than for fences^a.

In the Supplement of the younger Linneus it is said, from Forskahl and Thunberg, to be cultivated for the sake of its fragrance.

In the South Sea islands, where the Pandanus is also a native, this or some other species or variety is used for making mats. The leaves are beautifully white and glossy. In the Sandwich islands these mats are handsomely worked in a variety of patterns, and stained of different colours. The branches being of a soft spongy juicy nature, cattle will eat them very well, when cut into small pieces. They call it *Wharra Tree* at Otaheite^b.

Mugalie is the Telinga name of the male plant, and *Gbazangee* that of the female. *Caldera* is the name they are known by amongst Europeans on the coast of Coromandel^c.

It grows also in China and CochinChina, according to Loureiro, and is used for hedges and feeding tame elephants, &c. Its fragrance is not in much esteem there.

Forster says that the fruit in Otaheite is called *e-Vara*, and the male flowers *Hinanno*: that it is fond of sandy coasts, and is found on almost all the islands of the Southern ocean, within the tropics, even on those which are occasionally inundated; that it resembles the Ananas in the fruit and leaves, and may be connected with the Palms with more propriety than Stratiotes and Valisneria; that it is cultivated in Arabia and Ceylon on account of the fragrantcy of the male flowers; that the women in India, especially on the islands, powder their hair with the dust of the anthers, which is very fragrant, and that they lay up the floral leaves and bunches of flowers among their clothes; that in Ternate they dress the flowers before they open as sauce for flesh and fish; that in Banda they lay the leaves on wounds; that in India the fruit is eaten by elephants, in Otaheite and the neighbouring islands by children, and when bread-fruit is scarce, even by grown persons; and that it has a fine aromatic scent like the Strawberry or the Pine-apple, a taste at first sweetish, but afterwards astringent and austere.

He mentions four varieties figured in the Hortus Malabaricus, t. 5, 6, 7, 8. and says that some varieties have no fragrance^d.—Loureiro has distinguished two other species—*humilis*, hort. malab. t. 6. and *levis*. Rumph. amb. p. 147.

It was introduced into England in 1771, by Mons. Richard, but has not yet flowered in our stoves^e.

^a Roxburgh.

^b Hawksw. voy. 2. 217. Third voy. 1. 206. & 3. 149.

^c Roxburgh.

^d Escul.

^e Hort. kew.

PANDI-PAVEL. See *Momordica*.

PANJA. See *Bombax*.

PANICASTRELLA. See *Cenchrus*.

PANIC-GRASS and PANICI EFFIGIE. See *Panicum*.]

PANICUM (of Pliny. A Panic: from Bread, Lin. From panus, of which panicula is a diminutive; from πᾶνος, dor. πᾶνος, Vossius.)

Lin. gen. n. 76. Reich. n. 82. Schreb. n. 108.

Gærtn. t. 1. Juss. 29. Digitaria. Hall.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume two-flowered, two-valved: valves subovate, nerved: the outer valve a little lower, very small: one floret hermaphrodite, the other neuter or male.

COR. of the hermaphrodite, Glume two-valved; the outer valve (in the bosom of the smaller calycine valve) flattish, nerved; the inner membranaceous, flat, with the edges bent in: often small or very small.

Neſtary two-leaved, very small, gibbous. In the neuter florets none.

STAM. Filaments three, capillary. Anthers oblong. The neuter florets have no stamens.

PIST. in the hermaphrodites, Germ roundish. Styles two, capillary. Stigmas feathered. In the neuters none.

PER. none. Corolla adheres to the seed without opening.

SEED one, covered, roundish, flattish on one side.

OBS. Neglecting the inner valve of the neuter floret, the outer seems to belong to the calyx; hence three calycine valves are commonly reckoned by botanists, among which the third is very small.

ESSENTIAL CHARACTER.

Cal. two-valved, the third valve very small.

SPECIES.

Spiked.

[1. *Panicum polystachyon*. Many-spiked Panic-grass. Lin. spec. 82. Juss. 105. Reich. 153. Willd. 335. mant. 322. Vahl symb. 2. 18. Lour. cochinch. 46.

Phalaris setacea. Forsk. descr. 17.

Gramen caricosum alterum. Rumph. amb. 6. 17. t. 7. f. 2. B.

Spikes round, involucrets one-flowered in bundles and bristly, culms erect, branched at top.

2. *Panicum sericeum*. Silky Panic-grass.

Ait. hort. kew. 1. 38. Lin. spec. ed. Willd. 334.

Spike round, involucrets bristle-shaped villose one-flowered the length of the flowers, leaves flat.

3. *Panicum verticillatum*. Rough Panic-grass.

Lin. spec. 82. Reich. 153. Willd. 334. Hudf.

angl. 24. Wither. arr. ed. 3. 114. Curt. lond.

4. 6. Hall. herb. n. 1543. Pollich pal. n. 57.

Hoffm. germ. 21. Roth. germ. 1. 26. 2. 69.

Krock. files. n. 88. t. 19. Villars dauph. 2. 63.

Thunb. jap. 45.

P. vulgare spica simplici & aspera. Tourn. inst. 515.

Gramen paniceum spica aspera. Baub. pin. 8. theat.

t. 139. Scheuch. gram. 47. Dill. giff. app. 5. Raii

syn. 394. hist. 1262. Mor. hist. f. 8. t. 4. f. 11.

Gr. geniculatum tertium. Tabern. hist. 516.

P. sylvestre. Baub. hist. 2. 469. 1.

Spike whorled, racemelets in fours, involucrets one-flowered two-bristled, culms diffused.

4. *Panicum helvolum*. Pale-red Panic-grass.

Lin. syst. 105. Willd. 334. suppl. 107.

Spike round, involucrets one-flowered in bundles and bristly, seeds nerved.

5. *Panicum glaucum*. Glaucous Panic-grass.

Lin. spec. 83. syst. 105. Reich. 1. 153. Willd. 335.

Fl. zeyl. n. 44. Gærtn. fruct. 1. 2. Hall. herb.

n. 1542. Leers herborn. n. 39. t. 2. f. 2. Hoffm.

germ. 21. Roth. 1. 27. 2. 70. Krock. files. n. 90.

Villars dauph. 2. 63. Schreb. spicil. 44. gram.

t. 25. Gron. virg. 134.

P. lutescens. Weig. obs. 20.

Panici effigie gramen simplici spica. Lob. ic. 13.

Spike round, involucrets two-flowered in bundles and hairy, seeds waved and wrinkled.

6. *Panicum viride*. Green Panic-grass.

Lin. spec. 83. Reich. 1. 154. Willd. 335. Hudf.

angl. 24. Wither. arr. ed. 3. 115. Curt. lond. 4. 5.

- Relb. cant. suppl. n. 997. Leers herb. n. 40. t. 2. f. 2. Hoffm. 21. Roth. germ. 1. 27. 2. 69. Krock. files. n. 89. Schreb. spicil. 44.*
- P. cynosuroides. Scop. carn. n. 68.*
- P. sylvestre spica simplici & molliori. Tournes. inf. 515.*
- Gramen paniceum f. Panicum sylvestre, spica simplici. Baub. pin. 8. Scheuch. gram. 46. Mor. hist. 3. 139. f. 8. t. 4. f. 10. Park. theat. 1154.*
- Gr. pan. spica simplici lævi. Raii hist. 1261. syn. 393. Spike round, involucrets two-flowered in bundles and hairy, seeds nerved.]*
7. *Panicum germanicum. German Panic-grafs. Lin. spec. Willd. 336. Roth. germ. 1. 27. 2. 71. Hoffm. germ. 21.*
- P. germanicum f. panicula minore. Baub. pin. 27. Rupp. jen. 303. Raii hist. 1247.*
- P. album vulgare. Volck. norimb. 317.*
- β. With involucrets shorter than the flower. Spike compound close, spikelets glomerate, involucrets bristle-shaped longer than the flower, rachis hirsute.*
8. *Panicum italicum. Italian Panic-grafs. Lin. spec. 83. syst. 105. Reich. 1. 154. Willd. 336. vir. cliff. 7. hort. upf. 19. Gron. virg. 134. Weig. obs. 22. Lour. cochinch. 46. Rumph. amb. 5. 202. t. 75. f. 2.*
- P. italicum f. panicula majore. Baub. pin. 27. theat. 519.*
- P. indicum panic. villosa. Park. theat. 1139. Raii hist. 1247.*
- P. indicum. Ger. 78. 1. emac. 84. 1. Spike compound with the base interrupted nodding, spikelets glomerate, involucrets bristle-shaped much longer than the flower, rachis tomentose.*
- [9. *Panicum setosum. Bristly Panic-grafs. Lin. spec. ed. Willd. 336. Swartz prodr. 22. descr. 139.*
- Spike compound, spikelets panicle-fascicled, bristles mixed with the florets and very long, peduncles almost smooth.*
10. *Panicum lanceolatum. Spear-leaved Panic-grafs. Lin. spec. ed. Willd. 337. Retz. obs. 5. 17.*
- Spikes alternate, outer valve of the calyxes ciliate and awned, leaves lanceolate.*
11. *Panicum stagninum. Pond Panic-grafs. Lin. spec. ed. Willd. 337. Retz. obs. 5. 17.*
- P. hispidum. Forst. flor. austral. n. 36? Spikes alternate directed one way, calyxes two-flowered awned hispid.*
12. *Panicum Crus corvi. Crow-foot Panic-grafs. Lin. spec. 84. Reich. 1. 154. Willd. 337. Lour. cochinch. 46. Thunb. jap. 46.*
- Spikes alternate directed one way, spikelets subdivided, glumes sometimes awned hispid, rachis three-cornered.*
13. *Panicum Crus galli. Thick-spiked Cock's-foot Panic-grafs. Lin. spec. 83. syst. 105. Reich. 1. 155. Willd. 337. fl. suec. n. 55. vir. cliff. 7. hort. cliff. 27. Hudf. angl. 24. Wither. arr. ed. 3. 115. Curt. lond. 4. 8. Hall. herb. n. 1544. Pollich pal. n. 59. Leers herb. n. 41. t. 2. f. 3. Hoffm. germ. 22. Roth. germ. 1. 27. 2. 72. Krock. files. n. 93. Villars dauph. 2. 65.*
- Gr. paniceum spica divisa. Baub. pin. 8. theat. 136. Scheuch. gram. 49. Mor. hist. 3. 189. f. 8. t. 4. f. 15. Raii syn. 394. hist. 1261. Reliqu. Rudb. t. 8. f. 1.*
- P. vulgare. Ger. 79. 5. emac. 85. 4.*
- P. sylvestre herbariorum. Park. theat. 1154. 1.*
- Gramen Mannæ alterum. Dod. pempt. 559. 2.*
- Dens caninus secundus. Baub. hist. 2. 434.*
- β. Gr. pan. spica divisa, aristis longis armata. Baub. pin. 8. theat. 137. Scheuch. gram. 48. Mor. f. 16. Ger. 15. 1. emac. 16. 1. Park. theat. 1154. 4. Baub. hist. 2. 443. 2.*
- Spikes alternate and conjugate, spikelets subdivided, glumes awned hispid, rachis five-cornered.*
14. *Panicum fetigerum. Bristle-bearing Panic-grafs. Lin. spec. ed. Willd. 338. Retz. obs. 4. 15.*
- Spikes remote, florets directed one way, teeth of the rachis bristle-bearing.*
15. *Panicum colonum. Purple Panic-grafs. Lin. spec. 84. Reich. 1. 155. Willd. 338. Vahl symb. 1. 9.*
- P. tetraastichon. Forsk. descr. 19. n. 62.*
- Gramen paniceum minus, spica divisa infusæ barba-densis. Pluk. phyt. t. 189. f. 5.*
- Gr. pan. minimum humistratum, sp. divisa mutica, foliis variegatis. Sloan. jam. 1. 107. t. 64. f. 3. Raii suppl. 600. Ebrēt. pict. t. 3. f. 3.*
- Gr. aciculatum. Rumph. amb. 6. 13. t. 5. f. 3.*
- Spikes alternate directed one way awnless ovate rugged, rachis roundish.*
16. *Panicum fluitans. Floating Panic-grafs. Lin. spec. ed. Willd. 338. Retz. obs. 3. 8. & 5. 18. Vahl symb. 1. 8. Pluk. amaltb. t. 417. f. 7.*
- P. geminatum. Forsk. descr. 18. n. 59.*
- Spikes alternate sessile directed one way, the third calycine valve minute.*
17. *Panicum brizoides. Briza-like Panic-grafs. Lin. syst. 105. Reich. 1. 155. Willd. 338. mant. 184. Swartz obs. 36? Retz. obs. 5. 18. Pluk. phyt. t. 191. f. 1.*
- Spikes alternate sessile directed one way, two of the calycine valves much shorter than the corolla and refuse, the third the same length with the corolla.*
18. *Panicum flavidum. Yellowish Panic-grafs. Lin. spec. ed. Willd. 339. Retz. obs. 4. 15.*
- Culm leafy, spikelets remote sessile pressed close directed one way few-flowered.*
19. *Panicum dimidiatum. Half-spiked Panic-grafs. Lin. syst. ed. 13. 90. Reich. 1. 156. Willd. 339. Retz. obs. 6. 23. Burm. ind. 25. t. 8. f. 5.*
- Spike halved and directed one way, spikelets five-flowered, alternately pressed to the hollowed rachis.*
20. *Panicum Burmanni. Wave-leaved Panic-grafs. Lin. spec. ed. Willd. 339. Retz. obs. 3. 10. Bocc. mus. 2. 66. t. 55.*
- P. hirtellum. Burm. ind. 24. t. 12. f. 1.*
- P. undulatifolium. Ard. spec. 2. 14. t. 4.*
- Spikes mostly four remote directed one way simple, the two outer glumes of the flowers awned.*
21. *Panicum hirtellum. Rough-haired Panic-grafs, or Scotch-grafs. Lin. spec. 83. syst. 105. Reich. 1. 156. Willd. 340. amoen. 5. 391. Swartz. obs. 35. Brown. jam. 133. 2. Collinson app. 13.*
- Spike compound, spikelets pressed close alternate, calyxes doubled, all the valves awned, outer longest.*
22. *Panicum pilosum. Hairy Panic-grafs. Lin. spec. ed. Willd. 540. Swartz prodr. 22. descr. 141. Sloan. jam. 1. 114. (Miliun).*
- Spikes panicled alternate directed one way, spikelets in pairs, one smaller, acuminate, even, rachis compressed hairy, culm divaricate jointed.*
23. *Panicum molle. Soft Panic-grafs. Lin. spec. ed. Willd. 340. Swartz prodr. 22. descr. 143. Brown. jam. 133. 1.*
- Spikes panicled alternate directed one way spreading, spikelets approximating pedicelled directed one way awnless.*
24. *Panicum fasciculatum. Fascicled Panic-grafs. Lin. spec. Willd. 341. Swartz prodr. 22. descr. 145.*
- Spikes panicled alternate erect subfastigate, spikelets directed one way roundish.*
25. *Panicum carthagenense. Carthagea Panic-grafs. Lin. spec. Willd. 341. Swartz prodr. 22. descr. 148.*
- Spikes panicled, leaves shorter, spikelets directed one way roundish.*
26. *Panicum conglomeratum. Conglomerate Panic-grafs. Lin. syst. 106. Reich. 1. 156. Willd. 341. mant. 324.*
- P. indicum. Lin. mant. 184. Retz. obs. 3. 9.*
- Aira indica. Lin. spec. 94.*
- Spike directed one way subovate, florets blunt.*
27. *Panicum interruptum. Broken-spiked Panic-grafs. Lin. spec. ed. Willd. 341.*
- P. caudatum. Thunb. prodr. cap. 19?*
- Spike simple interrupted, spikelets two-flowered pedicelled naked.*
28. *Panicum sanguinale. Slender-spiked Cock's-foot Panic-grafs. Lin. spec. 84. syst. 106. Reich. 1. 157. Willd. 342. Hudf. angl. 25. Wither. arr. ed. 3. 115. Curt. lond. 4. 7. 242. Fl. dan. t. 388. Schreb. gram. 119. t. 16. Pollich pal. n. 60. Gron. virg. 154. Burm.*

- Burm. ind. t. 10. f. 1. Pallas it. 1. 36. Leers herb. n. 42. t. 2. f. 6. Hoffm. germ. 22. Roth. germ. 1. 28. 2. 73. Krock. files. n. 95.*
Digitaria sanguinalis. Scop. carn. n. 72. Hall. helv. n. 1526.
Phalaris velutina. Forsk. descr. 17. n. 55.
Gramen dactylon majus repens, foliis hirsutissimis. Busb. cent. 5. 34. t. 65.
Gr. dact. folio latiore. Baub. pin. 8. theat. 114. Scheuch. gram. 101. t. 2. f. 11. Raii syn. 399. hist. 1272.
Gr. dact. esculentum. Baub. theat. 118.
Gr. dact. aquaticum. Baub. pin. 118. Mor. hist. 3. 184. f. 8. t. 3. f. 5. Raii hist. 1273.
Gr. dact. majus, &c. Sloan. jam. 1. 113. t. 172. f. 2.
Ischæmum, gramen sanguinarium 1. Tabern. ic. 222. Dill. giff. app. 16.
I. sylvestre latiore folio. Park. theat. 1178. 1.
I. vulgare. Ger. 25. 2. emac. 27. 2.
Ischæmon Plinii. Clus. hist. 2. 217. 2.
Dens caninus 3. vel Gramen primum, f. Galli crus. Baub. hist. 2. 444. 1.
Spikes digitate knobbed at the inner base, florets in pairs awnless, sheaths of the leaves dotted.
 29. *Panicum Dactylon. Fingered Panic-grafs. Lin. spec. 85. syst. 106. Reich. 1. 157. Willd. 342. Hudf. angl. 25. Wither. arr. ed. 3. 116. t. 21. Monti ic. 99. Pollich pal. n. 61. Hoffm. germ. 22. Roth. germ. 1. 28. 2. 74. Krock. files. n. 96. Plenck, ic. 43.*
Digitaria Dactylon. Scop. carn. n. 73. Hall. helv. n. 1527.
Gramen dactylon, folio arundinaceo majus & minus germanicum. Baub. pin. 7? theat. 112, 113. Mor. hist. 3. f. 8. t. 3. f. 4. 6.
P. dactylon radice repente f. officinarum. Scheuch. gram. 304. t. 2. f. 11.
Gr. legitimum. Clus. hist. 2. 217. 1.
Gr. repens, cum panicula graminis mannæ. Baub. hist. 2. 755. Raii syn. 399. hist. 1271.
Gr. canarium ischæmi paniculis. Park. theat. 1179. 5.
Gr. dactyloides radice repente. Ger. emac. 28. 3.
Spikes digitate spreading, villose at the base on the inside, flowers solitary, runners creeping.
 30. *Panicum umbrosum. Shady Panic-grafs. Lin. spec. ed. Willd. 343. Retz. obs. 4. 16.*
Spikes about four remote, florets in pairs unequally pedicelled, culm creeping flaccid.
 31. *Panicum filiforme. Filiform-spiked Panic-grafs. Lin. spec. 85. Reich. 1. 158. Willd. 343. Thunb. jap. 48.*
Spikes subdigitate approximating erect filiform, rachis flexuose, teeth two-flowered, one sessile, inner valve very small, culm and leaves smooth.
 32. *Panicum ægyptiacum. Egyptian Panic-grafs. Lin. spec. ed. Willd. 343. Retz. obs. 3. 8.*
P. filiforme. Jacqu. obs. 3. 18. t. 70.
Spikes subdigitate approximating erect filiform, rachis flexuose, teeth two-flowered, flowers pedicelled, inner valve three-nerved, culm and leaves hairy.
 33. *Panicum ciliare. Ciliated Panic-grafs. Lin. spec. ed. Willd. 344. Retz. obs. 4. 16.*
Spikes subdigitate approximating erect filiform, rachis flexuose, teeth two-flowered, flowers pedicelled, outer valve ciliate, culm and leaves hairy.
 34. *Panicum lineare. Linear-spiked Panic-grafs. Lin. spec. 85. syst. 106. Reich. 1. 158. Willd. 344. Retz. obs. 3. 10. Burm. ind. 25. t. 10. f. 3. Sloan. jam. 1. 113. n. 28. t. 70. f. 3. (Gramen dactylon).*
Spikes digitate in fours or thereabouts linear, florets solitary directed one way awnless.
 35. *Panicum cimicinum. Bug Panic-grafs. Lin. spec. ed. Willd. 344. Retz. obs. 3. 9.*
Milium cimicinum. Lin. mant. 184.
Panicle umbelled, racemes in fours, one of the calycine glumes ciliate.
 36. *Panicum distachyon. Distich-spiked Panic-grafs. Lin. syst. 106. Reich. 1. 158. Willd. 345. mant. 138. Retz. obs. 5. 17.*
Spikes in pairs directed one way even—three or four. R.

37. *Panicum squarrosum. Scaly Panic-grafs. Lin. spec. ed. Willd. 345. Retz. obs. 4. 15. & 5. t. 1.*
Cenchrus muricatus. Lin. mant. 302. Schreb. gram. 2. 69. t. 34.
Spikes in pairs horizontal, involucre of the flowers squarrose, culms decumbent.
 38. *Panicum hispidulum. Hispid Panic-grafs. Lin. spec. ed. Willd. 346. Retz. obs. 5. 18.*
Spikes binate and ternate erect, calyxes hispid two-awned.
 39. *Panicum compositum. Compound-spiked Panic-grafs. Lin. spec. 84. syst. 106. Reich. 1. 159. Willd. 346. fl. zeyl. n. 42.*
Spike compound, spikelets linear directed one way, florets in pairs remote, calyxes awned.
 40. *Panicum elatius. Tall Panic-grafs. Lin. syst. 106. Willd. 346. suppl. 107.*
Spike compound, spikelets oblong scattered pressed close, florets crowded, calyxes mucronate-awned.
 ** *Panicled.*
 41. *Panicum dichotomum. Dichotomous Panic-grafs. Lin. spec. 85. Reich. 1. 159. Willd. 346. Gron. virg. 133.*
Panicles simple, culm branched dichotomous.
 42. *Panicum ramosum. Branched Panic-grafs. Lin. syst. 106. Reich. 1. 159. Willd. 346. mant. 29.*
Panicle with simple branches, flowers in threes or thereabouts, lower subsessile, culm branched.
 43. *Panicum deustum. Burnt Panic-grafs. Lin. spec. ed. Willd. 347. Thunb. prodr. cap. 19.*
Panicle spreading, flowers solitary, glumes smooth purple at the tip.
 44. *Panicum coloratum. Coloured Panic-grafs. Lin. syst. 106. Reich. 1. 159. Willd. 347. mant. 30. Jacqu. misc. 2. 365. icon. rar. 1. t. 12.*
Panicle spreading, stamens and pistils coloured, culm branched—quite simple. Jacqu.
 45. *Panicum repens. Creeping Panic-grafs. Lin. spec. 87. syst. 106. Reich. 1. 160. Willd. 347.*
Panicle rod-like, leaves divaricating.
 46. *Panicum Ischæmoides. White Panic-grafs. Lin. spec. ed. Willd. 348. Retz. obs. 4. 17.*
Panicle erect contracted, calyxes two-flowered polygamous acute, culm simple, leaves distich rigid.
 47. *Panicum remotum. Distant Panic-grafs. Lin. spec. ed. Willd. 348. Retz. obs. 4. 17.*
Branches of the panicle three-sided, florets subgeminat one pedicelled, culm branched four-cornered compressed.
 48. *Panicum aristatum. Awned Panic-grafs. Lin. spec. ed. Willd. 348. Retz. obs. 4. 17.*
Culm creeping rooting, branches of the panicle undivided, florets in pairs sessile awned.
 49. *Panicum miliaceum. Millet Panic-grafs. Lin. spec. 86. syst. 106. Reich. 1. 160. Willd. 348. hort. cliff. 27. upf. 20. mat. med. 46. Lour. cochinch. 47. Hoffm. germ. 22. Roth. germ. 1. 28. 2. 75. Krock. files. n. 99. Plenck, ic. 42.]*
Milium panicum. Mill. dict. n. 1.
M. femine luteo [& albo, item nigro. Baub. pin. 26. theat. 502. Retz. obs. 1. 11.
Milium. Baub. hist. Dod. pempt. 506. Ger. 73. 1. emac. 8. Raii hist. 1251. 1, 2.—& nigrum. Ger. 73. 2.
M. vulgare album. Park. theat. 1136. 1.
β. M. attenuatum. Moench. meth. 204. (excl. syn.)
Panicle loose flaccid, sheaths of the leaves rough-haired, glumes mucronate nerved.
 50. *Panicum antidotale. Medicinal Panic-grafs. Lin. spec. ed. Willd. 348. Retz. obs. 4. 17.*
Panicle nodding, calyxes two-flowered polygamous acute, culm erect very much branched.
 51. *Panicum notatum. Black-spotted Panic-grafs. Lin. spec. ed. Willd. 348. Retz. obs. 4. 18.*
Panicle spreading, axils marked, leaves lanceolate ciliate.
 52. *Panicum muricatum. Muricated Panic-grafs. Lin. spec. ed. Willd. 348. Retz. obs. 4. 18.*
Panicle spreading, flowers solitary muricated, culm rooting ascending.
 53. *Panicum capillare. Capillary Panic-grafs. Lin. spec. 86. syst. 106. Reich. 1. 160. Willd. 348. Retz. obs. 3. 9. Gron. virg. 13.*

- Milium indicum panicula sparsa erecta.* Tournef. inst. 515.
Panicle capillary erect spreading, peduncles strict, calyces acuminate even, sheaths of the leaves very hirsute.
54. *Panicum flexuosum.* Flexuose Panic-grass.
Lin. spec. ed. Willd. 349. Retz. obs. 3. 9.
β. totum glabrum. Retz. obs. 4. 16.
Panicle capillary spreading, peduncles flexuose, calyces ovate, beard of the joints reflex.
55. *Panicum grossarium.*
Lin. spec. 86. syst. 107. Reich. 1. 160. Willd. 349. amoen. 5. 392. Thunb. jap. 48.
P. repens. Burm. ind. 26. t. 11. f. 1?
Branches of the panicle simple, flowers in pairs with one of the pedicels very short, the other the length of the flower.
56. *Panicum maximum.* Large Panic-grass, or Guinea-grass.
Lin. spec. ed. Willd. 349. Jacqu. ic. rar. 1. t. 13. collect. 1. 76. Swartz descr. 170. Brown. jam. 366. n. 2. (Holcus).
P. polygamum. Swartz prodr. 24. Lin. spec. ed. Willd. 353.
Panicle compound capillary spreading, branches racemed, knots of the joints and sheaths hirsute at the base.
57. *Panicum nemorosum.* Wood Panic-grass.
Lin. spec. ed. Willd. 350. Swartz prodr. 22. descr. 150.
Panicle simple, branches distant erect, florets remote scattered ovate acuminate, culm decumbent jointed, sheaths and neck hairy.
58. *Panicum acuminatum.* Sharp leaved Panic-grass.
Lin. spec. ed. Willd. 350. Swartz prodr. 22. descr. 152.
Panicles simple shorter than the leaves, branches capillary diffused, spikelets remote obovate, culm decumbent jointed branched, leaves lanceolate-subulate, erect, sheaths villose.
59. *Panicum rigens.* Stiff-panicled Panic-grass.
Lin. spec. ed. Willd. 350. Swartz prodr. 23. descr. 154.
Panicle simple rigid spreading, culm branched decumbent, leaves horizontal rugged.
60. *Panicum fuscum.* Brown Panic-grass.
Lin. spec. ed. Willd. 350. Swartz prodr. 23. descr. 156.
Panicle simple, branches erect, florets directed one way in pairs, one on a shorter pedicel, culm erect subdivided, leaves broad-lanceolate.
61. *Panicum laxum.* Loose Panic-grass.
Lin. spec. ed. Willd. 350. Swartz prodr. 23. descr. 157. Sloan. jam. 1. 114. (Milium).
Panicle simple nodding, branches capillary, spikelets approximating alternate pressed close, culms simple filiform flaccid, leaves linear-lanceolate.
62. *Panicum latifolium.* Broad-leaved Panic-grass.
Lin. spec. 85. Reich. 1. 160. Willd. 350. Mor. hist. 3. 196. f. 8. t. 5. f. 4. Lour. cochinch. 47.
Panicle with racemes lateral simple, leaves ovate-lanceolate hairy at the neck.
63. *Panicum flavesens.* Yellow Panic-grass.
Lin. spec. ed. Willd. 351. Swartz prodr. 23. descr. 158.
Panicle simple erect stiff, branches subfastigate, the lowest opposite, spikelets approximating directed one way, pedicels two-flowered.
64. *Panicum diffusum.* Diffused Panic-grass.
Lin. spec. ed. Willd. 351. Swartz prodr. 23. descr. 160. Sloan. jam. 1. 114. (Milium).
Panicle somewhat simple capillary spreading, spikelets distant, culm decumbent simple, leaves linear hairy at the neck.
65. *Panicum oryzoides.* Rice-like Panic-grass.
Lin. spec. ed. Willd. 351. Swartz prodr. 23. descr. 162.
Panicle almost simple, branches erect, florets somewhat remote ovate acute, culm erect undivided, leaves broad-lanceolate rounded at the base, sheaths even.
66. *Panicum clandestinum.* Hidden Panic-grass.
Lin. spec. 86. Reich. 1. 161. Willd. 351.
Racemes hidden within the sheaths of the leaves.
67. *Panicum arborecens.* Tree Panic-grass.
Lin. spec. 87. Reich. 1. 161. Willd. 351. fl. zeyl. n. 43. hort. cliff. 27.
Panicle very much branched, leaves ovate-oblong acuminate.
68. *Panicum curvatum.* Crooked-chaffed Panic-grass.
Lin. syst. 107. ed. 12. 732. Reich. 161. Willd. 352.
Panicle racemed, glumes curved obtuse nerved.
69. *Panicum virgatum.* Long-panicled Panic-grass.
Lin. spec. 87. syst. 107. Reich. 1. 161. Willd. 352. Gron. virg. 133.
Panicle rod-like, glumes acuminate even, cutmost gaping.
70. *Panicum patens.* Spreading Panic-grass.
Lin. spec. 86. syst. 107. Reich. 1. 162. Willd. 352.
Panicle oblong flexuose capillary spreading, calyces two-flowered, leaves linear-lanceolate, culm rooting.
71. *Panicum trigonum.* Triangular-seeded Panic-grass.
Lin. spec. ed. Willd. 352. Retz. obs. 3. 9.
P. patens. Burm. ind. 26. t. 10. f. 2.
Panicle erect, peduncles two-flowered, calyces obtuse bipid one-flowered, seeds three-cornered.
72. *Panicum pallens.* Pale Panic-grass.
Lin. spec. ed. Willd. 352. Swartz prodr. 23. descr. 164.
Apluda Zeugites. Aubl. guian.
Panicle compound ovate, branches clustered erect, spikelets ovate subulate, culm subdivided jointed, leaves ovate-lanceolate, sheaths ciliate on the neck and at the edge.
73. *Panicum lanatum.* Woolly Panic-grass.
Lin. spec. ed. Willd. 353. Swartz prodr. 24. descr. 168.
Panicle compound erect smooth, spikelets ovate, culm branched, leaves ovate-lanceolate pubescent, sheaths lanuginose-hirsute.
74. *Panicum arundinaceum.* Reedy Panic-grass.
Lin. spec. ed. Willd. 353. Swartz prodr. 24. descr. 166.
Panicle compound spreading, branches and branchlets stiff capillary, spikelets roundish, culm subdivided jointed, leaves broad-lanceolate acuminate rigid.
75. *Panicum glutinosum.* Glutinous Panic-grass.
Lin. spec. ed. Willd. 353. Swartz prodr. 24. descr. 174. Sloan. jam. 1. 114. t. 71. f. 3. (Gramen miliaceum).
Panicle compound spreading, branches flexuose, spikelets pedicelled distant glutinous, culm erect simple, leaves broader.
76. *Panicum radicans.* Rooting Panic-grass.
Lin. spec. ed. Willd. 354. Retz. obs. 4. 18.
Panicle, culm branching rooting, the base of the leaves and the sheaths longitudinally ciliate.
77. *Panicum trichoides.* Hair-like Panic-grass.
Lin. spec. ed. Willd. 354. Swartz prodr. 24. descr. 176. Sloan. jam. 1. 86. 115. t. 72. f. 3. Brown. jam. 366. 1. (Holcus).
P. brevifolium. Lin. spec. 87. syst. 107. Pluk. phyt. t. 189. f. 4.
Panicle very much branched spreading, branches and branchlets subdivided capillary, culm declined jointed, leaves ovate-lanceolate very smooth.
78. *Panicum divaricatum.* Straddling Panic-grass.
Lin. syst. 107. Reich. 1. 162. Willd. 354. amoen. 5. 392.
Panicles short awnless, culm very much branched and extremely divaricating, pedicels two-flowered, one shorter.
79. *Panicum hirsutum.* Shaggy Panic-grass.
Swartz descr. 173.
Panicle compound capillary, spreading, culms and sheaths bristly-hirsute, leaves lanceolate acuminate nerved strict.

DESCRIPTIONS, &c.

1. In the spikes this resembles *Panicum glaucum*, but they are only half the size, and the pistils are blood-red. Culm rooting at bottom, from one to six feet in height, very much branched. Leaves hairy, at top almost opposite. Involucres almost six times as long as their flowers, purple, with ciliate bristles from the base to the middle with longish hairs.—Native of the East Indies. Biennial^a.

^a Linn. spec. & mant.

Loureiro describes the culm as annual, two feet high, upright, slender, round, jointed. Leaves subulate-linear, long, upright, those next the root in heaps, those on the stem scattered, short, somewhat hairy. Spike cylindrical, erect, simple. Involucres one-flowered, rough with many long bristles in bundles.—Native of Cochinchina.

2. This is an annual grass, native of the West Indies. It was introduced in 1780, by John Earl of Bute. It flowers from June to September^b.

3. This in its general habit agrees exactly with *P. viride*; but in the size and form of the spike, and the parts composing it, differs very materially: the whole plant is generally one-third larger; the spike also is larger, and much less compact; it is evidently composed of little branches, which grow somewhat in whorls, whence its name: the bristles of the spike are considerably shorter than those of the *viride*, and differ from them particularly in being hooked, so that the spikes readily adhere to any thing, and where several of them grow near each other they are very apt, from this cause, to become entangled^c.

According to Linneus, the spike is composed of longer racemes than in *P. viride*, three or four in number, directed one way downwards. Flowers green with purple pistils. Bristles one or two, rugged, to each flower, and longer than that. Pedicels on the falling of the flowers terminated by a truncate, concave, white cup. The rachis of the spike has three or four bifid angles. Culms even, two feet high. Leaves naked. The spike is from two inches and a half to four inches in length, and near half an inch broad^d.

Native of Europe, the Levant, and Japan. In England, Mr. Ray describes it as having been found between Putney and Roehampton, and beyond the neat-houses by the Thames side. Mr. Curtis found it sparingly in the gardener's ground in Battersea field, with the *viride*, and flowering at the same time. Scheuchzer remarks, that it is a troublesome weed in the gardens near Paris^e.

Thunberg describes two varieties, a larger and a smaller; the latter seeming to be distinct.

4. This is an annual grass, bearing a great resemblance to *P. glaucum*, but in reality different. Culm six feet high, branched; barren branches shorter. Leaves towards the base above with white hairs near an inch in length and spreading. Spike simple, a span long, the florets without order. Peduncles scarcely streaked at the tip. Involucres pale red, one-flowered, many-bristled, longer than the flower. Glume with longitudinal streaks (but no transverse waved ones) green, distinct.—Native of the East Indies^f.

5. Bristles on the spike the length of the florets. Sheaths of the leaves hairy at the edges. When the spike is just come out the flowers appear disposed in rows. Seeds marked with waved streaks^g. Peduncle very much grooved^h.

Root fibrous, annual. Culms a foot high, erect, leafy, having four knots, grooved at the top, even. Leaves broadish, flat, even, the upper one often longer than the spike. Instead of a ligule there are clustered, whitish, long hairs, especially from the lower sheaths. Sheaths striated, even. Spike as in the next species: the florets disposed in rows, three times as large, subsessile, solitary and in pairs, accompanied by bristles, finally becoming yellow, shorter than in *P. viride*. Calyx nerved, pubescent. Corolla less than the calyx. Third petal ovate, acute, flat, between the flatter valve of the calyx and the inner valve of the corolla; perhaps the rudiment of a second floret. Seed wrinkled with transverse waved streaksⁱ.

Native of the East Indies, America, and several parts of Europe, as Italy, the South of France, Germany, Switzerland. It flowers in June and July. Introduced in 1771, by Mons. Richard^k.

6. This is distinct enough from the preceding in having smooth seeds, not transversely waved and wrinkled. The glumes are nerved, as in the preceding^l.

^b Hort. kew.

^c Linn. suppl.

^d Leers.

^e Curtis.

^f Linn. spec.

^g Hort. kew.

^h Withering.

ⁱ Linn. syst.

^j Willdenow.

Scopoli says that the third glume is not always present: Leers, that it is always wanting.

Mr. Curtis remarks, that this species, to correspond with its trivial name, should be always green, but that its foliage is often red, and its spikes reddish brown; and that the *verticillatum* is the contrary; but the spike will always distinguish them. Between these two indeed there is a more sensible difference to the touch than between *Alopecurus pratensis* and *Pbleum pratense*. The hairs in the spike of the *viride* are much longer than those of the *verticillatum*; and though the microscope discovers them to be prickly, yet being upright, they show no manifest roughness.

Leers thus describes it. Root annual. Culms from a foot to eighteen inches in height, oblique, leafy, having three knots; streaked at top, rugged. Leaves wideish, the upper surface rugged. Instead of a ligule, a row of short hairs, running down. Sheaths somewhat compressed, even. Spike ovate-cylindrical, unequal in thickness, green, frequently tinged with violet on one side. Peduncles very short, having the florets in pairs (three or four) on scarcely conspicuous, knotted-truncate pedicels: each pair involucre with several whitish or violet bristles, four times as long as the florets. Calyx even: the smaller valve three-nerved, the opposite to this three times as large, embracing a third with its edge, convex, seven-nerved: the third flat, five-nerved. Seed nerved, shining. The third petal of the corolla is found in the preceding, in *Crus-galli* and *miliaceum*, but not in this.—According to Mr. Curtis, the calyx has three valves, two of which are opposite, equal, ovate, obtuse, ribbed; the third very minute and placed below the others: the corolla has two valves, which are ovate, hollow, shining and nearly equal.

He observes, that sparrows are remarkably fond of the seeds, and that the whole of this genus, when cultivated in a garden, require to be protected from them.

Native of Europe, as Germany, Carniola, England. With us not common, though the most common of the Panicums. In Battersea fields, near London; by Martha's chapel, near Guildford in Surry; and in the gravel-pits by Chippenham-park, Cambridgeshire, and the corn fields adjoining.

It flowers in July and August, and is an annual grass of no use in cultivation.

7. This has been confounded with the next species, from which it is distinct, in having the spike not interrupted at the base, smaller and ovate; in the height of the culm; in the shortness of the involucres; and in having the rachis hirsute^m.

Willdenow says that he has frequently received the seeds of the variety under the names of *P. indicum* and *sibiricum*; that it approaches in habit to *P. verticillatum*, on account of the very short involucres, sometimes scarcely visible without tearing the spikelets in pieces: but that it differs very much in the hairiness of the rachis, which in *P. verticillatum* is smooth.]

Mr. Miller says, it rises with a jointed reed-like stalk about three feet high, and about the size of the common Reed; with a leaf at each joint a foot and half long, and about an inch broad at the base where broadest, ending in an acute point, rough to the touch, embracing the stalk at the base, and turning downwards about half the length. The stalks are terminated by compact spikes, about the thickness of a man's finger at bottom, growing taper towards the top, eight or nine inches long, closely set with small roundish grain like that of Millet. It is annual, and perishes soon after the seeds are ripe. There are three varieties of it, with yellow, white and purple grains. It has been formerly cultivated for bread, in some of the northern countries, but is not so much esteemed as the Italian sort; since however it will ripen better in a cold climate than that, it is generally cultivated where a better sort of grain will not succeed: neither of them are reckoned to afford so good nourishment as Millet.

[Native of the southern part of Europe.

^m Willdenow.

8. Culm annual, a foot and half high, round, thickish, upright, quite simple. Leaves alternate, lanceolate-linear, flat, striated, reflexed. Spike single, large, reclining, composed of glomerate ovate spikelets mixed with close bristles, longer than the floret. Seed yellow, subglobular^a.]

This rises with a reed-like stalk, near four feet high, and much thicker than that of the preceding; the leaves are also broader. The spikes are a foot long, and twice the thickness of those of the former, but not so compact, being composed of several roundish clustered spikes; the grain is also larger. There are two or three varieties of this differing only in the colour of the grain. It is frequently cultivated in Italy, (whence its trivial name) and other warm countries. [It is a native of both Indies, and of Cochinchina, and was cultivated by Mr. Miller in 1739. It flowers in July and August^o.

Willdenow says that he has a variety from the East Indies with the rachis hirsute.

9. Height from two to four feet. Culm simple, erect, round, smooth, leafy. Leaves half a foot long, lanceolate, flat, entire, pubescent; sheaths embracing the culm, villose at the neck. Spike terminating, compound, a foot long, composed of panicle-fascicled racemes half an inch in length. Rachis flexuose, bristly. Spikelets two to four, clustered, pedicelled, unequal, mixed with bristles, green. Bristles several times as long as the florets, from one to three inserted into the base, flexuose, appearing hispid when magnified, ferrate. Pedicels very short, smooth. Inner valve of the calyx larger, ovate, acute, keeled. Corolline valves of the hermaphrodite equal, whitish: outer ovate, acute, somewhat keeled, concave; the other flat, included. Filaments very minute. Corolline valves of the male barren: outer larger ovate acute, concave; inner minute flat. Seed ovate, inclosed in the corolline glumes of the hermaphrodite. The smaller florets mixed with the others are commonly empty. It approaches near to *P. italicum*, but in that the spikelets are glomerate, on hirsute pedicels^p.

10. Culms simple, decumbent, leafy, rooting, long. Leaves naked, nerved, with very fine lines between the nerves, ciliate at the base. Sheaths tubercled and hairy. Spike composed of alternate spikelets an inch long. Flowers directed one way, alternately in pairs on a flexuose three-cornered rachis, one larger, both awned, sometimes but seldom on the lower part of the spike solitary; all green. Outer valve of the calyx wide, ciliate at the base, with an awn three times as long as the floret, flexuose: inner almost of the same length, narrower, both compressed: inmost entirely concealing the corolla, longer, roundish. Nectary, a linear scalelet hairy at the top, within the calyx. Valves of the corolla equal, hyaline, acute; the outer involving the inner, and the inner involving the stamens and pistil.

Native of the East Indies, whence it was sent by Koenig.

11. Culms erect, three feet high, leafy. Leaves linear, flat, even, rough at the edge, with the mouths of the sheaths hairy. Spike compound, half a foot long. Spikelets an inch and half in length; flowers in pairs and solitary, rather large. Outer valves of the calyx flattish, ovate-lanceolate, ending in a long rough-haired awn, three-nerved: inner of the same form and size, but more convex, awnless: accessory valve shorter by half and lanceolate: all of them hispid especially at the edge. Outer floret male, composed of one flat lanceolate hyaline petal: inner female generally longer than the valves of the calyx, two-petalled; the petals cartilaginous, one flat, the other convex, embracing at the edge. Germ roundish-ovate, compressed.

Native of the East Indies, in ponds. Found by Koenig^q.

Willdenow thinks that *P. hispidum* of Forster, found in New Caledonia, may be the same with this.

^a Loureiro.

^o Hort. kew.

^p Swartz.

^q Retzius.

Is *P. hispidulum* of Retzius. 5. 18. different from this?

12. Culm annual, two feet high, suberect, manifold, jointed, leafy. Leaves suberect. Spikes commonly alternate; but sometimes conjugate. Spikelets oblong, distich, spreading. Glumes awned, hispid. All the florets hermaphrodite. Rachis generally four-cornered^r.

Though Loureiro describes it under the name of *Crus Corvi*, he observes that it is intermediate between that and *Crus Galli*, and different from both.

Linneus remarks, that it resembles the next species very much, but that it is less and more tender. The panicle more nodding with a three-cornered (not five-cornered) rachis. The flowers on the spike are directed one way, and not incumbent all round on the rachis.

Native of the East Indies, Cochinchina and Japan.—Introduced in 1781, by Monf. Thouin. It flowers in July and August^s.

13. Root annual. Culms several, from one to two feet in height, thick, at first procumbent or oblique, but finally almost upright. Flowering-branches leafy, naked at top, even. Internodes three or four, the lower ones divaricating. Joints thickened, cylindrical, dusky. Leaves on the culm very wide, flat, even on both sides, hispid at the edges. Instead of a ligule, a short triangular membrane, adnate, dusky. Sheaths loose, compressed a little, cloven, even; the lower ones acute, leafless. General rachis linear, flattish, rugged, with one angle underneath, scarcely projecting, two at the sides sharper, and one above, with a groove for the insertion of the branches. Spikes alternate, seldom conjugate, mostly directed one way, subdivided, the terminating one more simple. Partial rachis three-cornered, somewhat flexuose, subdivided, involucre at the base with whitish hairs in bundles. Florets clustered, directed one way, on very short subdivided peduncles, with bundles of hairs at the base, more apparently in the variety. Calyx nerved, pubescent, rugged; two of the valves mucronate, and the third flat and awned. Awn terminating, rugged, straight, short in α , but ten times as long as the glume in β . The third petal of the corolla membranaceous, flat, acuminate, between the flat valve of the calyx and the inner valve of the corolla^t.

Mr. Curtis remarks, that the leaves in more humble plants are three or four inches long, and from two to three lines in breadth; in taller plants six inches or nearly a foot in length, four lines and sometimes six or seven broad, tapering to a point, keeled, smooth, the edges very finely toothed, and about the mouth of the sheath hairy. Spikes pale green, sometimes varying to purple. Spikelets often twelve in number, thick, roundish, the lowermost an inch and half in length, longer and farther asunder than any of the rest. Seed rather large, shining, covered by the valves of the corolla, round on one side, and flat on the other. These seeds being large and plentiful, this grass is much sought after by small birds.

Native of Virginia, the Cape of Good Hope, and several parts of Europe, as Sweden, Germany, Switzerland, the South of France, England. Thomas Willisell found it in a garden between Deptford and Greenwich; with a smooth spike, in a lane near the Neat-house gardens; with an awned spike, by the rivulet side near Petersfield, Hampshire, by Mr. Goodyer. Mr. Hudson describes it as growing by Martha's Chapel near Guildford. Dr. Milne found it in a coppice near Purfleet: and Mr. Curtis observed it in Battersea field.

He has figured it without awns, in which state it most frequently occurs with us. Leers remarks, that the florets are scarcely awned in cultivated grounds, but that in wet places it is found with very long awns. Linneus says that the latter, with awns ten times as long as the glumes, differs manifestly from the common sort, in which the awns are scarcely half as long again as the glumes.

^r Loureiro.

^s Hort. kew.

^t Leers.

14. Culms filiform, branched, leafy. Leaves two inches long, subcordate at the base, with the edges of the sheaths ciliate. Lower spikes remote, the upper ones often in whorls, short. Flowers directed one way, in pairs, really sessile, one of them placed higher than the other. Rachis depressed, with apparent teeth for the florets, furnished with a bristle or two on each side of the floret. Calyx ovate, acute, with a short accessory valve.—Native of China, whence it was sent by Bladh.

Retzius is of opinion that *P. repens* of Burmann, *ind.* 26. t. 11. f. 1. is not the *repens* of Linneus, nor the *grosserium*, but this species.

15. Root annual. Culms a span high, round, ascending. Leaves even, often ferruginous-spotted, purple at the throat without a ligule. Spike simple, directed one way, with a round weak rachis. Spikelets alternate, very many, subsessile, directed one way, ovate or somewhat oblong without any bundles of hairs. Florets somewhat streaked. Anthers purple. Pistils white, turning purple^a.

Native of the East Indies. Cultivated in 1699, by the Dutchess of Beaufort. It flowers in July and August^a.

16. This is a very beautiful smooth even grass. Culm compressed, leafy. Leaves linear. Rachis flat on the outside, within or on the side of the spikelets keeled, margined. Spikes alternate, sessile, almost upright, decreasing, twice as long as the interstices. Flowers directed one way, alternate, sessile, imbricate. Calyx ovate, acute, with a small rounded accessory valve.

It differs from *P. brizoides*, which it resembles very much, in having the two valves of the calyx of the same length with the corolla, the accessory valve only short and retuse: both have the appearance of a *Paspalum*^a.

Native of the East Indies, Arabia, and Madagascar.

17. Culms decumbent at the base, compressed, with purple joints. Leaves at the joints of the culm first single, but afterwards several within the same sheath, linear, even. Sheaths compressed, swelling, with the mouth ciliate and having a purple circle. Spike compound. Spikelets as many as twelve, linear, shorter than the interstices, erect and almost pressed close, an inch long. General rachis three-cornered: partial linear, repand, somewhat rough, with a lengthened dagger-point. Flowers in two (not three) rows, compressed, awnless. Calycine valves two outer minute, retuse, like scales; the third flat, the same size with the corolla, broad-ovate, acute, three-nerved. Corolla cartilaginous, with the valves flat and very smooth, one margin embracing. Stigmas pale rose-colour. Nectary, two retuse scalelets subvillose at the edge.—Native of the East Indies^a.

Swartz describes a grass of Jamaica under the same name, but it may be doubted whether it is the same species.—Culm from one to three feet high, simple, round, even. Leaves broadish, not long, acute, erect, rugged at the edge, striated, sheathing at the base; the neck beardless. Rachis terminating, almost a foot long, simple, linear. Spikes five or six, alternate, sessile, pressed to the rachis, directed one way: florets subsessile, approximating, in two rows on the same side, ovate, whitish. Two valves of the calyx equal, ovate, blunt, awnless; the third very small, roundish. Valves of the corolla smaller, oblong. Stigmas purple. Seed fastened to the corolla, roundish.

18. This is an upright grass from two inches to half a foot in height. Root fibrous, the fibres undivided. Culms several, erect, clothed with smooth leaves to the very lowest spike. Rachis elongated. Spikelets from three to seven, short, commonly six-flowered, erect, sessile, pressed close, three quarters of an inch distant from each other. Flowers globular, alternate, directed one way, yellow, with green nerves. All the glumes of the calyx violet-coloured at the tip. It is very nearly allied to *P. brizoides*, which however

is larger, green, and has longer leaves, with sheaths relatively narrower. The spikelets have as far as thirteen ovate white unspotted florets.—Native of Ceylon, whence it was sent by Koenig.

19. Culm ten feet high, very finely striated, ascending. Leaves at the base of the culm distichally alternate, three inches long, on the middle of the culm one; all linear, blunt. Spike terminating, linear, three inches long, as it were halved. Rachis dilated, membranaceous, jointed, at the joints alternately deeply gashed, excavated alternately in front for the spikelets. Spikelets five-flowered, glued as it were in the hollow of the rachis, sessile, with the partial rachis flexuose. Flowers awl-shaped, sessile, striated, flat in front, gibbous behind. Calyx three-valved, one-flowered: outer valve cartilaginous, flat, with the sides bent at a right angle, lanceolate, streaked: inner equal in length, thinner, boat-form gibbous, rounded and striated at the back, ciliate-bearded at the tip, involving the edges of the outer valve: accessory valve short, truncated, at the base of the outer valve. Corolla equal in length to the calyx, but narrower.—This is the *P. dimidiatum* of Linneus, very different from that grass, which the younger Linneus made a species of *Rottbollia*.

Native of the East Indies, where it was found by Koenig.

20. This is very different from *P. hirtellum* of Linneus. Culm decumbent, branched, villose and rooting at the base. Leaves lanceolate, with hairs thinly scattered over them; the sheaths villose at the edge. Spikelets four or three. Rachis clothed with long hairs especially under the pedicels. Florets alternate, commonly abortive. The two outer calycine glumes equal terminated by a long awn: the third longer, acute, sometimes awned; all villose. Corolla snow-white, very smooth.

Native of the East Indies, whence it was sent by Koenig^a: also of Italy.

21. Culm creeping, ascending, three inches to a foot. The smaller leaves waved, the larger stiff. Spike compound. Rachis hirsute. Spikelets directed one way. Three valves of the calyx almost equal; the fourth, which is inmost, minute, membranaceous, awnless. The awns of the others long, (five times as long as the valve in the outmost) ferruginous-red, glutinous;—according to Linneus, filiform, blunt, finally hooked. Valves of the corolla awnless. Anthers whitish. Stigmas feathered, long, blood-red.—Native of the West Indies^b.

This Grass is cultivated, and thrives very luxuriantly, in all the low and marshy lands of Jamaica, where it is almost universally used as fodder for all their stabled cattle: it is planted near the towns with great care, and found to be one of the most beneficial productions of the island. Its general growth is from two to four feet^c.

22. Culm three or four feet high, branched, compressed, even: joints villose, large. Leaves lanceolate, acute, even, rugged at the edge. Sheaths approximating, compressed, villose at the base. Peduncles from the sheathing internodes, compressed, short. Spikes rigid. Rachis linear, compressed, hairy: hairs long, thin, spreading. Spikelets pedicelled, alternate, sharpish, somewhat compressed, striated. Outer calycine valve minute; inner ovate, nerved, concave. Valves of the corolla ovate, very tender. Anthers purplish. Stigmas whitish. Seed oblong, compressed a little, small. Glume of the neuter corolla two-valved: outer valve larger, concave, inner very minute, flat. Filaments none.

Native of Jamaica and other islands in the West Indies, in woody mountainous pastures.

23. Culm from two to three feet high, decumbent at the base, ascending, subdivided at bottom, jointed, round, thick, pubescent. Leaves long, broad-lanceolate, rounded at the base, flat, villose, soft: sheaths closely girding the culm, striated, pubescent: joint thickish, villose. Spikes erect: spikelets two or three

^a Linn. spec.

^x Hort. kew.

^z Retzius.

^a Idem.

^s Retzius.

^b Swartz.

^c Browne.

clustered, on short pedicels, turned towards the lower side, largish, oblong, brown. Outer valve of the calyx minute: inner ovate, blunt, striated, pubescent. Valves of the corolla in the hermaphrodite florets nearly equal, ovate; one flatter. Anthers very dark purple. Stigmas the same and villose. Seed oblong, shining. Valves of the neuter corolla unequal: outer ovate, striated, brown; inner flat, whitish, minute. Filaments none. It is known immediately from the other species by its softness. The culms being thick and succulent, it is very grateful to cattle^d.

Swartz says that it is a native of Surinam, and is commonly called *Dutch-grass* in Jamaica, where it grows in moistish fertile pastures. He refers to a name in Browne, p. 133. which I do not find. Perhaps Dutch-grass is mistaken for Scotch-grass; but why it has either of these names we are not told. See n. 21.

24. Height two or three feet. Culm jointed, erect, round, leafy, smooth. Leaves a foot long, rounded at the base, broad-lanceolate, acute, streaked longitudinally, rough at the edge: sheaths long, striated, smooth, subvillose at the edge and neck. Spikes terminating, half a foot long, subverticillate. Rachis subflexuose, stiff, rough. Florets roundish or ovate, small, brown: pedicels subbiflorous, the upper ones one-flowered, capillary, somewhat hirsute. Outer valve of the calyx one third of the size of the other: inner ovate, concave, marked with longitudinal lines, appearing netted when magnified, ferruginous-brown. Valves of the hermaphrodite corolla ovate, whitish; one smaller, included. Stigmas whitish. Male corolla empty: outer valve like the inner valve of the calyx; inner smaller, whitish, ovate.—Native of Jamaica in low grassy places.

25. Roots long, filiform, stiff, perennial. Culm a foot high, very much branched, jointed, prostrate, compressed a little, grooved, stiff, smooth. Branches from the sheaths of the leaves, in bundles. Leaves rounded at the base, lanceolate, acuminate, two or three inches long, flat, entire, sometimes waved at the edge, striated a little, smooth: sheaths longer than the leaves, wide, longitudinally open, striated, pubescent, very much contracted at the edge and neck, subvillose: joints villose. Spikes on every side terminating the branches, commonly shorter than the leaves, an inch long, frequently concealed in the sheaths. Spikelets pedicelled, distinct, ovate, acute, green and brown. Inner valve of the calyx ovate, acute, concave: outer three times less. Valves of the corolla ovate, obtuse, whitish. Anthers whitish. Seed ovate inclosed in the glumes. Outer valve of the corolla in the male (or neuter) flower very like the inner valve of the calyx: inner small, ovate, flat, more tender, whitish: these florets have no filaments.

Native of Carthage in South America in grassy places^e.

26. It is thus described by Linneus, in his Mantissa, under the name of *P. indicum*. Culms filiform, prostrate, very much branched, rooting. Leaves lanceolate, even, with the sheaths shorter than half the internodes. Raceme terminating, peduncled, subspiked, small, shorter than the leaf, often eight-flowered, without hairs. Flowers alternate, sometimes two in the same tooth of the lower raceme, ovate. Pistils feathered, the size of the whole flower.

Retzius describes it under the same name, as a filiform grass, half a foot in height. Culm ascending, naked above. Spikes scarcely half an inch in length, without any involucrets. Inner valves of the calyx slightly hispid, almost equal, boat-shaped, acute: accessory valve blunt, minute.—He can scarcely think it to be the *P. conglomeratum*, which seems to him to be the *Aira indica* of the Species: for in *P. indicum* the spike is not directed one way, nor are the florets blunt.

Native of the East Indies, by towns and in the streets: sent by Koenig.

27. This grass is three feet high and smooth. Knots of the culm black. Sheaths smooth. Leaves long, linear, striated, smooth. Spike a foot long, narrow.

Flowers clustered. Peduncles one-flowered. Calyx two-flowered, two of the valves equal, acute, nerved; the accessory one less, obovate, obtuse, membranaceous. It differs from all the species in the inflorescence.—Native of the East Indies, in stagnant waters^f.

28. Root annual. Culms leafy, even, with three joints, at the two lower procumbent, the upper oblique, very long. Flowering-branches from the joints. Leaves broadish, short, sub lanceolate, even. Ligule crenulate. Sheaths somewhat compressed, blood-red, even, dotted: dots eminent, solitary and in clusters, bristle-bearing, scarcely visible. Spikes three, four or five, linear, alternate, on very short peduncles, inserted into the culm, which between them is linear-three-cornered, flexuose, and by means of an axillary callus piliferous: when bursting from the sheaths erect, parallel; when flowering horizontal, except the end one, which is erect. Rachis linear, subflexuose, flat, rugged, with a prominent nerve above, for the insertion of the florets: which on the convex side are pressed close to the rachis, two together, or often three in each tooth: the lowest peduncle shorter than the floret, the second of the same length, the third, when there is a third floret, longer than it. Calyx awnless, pubescent: the least valve triangular, three-nerved, but it is scarcely visible with a magnifier, and is very frequently quite wanting: the second, opposite to this, is blunt, embracing the third with its margin, subconvex, five-nerved: the third is flat, three-nerved, acute, sometimes violet-coloured. Corolla less than the calyx. Stigmas purple. Seed rufous, shining^g.

The root forms small tufts. Culms decumbent, curved at the joints below, and not unfrequently creeping, nine inches or a foot high, round, smooth, branching from the lower joints. Leaves acute, one or two inches long, two lines or a little more in width, waved chiefly at the edge, smooth as are also the sheaths, glaucous or reddish green. Ligule blunt, more than half a line in breadth. Spikes three or four to seven in number, alternately and in a bundle from the top of the culm, from two to three inches long, and near one line in width. Scape (or rachis) compressed, waved all along at the edge. Spikelets ovate, acuminate or a little blunt, imbricate, smooth, compressed, purple above, green underneath, near a line in length and half a line in width, placed by pairs near each other, and covering the upper side of the rachis: one spikelet is sessile, the other has a peduncle from half a line to a line in length. Calycine glumes of the same length and breadth with those of the corolla, ovate, parting horizontally. Valves of the corolla opening also in width; the outer convex and closely embracing the inner one. Anthers purple. Styles white. Stigmas red and feathered. The seed falls with the corolla^h.

Pollich observed the larger variety figured by Buxbaum. The sheaths and leaves of this are hirsute; the spikes and spikelets larger and greener.

Culms several, a span or a foot in height, reddish, sometimes branched, bending upwards, crooked, very slender and weak, generally four-jointed. Leaves from an inch to two inches in length, from two lines to two lines and a half in breadth, pointed, often waved on one side, having a few hairs on both sides, the edges when magnified appearing very finely serrate: sheath striated, very hairy, the hairs proceeding from little prominent points. Spikes three, four or five, in gardens more, from an inch and half to four inches in length, filiform, all proceeding from the same point, or growing alternately, leaving a small space between them, dark purple or purple and green mixed. Spikelets growing one way, in pairs, pressed to the rachis, pedicelled, ovate-lanceolate, pointed, purplish or green. Calyx three-valved, permanent; the lowest valve very minute and short, scarcely perceptible by the naked eye: the other two opposite, unequal, pointed, ribbed, rugged on the edges, the upper one the length of the corolla, which it enfolds with its margin; the lower one half the length of the upper. Valves of the corolla equal and smooth, the one receiving the other,

^d Swartz descr.

^e Idem.

^f Willdenow.

^g Leers.

^h Pollich.

having

having a small membrane at their base. Filaments very slender, a little longer than the corolla. Anthers small, short, purplish, forked at each end. Germ oblong. Styles filiform, the length of the stamens. Stigmas purple. Seed very small, inclosed by the glumes of the calyx, as well as of the corolla¹.

I have given three descriptions distinct of this grass, from three of our most accurate authors, two foreign and one domestic, because it is suspected that our *P. sanguinale* is not the same with that of Linneus. Mr. Curtis is induced to consider our plant as the *sanguinale* of Linneus, rather by the figures and descriptions quoted by him, than by his specific distinction, which does not well accord with our plant. The dotted sheaths are not mentioned by Haller, Scheuchzer or Scopoli.—The knots within the base of the spikes, says Dr. Withering, and the dots on the leaf-sheath, do not appear in Mr. Curtis's figure; but the latter are mentioned by Leers, and the former are expressed in his figure; so that there yet remains a doubt whether our plant may not be the *P. filiforme* figured by Jacquin, obs. 3. t. 70.

It is observed by Miss Jennings of this grass, that all the stems which lie near the ground take root, and by this means, though an annual and short-lived plant, it increases and spreads very wide^k.

Heister, Haller, Scopoli and Adanson arrange this and some other species of *Panicum* under a distinct genus, which they call *Digitaria*, from the disposition of the spikes, like the fingers of the hand spread out. But these having a three-leaved calyx, it seems better to continue them, with Linneus, Schreber, &c. under the genus *Panicum*.

This species is very universal, being found not only in Europe, but in Asia and America; and the Society isles in the Southern ocean: nevertheless it is not common in England. It grows at Elden in Suffolk, Witchingham in Norfolk, near Martha's chapel by Guildford, Wandsworth field, and in the gardener's grounds near Battersea: flowering from July to September.

The name of *sanguinale* is not taken from its colour, but from an idle trick which the boys in Germany have of pricking one another's nostrils with the spikelets of this grass, till they draw blood^l.

29. Culm creeping at the base, and above that upright, nine inches or a foot in height, glaucous, smooth, frequently branched from the lower joints. Leaves keeled, acuminate, stiffish, from one to four inches in length, one or two lines in breadth, hirsute on both sides, somewhat rugged, glaucous. Ligule very short, hairy. Sheath smooth with a yellow spot on each side at the insertion of the leaf. Joints purple, smooth, sometimes eight or nine. Spikes linear, four, five, or six, directed one way, three-sided, slightly hairy at the base, proceeding in a bundle from the top of the culm, at first purple, but by age acquiring the colour of chaff. Scape (or rachis) three-sided and smooth: at each toothlet one sessile spikelet, erect, ovate, acuminate, compressed, a line in length, and half a line in breadth, green and purple, smooth: the toothlets are about half a line from each other. The calyx embraces the corolla on its narrower side, and opens perpendicularly: the glumes are lanceolate, spread open above, and terminate in a very sharp dagger-point; they are equal in length to the corolla, or one is a little shorter. The valves of the corolla separate also perpendicularly; the larger of them is ovate, acuminate, keeled; the smaller narrow and acute, but nearly of the same length with the outer. Anthers purple. Styles and stigmas violet-coloured. The spikes curved archwise, are first erect, then vertical, and finally horizontal. Sometimes in the bundle of spikes a short branch springs forth, on the top of which is another bundle of spikes few in number. The spikelets at first are pressed close to the scape; but in the time of flowering they recede in a vertical direction from it; and afterwards approximate to it again^m.

Root creeping widely through the loose sand, with

¹ Curtis. ^k Withering. ^l Curtis. ^m Pollich.

strong fibres at the knots. Culm rarely exceeding six inches in height. Leaf-sheath parting from the culm when old, glaucous, hairy and pubescent throughout. Spikes four, diverging, dark purple changing to a chestnut colour, near two inches long, not more hairy than the other parts of the plant. Florets all on one side of the spike-stalk, awnlessⁿ.

There is some little doubt whether ours be the exact plant characterised by Linneus as the *P. Dactylon*. Clusius's figure has long awns to the florets: but perhaps in the milder climates of Spain and Italy the plant may be awned, though not so with us. In the figures of Bauhin, Morison, Monti and Scheuchzer there are no awns, and therefore they agree better with our plant. The hairs mentioned in the specific character, on the inside the base of the spikes, are not so evident in our specimens as to justify such an application; for though our plants have some hairiness there, they have it at least as much on the outside, and still more in other parts^o.

Native of Europe, the Levant, and the Cape of Good Hope. First found in England by Mr. Newton, between Penzance and Market-jeu in Cornwall; and lately again in the same place by Mr. Stackhouse. It flowers in July and August till late in the autumn.

30. Culms filiform, a foot high, ascending, leafy, weak, putting out roots at the joints. Leaves linear-lanceolate, short, naked. Rachis depressed. Florets directed one way, ovate, acute, generally in pairs and pedicelled unequally. Calyx streaked with green, convex on one side, flat on the other, with a short whitish accessory valve. Corolla of the same size and form with the calyx, not at all wrinkled. Stigmas blackish brown. Seed white, margined on the flatter side.

Native of the East Indies, in shady grass spots. Sent by Koenig^p.

31. Leaves lanceolate. Culms almost leafless, a foot high, filiform, at top naked, upright. Spike filiform, thin, with a flexuose rachis, alternately on each side at the teeth. Florets two, one sessile, the other pedicelled. Spikes slender, at first so close as to appear one, although they are alternate.

Native of North America, where it was found by Kalm^q. Also of Japan and the Cape of Good Hope, according to Thunberg; of the Society and Easter islands. Introduced in 1781, by Mons. Thouin. It is an annual grass; flowering from July to September^r.

32. It resembles the preceding very much, but differs in having the culm and leaves hairy, the spikes a little thicker, but especially in having the inner valve ovate, twice as large, and three-nerved. The accessory valve is extremely minute^s.

It is an annual grass as well as the former. Culms from one to two feet high, covered with sheaths that have long hairs closely set. Spikes long, linear, four or five. Rachis flat, membranaceous, flexuose. On one side of this the florets are fixed alternately in pairs, the pedicel of one being three times as long as that of the other^t.—Its native place is not ascertained, notwithstanding its trivial name.

33. Height a foot and half, branched at the base. Outer glume of the calyx smaller, lanceolate; inner larger, the length of the corolla, hairy at both edges: the accessory valve is a scalelet scarcely observable, and often wanting. Corolla quite smooth. Flowers lanceolate, acute, one of them sessile. It varies with the leaves more or less hairy; and with the sheaths and joints hairy and naked. This resembles *P. filiforme* so much, that they may easily be confounded: and perhaps, *sanguinale*, *filiforme*, *egyptiacum* and *ciliare* are nothing more than varieties.—In *egyptiacum* the accessory valve is a small toothlet, and the outer valve of the calyx short, ovate-lanceolate, and naked. In *filiforme* the accessory valve is scarcely larger, but the outer valve of the calyx is longer and lanceolate. In *sanguinale* the accessory valve is as in *egyptiacum*, but the outer glume of the calyx is more ovate.

ⁿ Stackhouse in Withering. ^o Withering.

^q Linn. spec.

^r Hort. kew.

^s Retzius.

^p Retzius.

^t Willdenow.

This species was brought from Java and China by Wennerberg^a.

34. Culms prostrate, even, branched. Spikelets linear, straight, narrow. Flowers alternate below. Outer scale of the calyx shorter, spreading, adhering to the rachis^a.—Native of both Indies.

Retzius says he had it from Koenig, with the culms branching very much and leafy to the very spikes, with tender leaves: and from Thunberg, gathered at the Cape of Good Hope, with the culms creeping, less leafy at top, the leaves far more rigid, and the sheaths equitant in two rows. He doubts whether they are the same or different.

35. Root annual. Culms a foot high, upright or ascending, even. Leaves lanceolate, even, ciliate. Sheaths having hairs thinly scattered over them, inclosing the culms below. Peduncle long, terminated by four digitate racemes from one point, pointing one way, simple, loose, almost upright. Flowers alternate. The larger valve of the calyx ovate, three-nerved, acute, flattish, softly and densely ciliate: the other valve lanceolate, shorter, naked. The outer petal has a straight terminating awn; the inner is narrower. The flower falls entire with the seed, and on account of the hairs in some measure resembles a bug^a.

Linneus, not observing the glume which is received by the margin of that which is awned, but taking the smaller glume of the calyx for a glume of the corolla, made this grass a *Milium*. Koenig, who found it in the East Indies, first discovered it to be a *Panicum*^a.

36. Culms somewhat branched, a foot high, narrower. Leaves short, rugged at the edge. Spikes two together, (according to Retzius commonly three, and sometimes four) terminating, nearly equal. Flowers sessile in a double longitudinal row along the rachis, awnless, ovate, even. Anthers yellow. Pistils feathered, purple.

It has the appearance of *Paspalum distichum*, but the leaves are lanceolate and flat, not bristle-shaped and involuted. Flowers sharpish but not mucronate. The calyx has a short accessory valve, whereas there is none in *Paspalum*. Flower ovate, convex, not compressed. Peduncle pubescent at top, not even^a.

Native of the East Indies, where it was found by Koenig.

37. Culms prostrate, rooting, branched, leafy. Leaves short, clustered, tomentose, as are also the sheaths. Peduncle elongated, erect, naked, terminated by two spikes, diverging horizontally, directed one way, squarrose. Rachis membranaceous, dilated, flexuose, jointed; at each joint a bundle of two or three flowers, fenced with involucre or difform cartilaginous bractes. One valve of the calyx very large, ovate, acuminate, flexuose, the other smaller, lanceolate; both hard and cartilaginous like the bractes: the accessory valve small, acute, under the larger. Corolla lanceolate, the size of the smaller calycine glume. A bundle of barren flowers terminates the spike. The appearance and structure are so singular, that it seems to constitute a distinct genus. It has somewhat the appearance of a *Cenchrus*^b. Linneus placed it in that genus, and the description, from the *mantissa*, has been already given under *Cenchrus muricatus*.

Willdenow remarks, that the spikes are usually in pairs, but that there is only one in Linneus's own specimen.

Native of the East Indies. Annual. Frequent in the sands of Malabar, during the rainy season.

38. This approaches nearest to *P. stagninum*, but is very different. The culms and leaves are the same as in that. Spikes compound, half a foot long, in clusters. Spikelets scarcely an inch in length, almost pressed to the rachis, binate, ternate or solitary. Outer valve of the calyx terminating in a naked awn four times as long as the flower: inner somewhat longer terminated by a dagger-point or short awn; both hispid especially at the edge: the accessory valve short

from a wide base surrounding the pedicel ending in a point, naked. Corolla as in *stagninum*, but acuminate and hermaphrodite. Besides between the corolla and that valve of the calyx which has the longer awn, there is a hyaline petal, as in *P. stagninum*; but in this there is no rudiment of stamens or pistil.

Native of the East Indies; sent by Koenig^c.

39. Culm creeping, leafy, rising, filiform, tender, simple. Leaves lanceolate, wider than in the rest, shorter. Spikelets four or five, alternate, remote, pressed to the rachis, growing on one side. Valves of the calyx lanceolate, slightly keeled, mucronate, with a straight awn, double the length of the florets, except the inmost, which has the awn shorter.

Native of Ceylon^d; and the Society isles in the Southern ocean, according to Forster.

40. This resembles the preceding very much. Culm upright, stiff, six feet high. Leaves long. Spike curved inwards. Rachis three-sided. Spikelets twelve or more, ovate-oblong, remote, alternate, seldom opposite, on every side of the rachis. Calyx swelling a little, even, nerved; outer valve shorter, ovate, acute; middle one with an awn; inner with a dagger-point scarcely to be called an awn.—It is an annual grass, native of Malabar^e.

41. In stature this grass emulates a small tree, simple below and fascicled above.—Native of Virginia^f.

42. Culms a foot high, erect, branched, even: with the internodes thickish at the base and knee-jointed. Leaves with even sheaths, striated, ciliate at the edge and throat. Panicle with simple, three-sided branches, channelled on one side; at each tooth two or three flowers, with a hair or two on the pedicel. Outer valve of the calyx short, membranaceous, perfoliate; the others ovate.—Native of the Indies^g.

43. Native of the Cape of Good Hope. Found there by Thunberg.

44. Culms two feet high, very much branched, even, with the sheaths of the leaves hairy, and at length rugged. Panicle spreading very wide, loosish with filiform branches. Glumes one-flowered, awnless, ovate, green and purple, eight-grooved. Anthers saffron-coloured and pistils deep violet, by which it is readily distinguished from *P. capillare* and others. Leaves even, linear, loose, the margin towards the base toothletted with calluses, sometimes furnished with a hair and sometimes without it. The outer valve of the calyx shorter, wide, embracing.—It is an annual grass, found by Forskahl near Cairo^h.

Jacquin describes the root as perennial, composed of thick long whitish fibres. Culms annual, several, aggregate, thickening at the base into a sort of bulb and there connected and rooting, two feet high, erect, round, smooth, not branched, as Linneus says they are, but quite simple without the least branchlet, only connate immediately above the root. Sheaths long, extending to the next knot above, hairy and rough, except the upper ones, which are often quite smooth. Leaves ensiform-linear, about ten inches in length, four lines in width, acuminate, even, smooth, sometimes thinly haired below, loose, prominent underneath into a sharp midrib, sometimes flat, sometimes converging, cartilaginous-toothed at the edges, only to be discerned by the magnifier. Panicle spreading very much, filiform, branched, wide. Flowers scattered, solitary, on capillary pedicels, which are commonly pressed so close to the branchlets of the panicle, as not to be discerned, so that the flowers appear to be sessile. Calycine glumes one-flowered: the two inner valves awnless, ovate, blunt, eight-grooved, pale green with seven purple streaks; the third outer valve small, acute, pale, not grooved. Corolla whitish, pellucid, obtuse, nearly the size of the calyx; the valves subovate: one concave and marked with lines, the other flatter. Filaments white, purple at the tip. Anthers twin, oblong, yellow. Stigmas feathered, purple.

The seeds were sent from St. Domingo. It was introduced here as a native of Egypt in 1771, by Monf. Richard, and flowers in July and Augustⁱ.

^a Retzius. ^b Linn. spec. ^c Linn. mant. ^d Retzius.
^e Linn. mant. ^f Retzius.

^a Retzius. ^b Linn. ^c Linn. suppl. ^d Linn. spec.
^e Linn. mant. ^f Idem. ^g Hort. kew.

45. This is allied to the preceding. Culms creeping, a foot high, ascending. Lower leaves wider, covering the stem all over with their sheaths, spreading so much that they are almost divaricate and reflex, mucronate; the sheaths subpubescent: the upper leaves are narrower, longer, erect. The panicle consists of three or four erect racemes, scarcely branched, on which the flowers are alternate, somewhat remote, ovate. The outer calycine valve is very short, and blunt.

It is an annual grass, cultivated in the East Indies^k. It was introduced in 1777, by Patrick Russell, M. D. and flowers from July to September^l.

46. Culms upright, quite simple, leafy. Leaves spreading, with the sheaths tomentose at the edge. Branches of the panicle few, naked, stiff, straight half way, but the flowering part flexuose. Flowers for the most part in pairs, one of them pedicelled. The accessory valve of the calyx very short and truncate. Corollas the length of the calyx, one hermaphrodite, the other male. Seed ovate, flattish. The whole grass is whitish, and is taller than the other Panics.

Very common in Malabar, on the borders of ponds: found by Koenig.

47. Culms two feet high and more, slender, four-cornered-compressed, branching. Leaves linear, from four to six inches long, narrow, naked. Branches of the panicle capillary, remote, solitary, about eight in number. Florets also remote, most of them solitary, sessile and pedicelled; but here and there in pairs, and then one is sessile, and the other on a long pedicel; they are ovate and whitish. Pedicels three-sided. Valves of the calyx almost equal, whitish streaked with green; the accessory valve ovate. Seed white, ovate, flattish.—Koenig sent it from Tranquebar.

48. Culm branched, creeping far and wide, putting out long and very simple fibres at the joints, thence rising straight, pubescent above the leaves. Leaves lanceolate, naked, short. Sheaths ciliate, gaping between the joints. Panicle stiff and straight, with few, almost upright branches, that are quite simple. Florets commonly in pairs, seldom in threes or solitary, sessile. Involucres bristle-shaped, varying in number, white. Outer valve of the calyx lanceolate, almost the length of the flower, terminated by a straight awn three times its length; the second ovate, half the length of the flower, with a very short terminating awn; the third embracing the corolla, larger, wider, awnless: all green and streaked. Corolla lanceolate, white, with equal valves.—Wennerberg brought it from China^m.]

49. Common Millet rises with a reed-like channelled stalk, from three to four feet high: at every joint there is one reed-like leaf, joined on the top of the sheath, which embraces and covers that joint of the stalk below the leaf, and is clothed with soft hairs; the leaf has none, but has several small longitudinal furrows running parallel to the midrib. The stalk is terminated by a large loose panicle, hanging on one side.

[Loureiro describes the culm as annual, three feet high, upright, thick, somewhat compressed and flexuose, hollow, jointed, branched. Leaves awl-shaped, largish, hairy, flat, reflex. Panicles scattered, large. Calyx three-valved, the outer glume only half the size. Corolla three-valved; glumes membranaceous, sharpish; outer one-third of the size, bifid at top. Styles capillary: stigmas ovate, feathered, coloured. Seed subovate, compressed a little, pale, shining.

Native of the East Indies, and China. In those countries, as also in the South of Europe, it is cultivated as an esculent grain. It varies in the colour of the seed.]

Mr. Miller mentions two varieties, one with white, the other with black seeds, but not differing in any other particular. He has also another species, which he names *Milium sparsum*. It was found at La Vera Cruz by Houstoun, who called it *M. panicula amplius erecta sparsa*. It has a more slender stalk than common Millet, about three feet high. The sheaths have

no hairs but are channelled. The leaves are shorter. The panicle stands erect, and the chaff has shorter awns or beards.

[Loureiro mentions a variety with brownish or dusky red seeds. Retzius describes the variety with black seeds (*Milium femine nigro*. *Bauh. pin.* 26. & *Mor. hist.* 3. 196. f. 8. t. 5. f. 2.) Culm round, jointed almost upright, branched. Leaves a foot long, half an inch wide, hairy, with hispid sheaths: no ligule, but instead of it widish bristles. Panicle nodding, with the peduncles commonly in pairs, dichotomous, rugged backwards, flexuose. Flowers on each pedicel commonly two, sometimes one or three, pedicelled, sometimes but very seldom one sessile. Calycine glumes ovate, acute, nerved; the third glume is much shorter. Corolla globular, hyaline. Seed brownish-black.

Variety β . has the panicle attenuated, the culm upright, the leaves lanceolate, the sheaths even and smoothⁿ.

Gerarde, in his Herball (A° 1597.) says, "I have of it yearly in my garden."

50. Root perennial, stoloniferous. Culms eight feet high and more, erect, branching very much. Leaves rough at the edge, and on the larger nerves, but less so. Edges of the sheaths bearded with bundles of whitish hairs like fringes. Panicle a foot long, branching very much. Pedicels two-flowered, so that one flower is subsessile on the pedicel of the other. Florets copious, green, round, acuminate. Calycine valves acute, even the accessory one, which is one-third shorter. Hermaphrodite floret two-petalled: the male one seems one-petalled.

Cultivated in Malabar, where it never produced seed, but is increased by offsets or runners; whence Koenig supposes it not to be a native, but to have been introduced from some other parts.

The natives there use it, particularly in ulcers of the nose, and as a discutient in other cases, either simply bruised, or made into a cataplasm by boiling, as Koenig reports.

51. This is a tall grass, with a slender culm and black knots. Leaves acuminate, very slightly hairy, five inches long, and three quarters of an inch wide. Sheaths shorter than the joints (or internodes with the edges bearded. Panicle almost a foot long, with long branches spreading at an acute angle and rugged, spotted with black in the axils. Flowers scattered, solitary or in pairs, pedicelled, oblong, acute, small. The two inner glumes of the calyx equal, purple; the accessory valve a little shorter, whitish; all lanceolate. Corolla of the same length and shape with the calyx.—Wennerberg gathered it in Sumatra.

52. Height a foot and a half. Culm filiform, decumbent at the base, rooting here and there. Leaves short, perfectly lanceolate, with white scattered hairs. Panicle with short solitary subdivided branches, spreading at an acute angle. Flowers small, sessile and pedicelled, oblique. The hollow glume of the calyx shorter, almost boat-shaped; the flattish one longer; both rugged-muricate: the accessory one small, lanceolate, striated, placed under the preceding. Corolla oblique, very smooth.—Native of the East Indies; sent by Koenig^o.

53. This grass resembles *Poa capillaris*, but is entirely hirsute^p. It is three feet high, with a panicle more than a foot long, the peduncles and pedicels stiff and straight. Calyxes pale green, narrow, naked. Joint of the stem bearded, but the beard turned upwards. Sheaths of the leaves striated, and between the streaks callous dots with hairs on them. There are also hairs on the leaves themselves arising from raised dots^q.

Native of Virginia and Jamaica. Cultivated in 1758, by Mr. Miller. It is an annual grass and flowers from June to August^r.

54. This has been confounded with the preceding. It is about a foot in height. Culms decumbent, branched, slightly hairy. Leaves two inches long,

^k Linn. spec.

^l Hort. kew.

^m Retzius.

ⁿ Willdenow from Moench.

^o Retzius.

^p Linn. spec.

^q Hort. kew.

narrow, hairy as are also the sheaths, but they have no callous dots. Beard of the joints dense, turned downwards. Panicle scarcely three inches long, the whole of an ovate form, with the pedicels remarkably flexuose. Calyxes ovate, blunt, with a few rough hairs*.—Native of the East Indies.

β. Retzius mentions a variety that is wholly smooth, found by Koenig every where in the rice fields.

55. Culm simple or branched, two feet high and more. Leaves ensiform with ciliate sheaths. Panicle spreading, compound. Peduncles capillary, flexuose, smooth. From each tooth of the rachis two florets, one subsessile, the other pedicelled.—Native of Jamaica and Japan*.

56. This is very nearly allied to *P. grossarium*. Root creeping, perennial. Culms from five to ten feet high, upright, simple, even. Leaves lanceolate, towards the top convolute and sharp, smooth, except at the edge, which is rugged, and at the base, which is rough-haired. Panicle erect, a foot long and more: the lower branches in whorls, the upper in pairs. Florets numerous, alternate, ovate-sharpish, pressed to the raceme, on short subflexuose pedicels. Spikelets polygamous. Outer valve of the calyx very small: inner oblong, sharpish, pale. Instead of the hermaphrodite there is often a female floret with a male at the side of it, or a female alone without the hermaphrodite and male. Seed oblong, shining.

Native of the West Indies; said to have been brought from the coast of Africa. Guinea-grass is much esteemed in Jamaica both for sheep and cattle, and flowers chiefly in October†.

57. Height from one to two feet. Roots and radicles very long, filiform. Culm creeping at the base, ascending, somewhat branched, rooting at the joints, round, striated, pubescent or smooth, loose. Branches from the sheaths of the leaves, somewhat hirsute. Leaves distich, obliquely elliptic at the base, unequal on the sides, terminated by a lanceolate point, quite entire, somewhat waved, very thin and very finely streaked, smooth underneath, hairy above. Sheaths at the joints short, open in front, striated, hirsute, hairy at the neck. Knots rather large, villose with white hairs. Panicles small, erect, with terminating and axillary peduncles; branches short, few-flowered: florets pedicelled, small, green. The two valves of the calyx are oblong, nearly equal, awned at the tip. The two valves of the corolla, in the hermaphrodite flower, are oblong, blunt, whitish; one of them smaller and included. Anthers pale. Styles rather long. Stigmas feathered, whitish. In the male flower, the outer valve is ovate, acute, concave, and includes the inner, which is smaller, ovate, acute and more tender. Anthers purple.—Native of Jamaica and Hispaniola.

58. This grass is a span in height. Culm creeping, but in a fertile soil erect, round, tomentose: branchlets ascending, short, about an inch in length, leafy, sheathed, jointed, tomentose-hirsute. Leaves half-embracing, short, broad-lanceolate, entire, acuminate, flat, extremely hirsute at the edge, soft. Sheaths small, rough-haired, with the ligule hirsute. Panicles small, very short: racemelets simple: florets small, ovate, obtuse, on short waved pedicels. Inner calycine valve ovate, concave, striated, rough-haired; outer minute. Valves of the hermaphrodite corolla ovate: filaments the length of the glumes; anthers purple: stigmas villose, dark purple, short: seed oblong, shining. In the male or neuter floret, the outer valve is like the inner calycine valve, ovate, striated; the inner is very small, flat, whitish.—Native of Jamaica, on sandy fields in the mountains.

59. Culm a foot high and more, decumbent, creeping a little, branched, jointed, sheathed, round, striated, smooth. Sheaths at the base of the branches elongated, embracing, striated, smooth: branchlets ascending, filiform, strict, subdivided, sheathed, leafy, round. Leaves half embracing, lanceolate, broadish, an inch long, acuminate, rigid, striated, somewhat rugged to the touch. Panicle small, oblong; composed of racemelets which are alternate, distant, sub-

divided, capillary, short, rugged. Florets remote, ovate, minute. Valves of the calyx almost equal, ovate, obtuse, concave, rigid, streaked with purple. Glumes of the corolla, in the hermaphrodite florets, a little less than those of the calyx, more slender, whitish. Filaments short. Anthers ovate, largish, bifid, vertical, whitish-yellow. Styles longer than the glumes. Stigmas villose, long, recurved, whitish. Seed roundish, shining, very minute. In the neuter floret, the outer valve of the corolla is ovate and striated, the same size with the inner glume of the calyx: the inner valve is tender, less, whitish. This grass is distinguished by its rigidity.

Native of Jamaica in the high mountains, with *Apluda Zeugites*.

60. Height from one to two feet. Culm jointed, round, pubescent. Leaves retuse and oblique at the base, entire, smooth, striated, three or four inches long. Sheaths long, with a contracted ligule, appearing somewhat hirsute when magnified. Panicles peduncled, an inch and more in length; peduncle long, filiform: florets brownish green, ovate. Pedicels now and then two-flowered. Outer valve of the calyx less, inner ovate. The rest as in *P. carthaginense*, which it resembles: but the culm is by no means branched, the sheaths are more contracted, the panicles peduncled, the florets in pairs, and the glumes ovate not acute.—Native of Jamaica in boggy pastures.

61. Height from two to four feet. Culm subdivided, compressed a little, striated, even. Leaves striated, even, spreading. Sheaths close, even. Branches of the panicle subdivided, spreading, almost upright, flexuose. Florets very minute, pedicelled, pressed close, approximating, ovate, bright green. Outer valve of the calyx less by half; inner a little larger; all ovate acute concave striated, bluntly keeled at the edge, appearing ciliate when magnified. Valves of the corolla in the hermaphrodite floret equal, less than the calycine glumes, ovate, concave. Filaments very short. Anthers yellowish. Stigmas blood-red. Seed roundish, shining, extremely small. In the neuter floret, the outer valve resembles that of the calyx.

Native of Jamaica, in dry woods; flowering at the end of the year*.

62. Leaves as wide as those of *Commelina*, embracing at the throat, villose on the outside of the neck about the throat, and hairy also on the edge of the leaves at the base. Panicle of a very middling size, composed of lateral racemes, not subdivided, but producing simple pedicels. Florets awnless, largish.—Native of North America*.

Loureiro says that he found it in CochinChina. He describes the culm as annual, thick, five feet high. Leaves lanceolate, large, plaited and grooved, with an embracing villose neck. Florets awnless, in a panicle that is somewhat contracted or squeezed, with the lateral branches mostly simple. Seed pale.—Introduced 1765, by Mr. John Cree. It flowers in August and September; and is a perennial grass†.

63. Height three or four feet. Culm simple, erect, round, at top compressed and pubescent. Leaves long, wide, flat, entire, striated, spreading, even. Sheaths close, somewhat rough-haired. Branches of the panicle simple, alternate, spreading; the lowest somewhat compressed, even. Florets pressed to the rachis, ovate, blunt, smooth, yellow. Pedicels equal. Outer valve of the calyx only one-third of the size of the inner one; both ovate, obtuse, concave, striated, pellucid. Valves of the hermaphrodite corolla ovate, concave. Filaments short. Anthers small, purple. Stigmas villose, blood-red. Seed oblong, shining, yellow. Outer valve of the neuter floret concave, ovate, striated: inner flat, more tender, whitish.

This species is singular in the colour being constantly yellow, which is not the case in the rest. It occurs, but rarely, in dry places, in the Southern parts of Jamaica.

64. Culm a foot, sometimes two feet in height, ascending, filiform, round, leafy, smooth. Leaves long, sharp, erect, striated, even. Sheaths striated,

* Thunberg.

† Swartz.

* Swartz,

* Linn. spec.

† Hort. kew.

villose

villose at the neck and throat. Knots purple. Branches of the panicle alternate, flexuose, somewhat rigid. Florets rather distant, pedicelled, ovate, acute, smooth. Calycine valves ovate, acute, smooth; outer less by half than the other. Glumes of the hermaphrodite corolla equal, less than the calyx, pellucid, whitish. Anthers purple. Stigmas villose, blood-red. Seeds roundish, yellow, shining. In the male floret, outer valve ovate, acute, smooth: inner minute, flat, whitish. Filaments one to three, minute, barren.—Common in dry places in the West Indies.

This species bears much resemblance to *P. repens*; but that has a more rigid habit, and creeping culms: the leaves spreading, somewhat divaricating, wider, much striated, rather rugged at the edge, with the sheaths subdistich, almost covering the culm: panicle more subdivided, with the florets blunter and pale.

65. Culm three or four feet high, round, leafy, smooth. Leaves a span long, entire, longitudinally striated, smooth. Sheaths more contracted. Panicle a foot long: branches alternate, stiffer, angular, subflexuose, smooth. Spikelets large, smooth, pedicelled, commonly in pairs, one shorter than the other. Outer valve of the calyx larger, but shorter, wide, acute, slightly keeled: inner a little longer, ovate, keeled, striated. Corolla pale: outer valve ovate, acute, including the inner, which is smaller and flattish. Anthers pale, seeming to be barren. Style bifid. Stigmas longer, pale purple. Outer valve of the male corolla larger, acute, green; inner a little less, ovate, acute, whitish. Anthers purple. Seed in the hermaphrodite floret inclosed in the valves, which are hardened, yellow and shining. It is distinguished by the spikelets being much larger than in any of the species.

Native of Jamaica, in mountain woods, in the Southern parts^z.

66. Culms dichotomous, branched. Leaves ovate-lanceolate, with the sheaths dotted and hairy; the racemes of fructification are so entirely concealed within them, that no vestige appears on the outside: in other respects it is nearly allied to *P. latifolium*.

Native of Pennsylvania, where it was found by Kalm.

67. This grass contends for height with the loftiest trees in the East Indies, where it is a native; and yet the culm is scarcely wider than a goose quill^a.

In Linneus's *Flora zeylanica* it is said to be creeping. Leaves embracing, even, wider in this grass, in proportion to its length, than in any other; hence the culm resembles that of *Commelina*. Sheaths narrow, striated. Stem at bottom often branched. Panicle less wide, with very slender and almost capillary peduncles. Florets small, awnless.

Introduced in 1776 by Mons. Thouin. It flowers here in march and april^b.

68. Culms filiform, even. Leaves lanceolate, even, five-nerved underneath, rugged at the edge; with the sheaths deeply striated. Panicle erect, narrow, with the branches subramose. Flowering calyxes subsubulate, curved on the outside, striated, awnless, the outer valve under the curvature membranaceous, cordate, acute, extremely small. Fruiting calyxes three times larger, oval, gibbous, very blunt, many-grooved, purple. Corolla shorter by half than the calyx, membranaceous.—Native of the East Indies.

69. This is a very tall grass, with a very large difused panicle^c.—Native of Virginia, and other parts of North America. Introduced in 1781, by Mr. William Curtis. It flowers in august and september^d.

70. Native of the East Indies. This, or one like it, is also found in Portugal^e.

71. Culms a span high, prostrate, leafy, rooting. Leaves smooth, narrow. Panicle small, strict, with the peduncles sometimes a little flexuose. Calycine glumes very blunt, unequal.—Native of the East Indies: found by Koenig^f.

72. Culm from one to two feet high, round, leafy, subdivided at the joints, grooved, striated. Knots larger, approximating, brown. Leaves oblique at the

base, acuminate, slightly keeled, entire, longitudinally striated, smooth. Sheaths rather large, often ventricose, striated. Peduncles from the upper sheaths, filiform, long, very loose. Branches of the panicle clustered in form of a thyrse. Spikelets pedicelled, approximating, erect, pale green, smaller. Inner valve of the calyx ovate-lanceolate, acuminate: outer three times smaller, ovate, acute. Valves of the corolla in the hermaphrodite florets minute, ovate, shining, whitish, hardish, one a little less, the other included. Filaments very minute. Anthers purple. Style bifid. Stigmas purple. Seed oblong, whitish, shining. In the male or neuter floret, the valves of the corolla almost equal, lanceolate: outer greener; inner more tender involved in the outer.—Native of Jamaica, among other grass in woods.

73. Culm a fathom in height at most, round, pubescent. Branches divaricating, leafy, hirsute. Leaves acuminate, half a foot long, spreading, striated, lanuginose-hirsute, soft. Sheaths open in front, very hirsute. Knots larger. Panicles half a foot long; with spreading, flexuose, smooth branches. Spikelets smooth, larger, remote, on capillary pedicels. Outer valve of the calyx less by half, ovate, obtuse, villose at top: inner larger, ovate, striated, concave, slightly keeled, villose at top. Valves of the corolla in the hermaphrodite floret ovate, paler. Anthers purple. Seed inclosed by the yellow indurated valves of the corolla, ovate on one side, flat on the other. In the corolla of the male or neuter floret, the outer valve is larger, concave, ovate, acute, smooth, keeled: inner flat, less, more tender.—Native of Jamaica.

74. Culm a fathom in height, erect, round, leafy, smooth. Leaves ovate at the base, erect, longitudinally nerved, striated, smooth. Sheaths close, with the neck contracted and villose, striated, long. Knots small, with a black ring. Panicle erect, dense, branched; branches and branchlets capillary, strict. Spikelets small, numerous, pedicelled, pale green. Valves of the calyx almost equal, convex, ovate, striated, green: outer ciliate at top, even when ripe villose; the other smooth. Valves of the corolla in the hermaphrodite floret ovate, yellow, shining. Anthers whitish. Stigmas very minute, villose, whitish. Seed white, shining: in the male, valves less, ovate, yellow, one less than the other. Filaments two or three, with very minute anthers.

Native of Jamaica, in the high mountains near Coldspring in St. Andrew's parish.

75. Culm three or four feet high, smooth, leafy. Leaves broad-lanceolate, an inch in breadth, more than a foot in length, acuminate, erect, rounded at the base, hairy, ciliate at the edge, marked with lines, smooth, somewhat rugged underneath. Sheaths long, close, smooth, contracted at the neck. Ligule villose. Panicle almost a foot long, erect. Branches in a sort of whorl, scattered, villose at the base, spreading, subdivided, somewhat rigid; the last capillary. Spikelets roundish, larger, shining; on flexuose, capillary pedicels. Valves of the calyx equal, ovate, blunt, smooth, glutinous. Valves of the corolla in the hermaphrodite floret smaller, whitish. Filaments capillary, whitish. Anthers purple. Stigmas hairy, purple. Seed roundish, hardish, white, shining. Outer valve of the corolla, in the neuter floret, ovate, obtuse, smooth: inner smaller and more tender.

Native of Jamaica, in the Southern parts, in the woods of the highest mountains. It is there called *Ginger-grass*, on account of the width of the leaves. The great clamminess of the spikelets, whence its trivial name, is peculiar to this species^g.

76. This grass is a foot high, slender, smooth. Culm leafy up to the panicle, decumbent, putting forth long very simple, solitary rooting fibres at the joints. Leaves linear-lanceolate, acute, an inch and half in length, having long white hairs at the base on both edges. Panicle two inches long, slender, upright. Flowers small, peduncled, oblique, blunt, purple, naked. Accessory valve of the calyx acute, half the length of the flatter valve. It resembles *P.*

^z Swartz. ^a Linn. spec. ^b Hort. kew. ^c Linn. syst.
^d Hort. kew. ^e Linn. spec. ^f Retzius.

trigonum, even in the shape of the seed.—Gathered near Canton in China, by Wennerberg^h.

77. Culm one foot high to two feet, sometimes rooting, subdivided at the base, loose, round, smooth, leafy: knots approximating, smooth. Leaves acute, rounded and oblique at the base, entire, spreading, striated. Sheaths close, longitudinally striated, ciliate. Ligule open, hairy. Panicles erect, often from the bosom of the upper leaf, as from a spathe. Branches in alternate clusters, multifariously subdivided, spreading very much, so fine that the extreme ones are scarcely visible. Spikelets distinct, pedicelled, very minute, oblong, green. Outer valve of the calyx very small; inner ovate, scarcely sharp, striated a little. Valves of the corolla, in the hermaphrodite floret, equal, ovate. Anthers whitish. Stigmas feathered, pale. Seed oblong, shining, very minute. Outer valve of the corolla, in the male or neuter floret ovate acute; inner minute, flat, whitish.

On comparing several specimens of *Pan. brevifolium*, from the East Indies, with the Jamaica Grass, they do not appear to be distinct, although the latter is larger and more spreading, and with the glumes scarcely blunter. Calyxes in both two-flowered, and the leaves wider or narrower. Some other species have short leaves, and therefore Linneus's trivial name of *brevifolium* is a bad one: *trichoides* is very descriptive of the panicle in this species.

Milium capillare of Rottboell. *alt. hafn.* 1778. 271. which is *Pan. capillare* of Rolander, seems to be only a variety of this, the third calycine glume, of which those two authors deny the existence, is found in many of the spikelets, though extremely slender. All the parts are larger in this variety, except the spikelets, which are very small; the sheaths are very smooth, but the leaves are pubescentⁱ.

Dr. Patrick Browne calls it *Smaller Wood-grass*, and says it is very common in the woods of Jamaica, agreeing for the most part with the Guinea grass both in the arrangement and formation of its flowers. The stalk and leaves are excellent fodder for all sorts of cattle, and the seeds serve to feed small birds.

78. Native of Jamaica.

79. Culm four or five feet in height, simple, round, leafy. Leaves broadish, two feet long, erect. Sheaths close, grooved-striated. Panicle a foot long, erect. Branches in whorls, capillary, spreading, appearing rough in the magnifier. Spikelets pedicelled, somewhat remote, small, pale green. Valves of the calyx ovate, acuminate, concave, striated: outer less by half. Valves of the corolla in the hermaphrodite floret ovate, acute, whiter. Anthers purple. Stigmas feathered, whitish: in the neuter, outer valve of the corolla like the inner of the calyx; inner more tender, whitish. It is very nearly allied to *P. maximum* (n. 56.) differing chiefly in its shagginess^k.

Swartz has another species from Jamaica, which he names *Pan. caespitosum*, very nearly allied to *grossarium* (n. 55.): but that has the culm more erect, large and strict. The spikes panicked, more numerous and approximating; with clustered, larger spikelets.

Thunberg also has a species from the Cape of Good Hope, not enumerated above—*Panicum caudatum*, which he thus characterises: Panicle subspiked contracted or squeezed close, flowers solitary, glumes smooth, acute.

We are obliged to Retzius and Swartz for the greater part of the above species, which are natives either of the East or West Indies. The former has, in his second fasciculus, a species, which he names *Pan. Caffrorum*. It is called *Caffer-korn* at the Cape, and may be of the genus *Holcus*.

In his fifth fasciculus, p. 18. n. 34. he has *Pan. hispidulum*, sent by Koenig from the East Indies, which he says is very nearly allied to *Pan. stagninum*, but is very different from it. The corolla is acuminate and hermaphrodite. Between the corolla and the long-awned valve of the calyx there is a hyaline petal, as in that; but in this there are no stamens, nor is there any rudiment of a pistil.]

^h Retzius.

ⁱ Swartz.

^k Idem.

PROPAGATION AND CULTURE.

7, 8. The seeds of these sorts may be sown in the spring, at the same time as Barley is sown, and may be managed exactly in the same way; but they should not be sown too thick, for these seeds are very small, and the plants grow stronger, therefore require more room.

The German sort does not grow above three feet high, unless it is sown on very rich land, in which case it will rise to be four feet high; but the leaves and stems of this Corn are very large, so require to stand four or five inches apart, otherwise they will grow up weak and come to little. These large growing Corns should be sown in drills at about eighteen inches apart, so that the ground may be hoed between the rows, to keep them clear from weeds, and the stirring of the ground will greatly improve the Corn. In August the Corn will ripen, when it may be cut down and dried, and then should be housed.

The Italian Panic grows much larger than the German, and produces much larger spikes; so this should be allowed more room to grow, otherwise it will come to little. This is also later before it ripens, so it is not very proper for cold countries.

Most of the other sorts are natives of very warm countries, where some are used by the inhabitants to make bread. These grow very large, and require a good summer, otherwise they will not ripen in this country. The seeds should be sown the latter end of March or the beginning of April, on a moderate hot-bed, and the plants should be planted out when grown to a proper size, upon a bed of light rich earth, in a warm situation. They should be planted in rows about three feet asunder, and the plants must be kept clear from weeds. When the plants are grown pretty tall, they should be supported by stakes, otherwise the winds will break them down; and when the Corn begins to ripen, the birds must be kept from it, otherwise they will soon destroy it. These are preserved in some curious gardens for the sake of variety, but they are not worth cultivating for use in England.

49. The common Millet was originally brought from the Eastern countries, where it is still greatly cultivated, from whence we are furnished annually with this grain, which is by many persons greatly esteemed for puddings, &c. but is seldom cultivated in England in quantity, but by way of curiosity in small gardens, for feeding of poultry; but the seeds generally ripen very well.

They must be sown the beginning of April, upon a warm dry soil, but not too thick, because these plants divide into several branches, and should have much room; and when they come up, they should be cleared from weeds, after which they will, in a short time, get the better of them, and prevent their future growth. In August these seeds will ripen, when it must be cut down, and beaten out, as is practised for other grain; but when it begins to ripen, if it be not protected from birds, they will soon devour it.

[21. Scotch-grass is propagated in Jamaica by the joints or root, and set in small drilled holes about two feet and a half asunder. The young shoots begin to appear in a few days, and as they grow, they spread and creep along the ground, casting a few roots, and throwing out fresh shoots from every joint, as they run; these soon supply the land, and fill the field with standing plants, which alone are generally cut. It is fit to cut in six months from the first planting, and every month or six weeks after, if the season fall in kindly, and due care be taken to keep the ground free from weeds. An acre of good ground, well stocked with this grass, near Kingston or Spanish town, is computed to bring in above a hundred and twenty pounds a year; and when once planted holds many years: but when the main stalk or root grows hard or woody, the younger shoots do not push so luxuriantly, and they are then obliged to plant anew; this however is easy, being done gradually, for the pieces are generally supplied as they clean them, by throwing up every stubbed or falling root they find, planting a few joints in the place.]

56. Guinea-grass is increased in the same manner, but does not require near so much moisture, and is reckoned a more hearty fodder. It is not so much cultivated as it ought to be. The lands about the towns are too subject to drought to produce it in any perfection; and in the other parts of the country they are too indolent to be at the trouble of planting it; not considering how much time and labour is lost in seeking for other fodder, which is not so good, and cannot so easily be obtained; nor do they consider the losses they sustain in stock, for the want of abundance of good wholesome food¹.

PANICUM. See *Andropogon*, *Alopecurus*, *Cynosurus*, *Holcus*, *Paspalum*.

PANNA-KELEUGO-MARAVA. See *Polypodium*.

PANOVER-TSJEKAVA. See *Tropa*.]

PANSIES. See *Viola*.

PAPAYER (of Pliny and other Latin authors: a Papo, because it was put into Papa or Pap to procure sleep, whence the verb Pappo in Persius. In Greek Μῆλον.)

Lin. gen. n. 648. Reich. n. 704. Schreb. n. 881.

Tournef. t. 119. Juss. 236. Gærtn. t. 60.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Rhoeadeæ*. *Papaveraceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth two-leaved, ovate, emarginate: leaflets subovate, concave, obtuse, caducous.

COR. Petals four, roundish, flat, spreading, large, narrower at the base; alternately less.

STAM. Filaments numerous, capillary, much shorter than the corolla. Anthers oblong, compressed, erect, obtuse.

PIST. Germ roundish, large. Style none. Stigma peltate, flat, radiate.

PER. Capsule crowned with the large stigma, one-celled, half-many-celled, opening by many holes at the top under the crown.

SEEDS numerous, very small. Receptacles, longitudinal plaits; the same number with the rays of the stigma, fastened to the wall of the pericarp.

Obs. The pericarp is either globular or oblong, and differs in the rays of the stigma. The primary division of the species is to be taken from the smoothness and roughness of the pericarp.

ESSENTIAL CHARACTER.

Cal. two-leaved. Cor. four-petalled. Caps. one-celled, opening by holes under the permanent stigma.

SPECIES.

* With hispid Capsules.

1. *Papaver hybridum*. Round prickly-headed Poppy.

Lin. spec. 725. Reich. 2. 571. hort. cliff. 201. upf. 136. Hudf. angl. 230. Wither. arr. ed. 3. 485. Engl. bot. t. 43. Relb. cant. n. 383. Sibth. oxon. n. 472. Krock. files. n. 816.

P. laciniato folio, capitulo hispido rotundiore. Raii syn. 308.

Argemone capitulo brevior. Bauh. pin. 172.—hispido. Bauh. hist. 3. 396. 1.

A. capit. rotundior. Park. theat. 369. 1. Raii hist. 855. Petiv. brit. t. 52. f. 5.

A. capit. torulo. Ger. 300. 1. emac. 373. 1. Lob. obs. 144. 1. ic. 1. 276. 1. Mor. hist. 2. 278. f. 3. t. 14. f. 9.

Capsules subglobular torose hispid, stem leafy many-flowered.

2. *Papaver Argemone*. Long prickly-headed Poppy.

Lin. spec. 725. syst. 489. Reich. 2. 571. fl. suec. n. 466. hort. cliff. 201. Hudf. angl. 230. Wither. arr. ed. 3. 486. Curt. lond. 5. 38. 313. Relb. cant. n. 384. Lightf. scot. 279. Sibth. oxon. n. 473. Fl. dan. t. 867. Hall. helv. 1061. Scop. carn. n. 636. Pollich pal. n. 505. Neck. gallob. 229. Sauv. monsp. 252. Ger. prov. 373. Villars dauph. 3. 688. Krock. files. n. 817. Gron. orient. 158.

P. laciniato folio, capitulo hispido longiore. Raii syn. 308.

P. erraticum capit. long. hisp. Tournef. inst. 238. Garid. 348.

¹ Browne jam. See Bath Society's Papers 5. 282.

Argemone capitulo longiore. Bauh. pin. 172. Lob. obs. 144. 2. ic. 1. 276. 2. Ger. 300. 2. emac. 373. 2. Park. theat. 370. Raii hist. 856. Petiv. brit. t. 52. f. 6.—spinofo. Bauh. hist. 3. 396. 2.

A. capit. tenuiore long. hirsuto. Mor. hist. 2. 278. f. 3. t. 14. f. 10.

Capsules club-shaped hispid, stem leafy many-flowered.

3. *Papaver alpinum*. Alpine prickly headed Poppy.

Lin. spec. 725. syst. 490. Reich. 2. 572. mant. 401. Hall. helv. n. 1062. Scop. carn. n. 637. Jacqu. austr. 1. t. 83. Krock. files. n. 818. Villars dauph. 3. 689. Allion. pedem. n. 1067.

P. alpinum saxatile coriandri folio. Tournef. inst. 239. Segu. ver. 1. 416. t. 4. f. 4.

P. Argemone flore flavo, perpusillum. Pluk. phyt. t. 247. f. 3.

Argemone alpine foliis Scandicis, lutea. Bauh. pin. 173. prodr. 93. Raii hist. 856. 10.

A. alpina coriandri folio. Bauh. pin. 172. Raii hist. 857.

A. minor Ponæ. Dalech. hist. 1714.

Capsule hispid, scape one-flowered naked hispid, leaves bipinnate.

4. *Papaver nudicaule*. Naked-stalked prickly-headed Poppy.

Lin. spec. 725. syst. 490. Reich. 2. 572. hort. cliff. 136. Fl. dan. t. 41. Gunn. norv. n. 578. Gmel. fib. 4. 180. Kniph. cent. 10. n. 68.

P. erraticum nudicaule, flore flavo odorato. Dill. elth. 302. t. 224. f. 291.

P. errat. luteo flore, capite oblongo hispido et lævi. Amm. ruth. 61. n. 81.

Capsules hispid, scape one-flowered naked hispid, leaves simple pinnate-sinuate.

** With smooth Capsules.

5. *Papaver Rhoeas*. Corn or Red Poppy.

Lin. spec. 726. Reich. 2. 572. hort. cliff. 201. upf. 136. fl. suec. n. 468. mat. med. 134. Woodv. med. bot. 512. t. 186. Hudf. angl. 230. Wither. arr. ed. 3. 486. Curt. lond. 3. 32. 215. Lightf. scot. 279. Relb. cant. n. 385. Sibth. oxon. n. 474. Hall. helv. n. 1064. Scop. carn. n. 638. Pollich pal. n. 507. Neck. gallob. 229. Sauv. monsp. 252. Ger. prov. 373. Villars dauph. 3. 689. Allion. pedem. n. 1068. Krock. files. n. 820. Pallas it. 3. 546. Gron. orient. 157. Regn. bot. Ludw. eccl. t. 17. Blackw. t. 2. & 560. Kniph. cent. 5. n. 63, 64. Knorr. del. 1. t. R. 14. Ger. 299. 1. emac. 371. 1. Petiv. brit. t. 52. f. 2. Lob. obs. 143. ic. 1. 275. Raii hist. 855.

P. erraticum. Dod. pempt. 447. Matth. 1057.—primum. Fuchs. hist. 516.—prius. Dalech. hist. 439.—majus. Bauh. pin. 171.—simplex. Mor. hist. f. 3. t. 14. f. 6.—rubrum campestre. Bauh. hist. 3. 395.—rhoeas f. sylvestre. Park. theat. 366. 4.

P. laciniato folio, capitulo brevior glabro annuum, Rhoeas dictum. Raii syn. 308.

Capsules urn-shaped smooth, stem hairy many-flowered, leaves pinnatifid gashed.

[5. *Papaver dubium*. Long smooth-headed Poppy.

Lin. spec. 726. syst. 490. Reich. 2. 573. fl. suec. n. 467. Hudf. angl. 230. Wither. arr. ed. 3. 487. Curt. lond. 5. 37. 297. Lightf. scot. 280. Relb. cant. n. 386. Sibth. oxon. n. 475. Hall. helv. n. 1063. Pollich pal. n. 506. Jacqu. austr. 1. 17. t. 25. Krock. files. n. 819. Ger. prov. 373. Villars dauph. 3. 689.

P. erraticum capite longissimo glabro. Tourn. inst. 238. Rupp. jen. 2. 71. ed. Hall. 79. Vaill. bot. 157.

P. laciniato folio, capitulo longiore glabro. Raii syn. 309. Petiv. brit. t. 52. f. 3.

Argemone capit. long. glabro. Mor. blef. 233. hist. 2. 279. f. 3. t. 14. f. 11.

Capsules oblong smooth, stem many-flowered with bristles pressed close, leaves pinnatifid gashed.]

7. *Papaver somniferum*. White Poppy.

Lin. spec. 726. Reich. 2. 574. hort. cliff. 200. upf. 135. mat. med. 134. Woodv. med. bot. 503. t. 185. Hudf. angl. 231. Wither. arr. ed. 3. 487. Relb. cant. n. 387. Sibth. oxon. n. 476. Krock. files. n. 821. Hall. helv. n. 1065. Villars dauph. 3. 690.

- P. album* & *nigrum officinarum*. *Crantz. austr.* 138. *Blackw.* 482, 483. *Regn. bot.*
- P. sylvestre*. *Ger. emac.* 370. *Raii hist.* 854. *syn.* 308.
- α. *P. hortense* femine albo. *Baub. pin.* 170.
P. album. *Mill. dict. n.* 9.
Common White Poppy.
- β. *P. hort.* nigro femine. *Baub. pin.* 170.
P. fominiferum. *Mill. dict. n.* 8.
Black-seeded White Poppy.
- γ. *P. pleno flore* album. *Baub. pin.* 171.
Double-flowered White Poppy.
Calyxes and capsules smooth, leaves embracing gashed.
8. *Papaver cambricum*. *Welch Poppy.*
Lin. spec. 727. *Reich.* 2. 574. *hort. cliff.* 201.
Huds. angl. 231. *Wither. arr. ed.* 3. 488. *Engl. bot. t.* 66.
P. cambricum perenne, flore sulphureo. *Dill. elth.* 300. *t.* 223. *f.* 290.
P. luteum perenne, laciniato folio Cambro-britannicum. *Raii syn.* 309. *Petiv. brit. t.* 52. *f.* 4.
Argemone lutea Cambrobritannica. *Park. theat.* 369. *Raii hist.* 856.—capite longiore glabro. *Mor. hist.* 2. 297. *f.* 3. *t.* 14. *f.* 12.
P. erraticum pyrenaicum, flore flavo. *Baub. pin.* 171. *prodr.* 92.
Capsules smooth oblong, stem many-flowered smooth, leaves pinnate gashed.
9. *Papaver orientale*. *Oriental Poppy.*
Lin. spec. 727. *Reich.* 2. 574. *hort. ups.* 136. *Knorr. del. t. R.* 14. *a.* *Curt. magaz.* 57. *Gart. fruct.* 1. 289.
P. orientale hirsutissimum, flore magno. *Tournef. cor.* 17. *itin.* 3. 127. *Comm. rar. t.* 34.
Capsules smooth, stems one-flowered rugged leafy, leaves pinnate serrate.

DESCRIPTIONS, &c.

1. The leaves of the *Bastard Poppy* are much smaller than those of the common Corn-Poppy, and are cut into much finer segments. The stalks are slender, little more than a foot high, and not so branching as *P. Rhoeas*. The flowers are not so large, and of a deep purple colour, seldom lasting more than a whole day. The oblong prickly capsules are filled with small black seeds.

[Leaves doubly pinnatifid, with linear and nearly equal divisions; terminating pinna trifid; upper side nearly smooth: nerves of the under side covered with strong hairs pointing upwards. Branches and peduncles channelled, covered with hairs of the same sort. Calyx oval, with a few hairs, larger and broader than the *P. Argemone*^m. Petals small, dark dirty scarlet. Filaments deep purple. Anthers pleasant blueⁿ. Capsule with six furrows like a melon^o, or from six to ten, with as many rays to the stigma^p.

Native of some of the Southern parts of Europe, and of England, among corn: as near Norwich, and Wells in Norfolk; the Parks Oxford, and Eynsham, Oxfordshire; about Durham. It flowers in June and July.]

2. Leaves finer cut and smaller than those of the common sort, but not so fine as those of the preceding. Stalks not so high as either, seldom having many branches. Flowers not half so large, of a copper colour, and falling away in a few hours. They appear in May, and are succeeded by long slender channelled capsules, filled with small black shrivelled seeds.

[Leaves pinnate; pinnae opposite, decurrent, lanceolate, deeply pinnatifid; the terminating one trifid; the upper side nearly smooth; the nerves of the under side and petioles rough with diverging hairs. Stem and peduncles covered with hairs pointing upwards. Calyx hairy. Petals wedge-shaped, narrow^q: or, according to Withering, obovate, scarlet, with a black spot towards the base, white before the calyx opens. Germ inversely conical. From five to eight rays to the stigma. The capsule has the same number

of cells as the stigma has rays; it is ribbed, and the strong hairs or bristles on it are white and point upwards.

Stalks a foot or more in height, bending upwards; where it grows luxuriantly it puts forth several, but among corn it is commonly found with a single upright one. Leaves next the root numerous, on long petioles. The hairs on the calyx issue from small papillæ or prominent points. Petals finely notched at top. Filaments about twenty, purple. Pollen blueish. Germ the length of the filaments, thickest at top, somewhat angular; the hairs gray and pressed to it. Rays of the stigma from three to five, villose, blueish. Capsule for the most part naked below, of a purplish colour. Seeds blackish.

The divisions of the leaves are finer in this than in any of the other Poppies; the petals in general grow more upright, and instead of having the edges falling over each other, are usually a little distant; the filaments are uncommonly dilated at top not at the base, as Haller asserts; and the anthers stand on a very slender pedicel placed on the top of each filament.

Like most of the other Poppies, it usually grows in corn fields, and is not unfrequent about London. It flowers at the beginning of June, and is often overlooked from the extreme fugacity of its petals^r. It is a native not only of most parts of Europe, but of the Levant. This and the preceding are annual plants.]

3. Leaves smooth, with the segments finely cut. Stalks about a foot high, sustaining one small yellow or copper-coloured flower, succeeded by a roundish prickly head.

[The Poppy of the Alps is a little perennial plant hairy all over; the stems are naked and simple, with a bundle of leaves at the base; the leaves are winged; the first and the last leaflets are simple, the middle one larger, often trifid; the corolla is yellow, reddish or whitish; the capsule is oblong, with the upper part five-cornered. It grows in high rocky places, exposed to the wind, and bare of grass^s.

Scopoli remarks, that the variety with a yellow flower is not so hairy; that the segments of the leaves are more long and slender, with the last only trifid; and the stamens from sixty to seventy: he ascribes to this the synonym from Dillenius which belongs to *nudicaule*. The variety with a white flower is, according to him, a larger and more hairy plant, with paler leaves, all the pinnae trifid and wider, with the claws of the petals greenish. Seguier's figure seems to belong to this; the yellow variety not having sessile gashed pinnae.

Linneus, in his *mantissa* says, that the calyx is hirsute; the petals white with a yellow base; and the capsule ovate with five stigmas.

According to Haller, the leaves are commonly hirsute, but in the Swiss plant smooth; the stem a long span in height; the calyx brown and very hirsute; the corolla small, flaccid, white with a yellow claw, the yellowness frequently diffusing itself over the whole petal. Under the flower, as in *P. Argemone*, is a pencil of hairs of a dark-brown colour. The whole plant, when fresh, has a strong smell of musk. Neither Haller nor Scopoli distinguish this from the next species.

Native of Switzerland, Austria, Carniola, Dauphiné, Piedmont, Silesia.

4. Roots slender, whitish, fibrous (annual or biennial). Root-leaves many, hispid, the lowest broader and shorter, less deeply divided into fewer and broader segments; the leaves next above are divided into many narrower and longer segments, glaucous green especially underneath. From among these leaves arises a single naked stalk, sometimes two, a long span or a foot in height, somewhat glaucous, hispid, sustaining one flower of a middling size, like that of *P. cambricum*, but of a paler yellow colour, the two inner petals a little smaller, the two outer somewhat larger. Filaments very many, yellowish, with broadish compressed striated anthers. Germ roundish, greenish,

^m Woodw. Mfs.ⁿ Relhan.^o Linn.^p Robson.^q Woodw. Mfs.^r Curtis.^s Villars.

with eight rays on the top. Capsule roundish-oblong. Seeds black when ripe. The flower has a fine sweet smell like the Jonquil, especially morning and evening. The seeds were sent from the eastern confines of the Russian empire, from the province of Argunsky in Siberia, in latitude 51° by Heidenreich, and were sent to the Eltham garden, with those of several other plants by J. H. de Sprekelsen¹. It was therefore cultivated there in 1730. It varies with white and with yellow flowers; which appear from June to August².

Linneus says, the peduncles and calyxes are hairy; and that the leaves are less divided; but that it is so nearly allied to the preceding, as to give room to suppose it to be the produce of culture.

5. Stem from one to two feet high, upright, round, branched, purplish at bottom, with spreading hairs bulbous at the base. Leaves sessile, forming a kind of sheath at bottom, hairy on both sides; the segments or leaflets unequally toothed or serrate, each tooth rolled back at the edge, callous at top, and terminated by a small spine. Peduncles long, round, upright, one-flowered, the hairs on it spreading horizontally. The two calyx-leaves are hispid, membranaceous at the edge. Petals bright full scarlet. Stigma convex, with ten or twelve rays, of a purple colour. Capsule, not globular, as Linneus terms it, but shaped like an egg with the broad end cut off, (or, as Dr. Withering has it, urn-shaped, and nearly as broad as it is long) marked with as many raised lines as there are rays to the stigma; which is flat and scalloped on the edge. Seeds dark purple³.

Native of every part of Europe, the Levant, Japan, &c. and much the most common with us of any of the species, in corn-fields; also on dry banks and on walls, in such situations varying in its foliage, but still retaining the urn-shaped capsule, and spreading hairs. It flowers from June to August⁴. Being so common a weed it has many provincial names in English, besides its more classical ones of Corn Poppy, and Red or Scarlet Poppy; such as Corn-Rose, Cop-Rose or Cup-Rose in Yorkshire, Canker or Canker-Rose or Redweed in the Eastern counties, Head-wark, &c.

The petals give out a fine colour when infused, and a syrup prepared from this infusion is kept in the shops, more for the sake of the colour, than of any active principle the flowers possess. This species partakes in a small degree of the same properties with *P. somniferum*⁵. The capsules, as in that, contain a milky juice, of a narcotic quality, but the quantity is very inconsiderable. An extract from them has been successfully employed as a sedative; and some foreign practitioners even prefer this extract to opium⁶.

There is a variety with an oval black shining spot at the base of each petal, from which many beautiful garden varieties originate⁷. These have double flowers, white, red bordered with white and variegated.

[6. This species resembles the preceding so much, as often to be mistaken for it. But the capsules of this are long and slender; the hairs on the peduncle are finer, and pressed upwards close to it; on the young peduncles they assume a shining silvery-white appearance, which is very beautiful; on the other parts of the plant the hairs spread out; the stalks and leaves are much paler; the flowers much smaller, and less intensely red⁸.

Dr. Withering also remarks, that a strict attention to the proportionate length and breadth of the capsule, and to the hairs of the peduncle being laid close or spreading, will always distinguish this species from *P. Rhoeas*. According to him, the segments of the leaves are entire, the edges and midribs hairy; rays of the stigma from six to ten.

Dr. Withering mentions a variety, with the whole plant very hairy, figured in *Flora danica*, 902.—It seems, he says, to be an intermediate plant between *P. Rhoeas* and *dubium*, if it be not a distinct species.

The bristles on the peduncles are laid close, as in the latter, but the segments of the leaves are very much snipt at the edges. The calyx is studded with large transparent globules, and a taper bristle springs out of each. The capsule is nearly twice as long as it is broad, so that it is longer than in *P. Rhoeas*, but shorter than in *P. dubium*. It is found about Shankline Chine, and in pastures in various parts of the Isle of Wight.

P. dubium is native of several parts of Europe. According to Mr. Lightfoot, it is the most common species in North Britain; and in Battersea field, says Mr. Curtis, where the soil is light, it is nearly as common as the *Rhoeas*; nor is it unfrequent on walls. About Cambridge, Oxford, Stockwell in Surry, Bocking in Essex, &c.—This, as well as the preceding, is annual.]

7. The Common White Poppy has the stalks large, smooth, five or six feet high, branching. Leaves large, grayish, embracing at the base, irregularly jagged on their sides. Flowers terminating, whilst inclosed in the calyx hanging down, but before the corolla expands becoming erect. The calyx is composed of two large oval grayish leaves, that separate and soon drop off. The corolla is composed of four large, roundish, white petals, of short duration; and succeeded by large roundish heads as big as Oranges, flattened at top and bottom, and having an indented crown or stigma. The seeds are white. There are several varieties, differing in the colour and multiplicity of their petals, which are preserved in gardens for ornament; but that with single flowers only is cultivated for use.

8. The Common Black Poppy has stalks about three feet high, smooth and dividing into several branches. Leaves large, smooth, deeply cut or jagged on their edges, and embracing. Petals purple with dark bottoms; succeeded by oval smooth capsules filled with black seeds, which are sold under the name of Maw-seed. There are many varieties of this with large double flowers, variegated of several colours; red and white, purple and white, and some finely spotted like Carnations: there are few plants whose flowers are so handsome; but having an offensive scent, and being of short duration, they are not much regarded. They are both annual and flower in June.

[Linneus remarks the smoothness of all the parts in this species; the stem, leaves, calyx and capsule. The rays of the stigma are ten, or thereabouts, and the half internal divisions as many.

The officinal Poppy is a native of the Southern parts of Europe, but probably came originally from Asia, where it is cultivated in great quantities.

The general history of Opium and its virtues has been so judiciously detailed by Dr. Woodville, in his Medical Botany, that we shall here insert the most material part of that author's information.

Opium, called also Opium Thebaicum, from being anciently prepared chiefly at Thebes, has been a celebrated medicine from the remotest times. It differs from Meconium, which was made by the ancients of the expressed juice or decoction of the Poppies. It is imported into Europe in flat cakes, covered with leaves, to prevent their sticking together: it has a reddish brown colour, and a strong peculiar smell: its taste, at first, is nauseous and bitter, but soon becomes acrid, and produces a slight warmth in the mouth: a watery tincture of it forms an ink, with a chalybeate solution. According to the experiments of Alston, it appears to consist of about five parts in twelve of gummy matter, four of resinous matter, and three of earthy, or other indissoluble impurities.

The use of this celebrated medicine, though not known to Hippocrates, can be clearly traced back to Diagoras, who was nearly his contemporary, and its importance has ever since been gradually advanced. Its extensive practical utility however has not long been well understood; and in this country perhaps may be dated from the time of Sydenham. Opium is the chief narcotic now employed: it acts directly upon the nervous power; diminishing the sensibility, irritability, and mobility of the system; suspending, according

¹ Dillenius.² Hort. kew.³ Curtis.⁴ Idem.⁵ Withering.⁶ Woodville.⁷ Woodw. Mfs.⁸ Curtis.

-according to the idea of a late ingenious author, the motion of the nervous fluid to and from the brain, and thereby inducing sleep, one of its principal effects. From this sedative power of Opium, by which it allays pain, inordinate action, and restlessness, it naturally follows, that it may be employed with great advantage in a variety of diseases. Indeed there is scarcely any disorder in which, under some circumstances, its use is not found proper; and though in many cases it fails to procure sleep, yet if taken in a full dose, it occasions a pleasant tranquillity of mind, and a drowsiness, approaching to sleep, which always refreshes the patient. But, besides the sedative power, it is also known to act, more or less, as a stimulant, exciting the motion of the blood; and this increased action has been ascribed ingeniously and, as we think, rationally, to that general law of the animal economy, by which any noxious influence is resisted by a consequent re-action of the system. By a certain conjoined effort of this sedative and stimulant effect, Opium has been thought to produce intoxication, a quality for which it is much used in the Eastern countries.

In most of the continued fevers of this climate, though originating from contagion, or from whatever cause, there is generally at the beginning, more or less of inflammatory diathesis; and this, while it continues, would forbid the use of Opium, which might prove dangerous. Its use is also forbidden in the more advanced state of this fever, whenever topical inflammation of the brain is ascertained, which sometimes exists, and produces delirium, though other symptoms of the nervous and putrid kind prevail. But when irritation of the brain is not of the inflammatory kind, and debility has made much progress, or where delirium is accompanied with spasmodic affections, Opium is a sovereign remedy, and may be employed in large doses every eight hours, unless a remission of the symptoms and sleep take place. In intermittent fevers Opium, in combination with other medicines, was much used by the ancients; but since the introduction of Peruvian bark it is seldom trusted to for the cure of these disorders: it has however been strongly recommended as an effectual means of stopping the recurrence of the febrile paroxysms; and has been given before the fit, in the cold stage, in the hot stage, and during the interval, with the best effects, producing immediate relief, and in a short time curing the patient, without leaving those abdominal obstructions which have been ascribed to the bark; but in these fevers, the best practice seems to be that of uniting Opium with the bark, which enables the stomach to bear the latter in larger doses, and adds considerably to its efficacy.

When Opium is so managed as to produce sweat, it will tend to remove an inflammatory state of the system, and may prove generally useful: a notable instance of this we observe in the cure of acute rheumatism by means of Dover's powder. In the small-pox, Opium, since the time of Sydenham, has been very generally and successfully prescribed, especially after the fifth day of the disease; but during the first stage of the eruptive fever, we are told that it always does harm; an opinion (says Dr. Woodville) which our experience at the small-pox hospital warrants us to contradict. In hæmorrhages the use of Opium is inferred from its known effects in restraining all excretions except that of sweat; but unless the hæmorrhages be of the passive kind, or unattended by inflammation, it may produce considerable mischief. In dysentery, Opium may be occasionally employed to moderate the violence of the symptoms. In diarrhæa, when the acrimony has been carried off by a continuance of the disease, it is a certain and efficacious remedy. In cholera it is employed with laxatives, and no doubt often prevents inflammation by removing the spasm.

Opium has lately been commended in venereal cases; and instances have been adduced in which it has succeeded where mercury had failed: but few practitioners, we apprehend, will trust to Opium alone in these complaints. Opium is successfully used in tetanus, and in other spasmodic and convulsive cases.

Respecting the external use of Opium authors are not agreed; some contending, that when applied to the skin it allays pain and spasm, and procures sleep, while others affirm, that when thus applied it has no effect whatsoever. Applied to the naked nerves of animals, it produces torpor, and loss of power in all the muscles with which the nerves communicate. Opium taken in an immoderate dose, proves a narcotic poison, producing vertigo, tremors, convulsions, deliriums, stupor, stertor, and finally, fatal apoplexy.

The officinal preparations of this drug are Opium purificatum, pilula ex opio, pulvis opiatus, tinctura opii, and tinctura opii camphorata. It also enters into the pulvis sudorificus, balsamum anodynum, electuarium japonicum, pulvis e creta composita, &c.

The requisite dose of Opium varies in different persons, as well as in different states of the same persons. A quarter of a grain in one adult, will produce effects which ten times the quantity will not do in another; and a dose that might prove fatal in cholera or cholera, would not be perceptible in many cases of mania or tetanus. The lowest *fatal dose*, to those unaccustomed to it, seems to be about four grains; but a dangerous dose is so apt to occasion vomiting, that it has seldom time to occasion death. When given in too small a dose, it often produces disturbed sleep, and other unpleasant consequences; and on the other hand, a small dose will sometimes produce sound sleep, and alleviation of symptoms, when a larger one would not have succeeded. Its general operation is supposed to last about eight hours. It is well known, that by continued habit, Opium may be taken in large quantities; and we are told by Garcias ab Horto, an instance in which it was increased to ten drams a day. About twenty drops of the tinctura thebaica, or Laudanum, are considered as nearly equivalent to a grain of Opium. Those who are addicted to the use of Opium in the Eastern regions will sometimes take incredible quantities.

The White Poppy is commonly considered as the officinal plant, but any of the varieties may be employed indiscriminately, since no difference is discovered in their sensible qualities or effects.

The heads or capsules are also powerfully narcotic or anodyne; boiled in water they impart their narcotic juice. The liquor strongly pressed out, suffered to settle, clarified with whites of eggs, and evaporated to a due consistence, yields an extract, possessing the virtues of Opium, but requiring to be given in double the dose. It is said not to occasion a nausea and giddiness, which are the usual effects of Opium. It is convenient to prepare the syrup from this extract, by dissolving one dram in two pounds and a half of simple syrup. The *syrupus Papaveris albi*, as directed by both colleges, is an useful anodyne, and often succeeds in procuring sleep, where Opium fails. It is more especially adapted to children. White Poppy heads are also used externally in fomentations, either alone, or more frequently added to the *decoctum pro fomento*.

The seeds possess not any narcotic power: they consist of a simple farinaceous matter, united with a bland oil, and in some countries are eaten as food. As a medicine they have been given in the form of emulsion, in catarrhs, stranguries, &c.

Opium is imported into Europe from Persia, Arabia, and other warm regions of Asia. Six hundred thousand pounds of it are said to be annually exported from the Ganges.

It appears that the Poppy may be cultivated for the purpose of obtaining Opium to great advantage in Britain. Professor Alston, of Edinburgh, said long since, that the milky juice, drawn by incision from Poppy heads, and thickened either in the sun or shade, even in this country, has also the characters of good Opium; its colour, consistence, taste, smell, faculties, phenomena are all the same; only, if carefully collected, it is more pure and free from feculencies.

Similar remarks have been made by others; to which, says Dr. Woodville, we may add our own; for during that summer (probably 1792) we at different times made incisions in the green capsules of the White Poppy, and collected the juice, which soon

acquired a due consistence, and was found, both by its sensible qualities and effects, to be very pure Opium. May I be permitted to add, that near fifty years ago, I frequently amused myself with slashing the green Poppy heads, and collecting a most pure and well digested Opium from them.

But the merit of first cultivating the Poppy for Opium is due to Mr. John Bull, of Williton, who in the year 1796 was rewarded by the Society of Arts, Manufactures and Commerce, for procuring Opium in an unsophisticated state from British Poppies, and communicating his mode of preparing it, to the Society, for the use of the public.

When the leaves die away and drop off, the capsules or heads being then in a green state, is the proper time for extracting the Opium, by making four or five small longitudinal incisions with a sharp-pointed knife, about an inch long, on one side only of the head, taking care not to cut to the seeds: immediately on the incision being made, a milky fluid will issue out, which being of a glutinous nature, will adhere to the bottom of the incision; but some are so luxuriant, that it will drop from the head. The next day, if the weather should be fine, the Opium will be of a grayish substance, and some almost turning black; it is then to be scraped off, with the edge of a knife, into pans or pots; and in a day or two it will be of a proper consistence to make into a mass, and to be potted.

As soon as the Opium is all taken away from one side, make incisions on the opposite side, and proceed in the same manner. The reason of not making the incisions all round at once is, that the Opium cannot so conveniently be taken away; but every person, upon trial, will be the best judge. Children may with ease be soon taught to make the incisions, and take off the Opium; so that the expense will be trifling.

An instrument might be made, of a concave form, with four or five pointed lancets, about the twelfth or fourteenth part of an inch, to make the incisions at once.

Mr. Ball calculates, that supposing one Poppy to grow in one square foot of earth, and to produce only one grain of Opium, more than 50lb. will be collected from one statute acre. But since one Poppy produces from three or four to ten heads, in each of which from six to ten incisions may be made, each incision sometimes producing two or three grains; what must be the produce? and what the profit at the present price of Opium, 22s. the pound*?

I am sensible that great abatements must be made in practice from such theoretical calculations as these; and that in our moist climate many seasons will occur, and many days in almost every summer, unfavourable to the collection of the Opium. It is however, with all its disadvantages, a very important object to cultivate the Poppy for this purpose in Britain; considering the great price of foreign Opium, the increasing call for it in medicine, the adulteration of what is imported by rice flour and other articles, and the employment that it will find in the collection for women and children.

Mr. Ball adds, that in 1795 from a bed of self-sown Poppies 576 feet square, he collected four ounces of Opium, though the plants were very thick: and from a few plants that stood detached he took from fifteen to thirty-four grains: this ground had been well manured with rotten dung. He remarks that the semi-double flowers, and those of a dark colour produced the most Opium: that the heads should be about the size of a walnut before the incisions are made; and that the foreign dried Poppy heads are full three times as big as ours†. Mr. Miller remarks also that they are of a different shape; but the size is only owing to climate, and the shape indicates no more than a variety.

Mr. Ball collected from one semi-double Poppy a quantity which he supposes to be more than thirty grains; but this plant had twenty-eight heads on it. He prefers the double and semi-double flowering plants to those which have single flowers. But I have ob-

served that the single Poppy, cultivated by our physick-gardeners here for the seed and the heads, have generally larger heads than the double Poppies cultivated in gardens.

But after all, the point of most importance respecting the cultivation of the Poppy for Opium in Britain is, whether its quality be equal to that of foreign Opium. This has been fully ascertained; not only by a druggist in London having agreed with Mr. Ball to give him the same price for what he should make in the year 1795, as the foreign drug should bear at that time; but by the testimony of several eminent medical gentlemen in London who tried it, in consequence of the request of the Society for the Encouragement of Arts, Manufactures and Commerce. Dr. Latham observes that in its sensible qualities it does not seem inferior to any; that it possesses the excellence of being perfectly clean, which must always be an advantage when given in a crude state; and that probably the purified extract of the foreign would not be superior to the English. Dr. Pearson also reports, that he found the English Opium to be equally powerful, and to produce the same effects as the best foreign preparation of this drug. Mr. Wilson not only found the English drug equal in point of strength to the best extract from foreign Opium; but far superior in flavour, which, in the extract is much injured by the boiling, and free from the impurities which are so abundant in crude foreign Opium‡.

The manner in which this drug is collected in the East has been described long ago by Kæmpfer and others; but the most circumstantial detail of it is given by Mr. Kerr, in the fifth volume of Medical Observations and Inquiries.

When the capsules are half grown, at sunset, they make two longitudinal double incisions, passing from below upwards, and taking care not to penetrate the internal cavity. In Persia, according to Kæmpfer, a five-pointed knife is used for this purpose. The incisions are repeated every evening, until each capsule has received six or eight wounds: they are then allowed to ripen their seeds. If the wound were to be made in the heat of the day, a cicatrix would be too soon formed. The night-dews favour the exsillation of the juice.

Early in the morning, old women, boys and girls collect the juice, by scraping it off with a small iron scoop, and deposit the whole in an earthen pot, where it is worked by the hand in the open sunshine, until it becomes of a considerable thickness. It is then formed into cakes of a globular shape, and about four pounds in weight, and laid into little earthen basins to be farther dried. These cakes are then covered over with poppy or tobacco leaves, and thus dried until they are fit for sale. Opium is frequently adulterated with cow-dung, the extract of the plant procured by boiling, and various other substances of which they make a secret§.

The capsules of *Papaver Rhoeas*, red or corn Poppy, like those of the *somniferum*, contain a milky juice, of a narcotic quality, but the quantity is very inconsiderable, and has not been applied to any medical purpose; but an extract prepared from them has been successfully employed as a sedative.

The flowers have somewhat of the smell of Opium, and a mucilaginous taste, accompanied with a slight degree of bitterness. A syrup of these flowers is directed in the London Pharmacopeia, which has been thought useful as an anodyne and pectoral, and is therefore prescribed in coughs and catarrhal affections. The colour is beautiful, but its virtues as a medicine seem to be inconsiderable§.]

8. The stalks of the Welch Poppy are a foot high and smooth. The pinnae of the leaves are deeply cut on their edges; and there are a few small leaves on the stalk shaped like the lower ones. The upper part of the stalk is naked, and sustains one large yellow flower, appearing in June, and filled with small purplish seeds.

† Transf. Arts, 14. 267 to 270.

‡ Woodville, 505.

§ Idem, 513.

* Transf. Arts, vol. 14. 260 to 263.

† Idem, 264.

[Root-leaves on very long hairy petioles, consisting of two or three pairs of oval-lanceolate pinnae, deeply cut, almost lobed; the terminating one consists of three lobes deeply cut, nearly smooth. Stem-leaves similar on short petioles; the upper ones sessile. Peduncles slightly hairy, bearing a single pale-yellow flower, of four ovate petals, striated towards the base^d. Stigmas five or six, distinct. Capsule oblong, narrower at the base, somewhat beaked at the top^e.—The descriptions of Ray and Morison are chiefly translated from Parkinson. Dillenius gives Bauhin's synonym to the *nudicaule*.

First described and figured by Parkinson in 1640. He says that it grows in many places of Wales, in the valleys and fields, at the foot of the hills, and by the water sides; about a mile from Abbar, and in the midway from Denbigh to Guider, the house of Sir John Guin (Wynne), as also near a wooden bridge over the Dee to Balam in North Wales, and in going up the hill that leads to Bangor, as also near Anglesea.—On the back of Snowden going from Caernarvon to Llanberris; as you ascend the Glyder from Llanberris, &c. commonly by rivulets or on moist rocks; also beyond Pont vawr*.

Found by Dillenius on Cheddar rocks in Somersetshire; and since about Kendal, Kirby-Lonsdale, and Winander Mere in Westmoreland, and Holker in Lancashire, by Mr. Woodward and others.

9. Root perennial, composed of two or three strong fibres as thick as a man's little finger, a foot and half long, dark brown on the outside, full of a milky juice, which is very bitter and acrid. Leaves a foot long, closely covered with bristly white hairs. Stems two feet and a half high, very rough and hairy, having leaves towards the lower part like the root-leaves, but smaller: the upper part is naked, and sustains at the top one very large flower, of the same colour with the common red Poppy.

[Stigmas sixteen. Bristles on the stem scattered, pressed close, rough with a prominent base^f. Capsule globular, smooth, crowned with the large shield of the stigma, having one cavity in the middle, but towards the periphery divided by incomplete partitions into cells equal in number to the number of rays in the stigma, and opening, not by valves, but by as many holes under the shield. Seeds very numerous, kidney-form, beautifully marked with longitudinal streaks and little excavations in rows, of a russet-bay colour, covering the incomplete partitions on both sides^g.]

Found by Tournefort in Armenia, whence he sent the seeds to the royal garden at Paris, where they succeeded and were distributed to the gardens of Holland and England. It flowers here in May. There are two or three varieties, differing in the colour of the flowers; and it is said that the flower is sometimes double, with us it is always single. Tournefort says that the Turks eat the green heads, although they are very bitter and acrid. [Cultivated before 1714, by Mr. George London^h.]

PROPAGATION AND CULTURE.

All the sorts of Poppy are propagated by seeds, but those which have perennial roots, may be also propagated by offsets. The best time for sowing the seeds is in September, when they will more certainly grow, and those sorts which are annual will make larger plants, and flower better, than when they are sown in the spring. The best way is to sow the seeds of the annual kinds in the places where they are to remain, and to thin the plants where they are too close; those of the large kinds should not be left nearer to each other than a foot and a half, and the smaller sorts may be allowed about half that space. The culture they will require after this, is only to keep them clean from weeds.

7. Those who are curious to have fine Poppies in their gardens, carefully look over their plants when they begin to flower, and cut up all those plants whose flowers are not very double and well marked, before they open their flowers, to prevent their farina mixing

with their finer flowers, which would degenerate them; and it is the not being careful of this, that causes the flowers to degenerate so frequently in many places, which is often supposed to be occasioned by the ground.

8. The yellow Welsh Poppy requires a cool shady situation, where the plants will thrive, and produce plenty of seeds annually. If these seeds are permitted to scatter, the plants will come up better than when sown by hand; but if they are sown, it should be always in the autumn; for the seeds of this, which are sown in the spring, rarely succeed.

The best time to transplant and part the roots of this sort is in the autumn, that the plants may be well established in their new quarters, before the dry weather comes on in the spring.

9. The eastern Poppy will thrive either in sun or shade, for I have several of these plants growing under trees, where they have thriven many years, and flower full as well as those in an open situation, but came later in the season. This will propagate very fast by its roots, so there is no necessity for sowing the seeds, unless to procure new varieties. This sort should be transplanted at the same season as the former; and if the seeds are sown, it should be at the same time, for the reasons before given.

[5. The quantity of Scarlet Poppy, Canker or Redweed in some lands is a disgrace to the farmer, and the brilliancy of the flowers proclaims his disgrace to the whole country. Being an annual weed it is easily destroyed by good husbandry; but like other oily seeds it will lie long in the ground without corrupting. It is said to have vegetated after having been twenty-four years buried.

Swine are frequently turned upon it in Norfolk; and they will eat out this troublesome weed, with little or no damage to the wheatⁱ. Others feed first with sheep, then with cattle; till April, taking them off when it rains much, if the land is not very light.

Upon dry soils, which are most subject to Poppy, Mr. Ellman of Shoreham, ploughs his tare and rape land for wheat, the beginning or middle of September; in order to sow the middle of October; the harrowing kills the Poppy; and in putting in the seed, he likes to tread much with oxen or sheep. A neighbour treads his with oxen in March, which he thinks better against the Poppy, than doing it at sowing^k.—This treading may destroy the present crop of Poppy; but the hoard of seed remains in the ground to come up on every ploughing. The only way to destroy such weeds effectually, is to make them germinate, by bringing them near the surface, and then to cut and tear them with the plough, the skim, the scuffler, or the harrow, according to circumstances.

7. Mr. Ball advises the seed of *Papaver somniferum*, officinal or garden Poppy to be sown at the end of February, and again the second week in March, in beds three feet and a half wide, well prepared with good rotten dung, and often turned or ploughed, in order to mix it well, and have it fine, either in small drills, three in each bed, or broadcast; in both cases, thinning out the plants to the distance of a foot from each other, when about two inches high: keep them free from weeds, and they will grow well, produce from four to ten heads, and show large flowers of different colours. With an instrument something like a rake, but with three teeth, the drills may be made at once. Poppies do not bear transplanting: out of four thousand which Mr. Ball transplanted, not one plant came to perfection*.

The culture as practised in the province of Bahar is as follows. The field being well prepared by the plough and harrow, and reduced to an exact level surface, it is then divided into quadrangular areas, seven feet in length, and five in breadth, leaving two feet of interval, which is raised five or six inches, and hollowed out for conveying water to every area, for which purpose they have a well in every cultivated field. The seeds are sown in October or November. The plants are allowed to grow six or eight inches

^d Woodw. Mfs.

^e Linn.

^f Ray's syn.

^g Linn.

^h Gærtner.

ⁱ Hort. kew.

^j Marshall's Norfolk, 1. 226.

^k Young's ann. 17. 143.

* Trans. arts, 259.

distant from each other, and are plentifully supplied with water. When the young plants are six or eight inches high they are watered more sparingly; but a compost of ashes, human excrement, cow-dung, and a portion of nitrous earth scraped from the high-ways and old mud walls, is strewed all over the beds. When the plants are near flowering, they are watered profusely to increase the juice. The capsules being half grown, and fit to collect Opium from, the plants are no longer watered*.

PAPAVER CORNICULATUM [and CORNUTUM. See Chelidonium, and Cleome.

SPUMEUM. See Cucubalus.]

SPINOSUM. See Argemone.

[PAPAW-TREE,] PAPAYA, [and PAPAYA-MARAM.] See Carica.

[PAPIA. See Lamium.

PAPIRIA. See Gethyllis.

PAPPOPHORUM. (From *παππος*, and *φερω*. The awns of this grass resembling the capillary down of the seed in Syngenesious plants.)

Lin. gen. Schreb. n. 1715. p. 787.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume two-flowered, two-valved: valves long, linear, somewhat compressed, very thin, acuminate, awnless: outer a little shorter. One floret inferior, larger, sessile, bearded at the base, hermaphrodite: the other superior, less, on a short pedicel, pressed close to the back of the lower one, beardless, neuter: and above this, the rudiment of a third.

COR. Glume two-valved, shorter than the calyx: outer valve ovate, ventricose, angular, terminated by several awns (thirteen or fourteen), very long, straight, unequal, spreading, with its edges embracing the inner valve, which is lanceolate, acute, a little longer and narrower than the outer.

NECTARY two-leaved, very small, with linear leaflets.

STAM. Filaments three, capillary. Anthers oblong.

PIST. Germ ovate. Styles two, short. Stigmas villose.

PER. none. Corolla incloses the seed, and lets it drop.

SEED one, ovate, compressed, diaphanous.

OBS. The outer glume of the lower floret is villose at the back and sides: the inner is excavated at the back, to receive the upper floret.

ESSENTIAL CHARACTER.

Cal. two-valved, two-flowered. Cor. two-valved, many-awned.

SPECIES.

1. Pappophorum alopecuroideum.

Lin. spec. ed. Willd. 458. Vahl symb. 3. 10. t. 51.

DESCRIPTION, &c.

Culm branched, three or four feet high, smooth, sheathed with leaves, which are convoluted, awl-shaped, striated, shorter than the culm; the last spatheaceous. Panicle erect, subspiked, often a foot and half long, resembling *Alopecurus monspeliacus*. Calyx three or four-flowered.—Found by von Rohr at Spanish Town in America¹.

PAPYRUS. See Cyperus.

PARAGUA. See Ilex.

PARALIAS. See Euphorbia.

PARDALIANCHES. See Doronicum.

PAIREIRA. See Cissampelos.

PAIRELLE D'Auvergne and PARELLUS. See Lichen.

PARIANA. (The flowers growing in pairs on the spike, seem to have suggested the generic name.)

Lin. gen. Schreb. n. 1455. Aubl. t. 337. Juss. 34.

Class. 21. 7. Monoecia Polyandria.

GENERIC CHARACTER.

* Male flowers in whorls, digested into spikes.

CAL. Glume one-flowered, two-valved: valves short, acute.

COR. two-valved, larger than the calyx: valves ovate, acute, one narrower.

STAM. Filaments about forty, capillary, inserted into the bottom of the corolla. Anthers linear.

* Kerr in med. obs. vol. 5. and Woodv. 505.

¹ Vahl.

* Female flower solitary in each whorl, fastened to the axis of the spike.

CAL. Glume two-valved: valves ovate, concave, acute.

COR. two-valved, less than the calyx: valves acute, hairy at the tip.

PIST. Germ three-cornered. Style long, hairy. Stigmas two, villose.

PER. none. Corolla investing the seed.

SEED one, three-cornered, inclosed.

ESSENTIAL CHARACTER.

MALE flowers in whorls, forming spikes. Cal. two-valved. Cor. two-valved, larger than the calyx. Filaments forty.

FEM. flowers solitary in each whorl. Cal. two-valved. Cor. two-valved, less than the calyx. Stigmas two. Seed three-cornered, inclosed.

SPECIES.

1. Pariana campestris.

Aubl. pl. gui. p. 877. Lin. syst. Gmel. p. 828.

DESCRIPTION, &c.

This plant puts forth several straight shoots or canes about one or two feet high. At each joint they are garnished with alternate, oval, weak leaves, striated throughout their whole length, smooth, glossy, greenish above, paler beneath: the footstalks are short, and accompanied by a long split sheath in opposite directions on each side the stalk. This sheath envelopes the stem from one joint to the other. It is crowned with reddish, long, and roughish hairs: this crown has on each side two appendices in the form of an ear, bordered on both sides with similar hairs. The stem is terminated by a serrated spike, formed of several ranges of male flowers growing above each other. The female flower is single in the middle of each range. The spike of flowers is about two inches and a half in length.

This plant grows in woods in the isle of Cayenne.]

PARIETARIA. (From its place of growth, *Paries*, a wall.)

Lin. gen. n. 1152. Reich. n. 1259. Schreb. n. 1576.

Tournef. t. 289. Juss. 404. Gært. t. 119.

Class. 23. 1. Polygamia Monoecia.

Nat. order of Scabridæ. Urticæ, Juss.

GENERIC CHARACTER.

* Hermaphrodite flowers two, are contained in a flat six-leaved involucre: the two opposite and outer leaflets larger.

CAL. Perianth one-leaved, four-cleft, flat, blunt, the size of the involucre halved.

COR. none, unless the calyx be called so.

STAM. Filaments four, awl-shaped, longer than the flowering perianth and expanding it, permanent. Anthers twin.

PIST. Germ ovate. Style filiform, coloured. Stigma pencilform, capitate.

PER. none. Perianth elongated, larger, bell-shaped, the mouth closed by converging segments.

SEED one, ovate.

* Female flower one, between the two hermaphrodites, within the involucre.

CAL. as in the hermaphrodites.

COR. none.

PIST. as in the hermaphrodites.

PER. none. Perianth thin, involving the fruit.

SEED as in the hermaphrodites.

ESSENTIAL CHARACTER.

Two hermaphrodite flowers and one female flower in a flat six-leaved involucre.

Cal. four-cleft. Cor. none. Style one. Seed one, superior elongated.

HERM. Stam. four.

FEM. Stam. none.

SPECIES.

[1. Parietaria indica. Indian Pellitory.

Lin. syst. 908. Reich. 4. 321. mant. 128.

Cratægogonum. Rumph. amb. t. 10. f. 1.

Leaves lanceolate, stem erect.]

2. Parietaria officinalis. Common Pellitory.

Lin. spec. 1492. syst. 908. Reich. 4. 321. hort.

cliff. 496. upf. 302. mat. med. 220. Woodv. med.

bot. 384. t. 142. Hudf. angl. 422. Wither. arr.

ed. 3. 201. Curt. lond. 4. 63. 233. Lightf. scot.

634. *Relb. cant. n. 740. Sibth. oxon. n. 196. Hall. belv. n. 1612. Fl. dan. t. 521. Scop. carn. n. 1242. Neck. gallob. 418. Pollich pal. n. 940. Villars dauph. 2. 345. Allion. pedem. n. 2028. Ludw. est. t. 115. Kniph. cent. 4. n. 60. Regn. bot.*
P. officinarum & Dioscoridis. Bauh. pin. 121. Mor. hist. f. 5. t. 30. f. 1.
Parietaria. Dod. pempt. 102. Bauh. hist. 2. 976. 2. Ger. 261. emac. 331. Raii hist. 206. syn. 158. Petiv. brit. t. 8. f. 1.—vulgaris. Park. theat. 437.— & major. Trag. 193.
P. Helxine. Tabern. 550. Blackw. t. 136. Helxine. Camer. epit. 849. Fuchs. 277. Matth. 1113. Lob. obs. 130. ic. 1. 258. 1.
Leaves lanceolate-ovate, peduncles dichotomous, calyxes two-leaved.
 3. *Parietaria judaica. Basil-leaved Pellitory. Lin. spec. 1492. syst. 908. Reich. 4. 321. Gärtn. fruct. 2. 184. Hall. belv. n. 1613. Villars dauph. 2. 346. Kniph. cent. 11. n. 83.*
P. ocynis folio Tragi. Bocc. sic. 47. t. 24. f. A. Leaves ovate, stems erect, calyxes three-flowered, corollas male elongated-cylindrical.
 [4. *Parietaria lusitanica. Chickweed-leaved Pellitory. Lin. spec. 1492. syst. 909. Reich. 4. 322.*
P. lusitanica annua minima. Tournef. inst. 509. Raii suppl. 129.
P. ficula allines folio. Bocc. sic. 47. t. 24. f. B. Raii hist. 206.
Leaves ovate obtuse, stems filiform striated even procumbent.
 5. *Parietaria urticæfolia. Nettle-leaved Pellitory. Lin. syst. 909. suppl. 434.*
Leaves ovate opposite petioled serrate veined pubescent, flowers axillary.
 6. *Parietaria cretica. Cretan Pellitory. Lin. spec. 1492. Reich. 4. 322.*
P. cretica minor capsulis seminum alatis. Tournef. cor. 38.
Leaves subovate, fruiting involucre five-cleft compressed, lateral segments larger.
 7. *Parietaria capensis. Cape Pellitory. Thunb. prodr. cap. 31.*
Leaves opposite ovate serrate, branches diffused, flowers sessile.
 8. *Parietaria debilis. Forst. flor. austral. prodr. n. 387.*
Leaves alternate ovate petioled quite entire somewhat hairy, peduncles axillary subtriflorous, stem almost upright.
 9. *Parietaria cochinchinensis. Lour. cochinch. 654.*
Leaves ovate three-nerved hairy, stem cespitose diffused, flowers monoecous.
 10. *Parietaria arborea. Tree Pellitory. L'Herit. in journ. de Rozier, 33. p. 55. Ait. hort. kew. 3. 429.*
Urtica arborea. Linn. suppl. 417. L'Herit. stirp. nov. 39. t. 20.
Leaves elliptic acuminate, somewhat triple-nerved, stem arborescous.

DESCRIPTIONS, &c.

1. This resembles our common Pellitory, but is more naked. Leaves lanceolate, drawn out to a much longer point, three-nerved, naked. The balls of flowers are smaller, except the bractes, which are awl-shaped not ovate. Styles longer. Fruits sessile, grooved.—Native of the East Indies^m.

2. Root perennial, somewhat woody, red, fibrous; according to Lightfoot, creeping. Stems several, nearly upright, from nine inches to a foot or more in height, very much branched, round, striated, solid, reddish, pubescent; according to Lightfoot, rough to the touch and adhesive. Leaves alternate, ovate, pointed, tapering towards each extremity, entire at the edge, spreading, pubescent along the edge and on the veins of the under side, on the upper side deep green, shining, somewhat wrinkled, and having small prominent points scattered over it. Petioles nearly as long

as the leaf is broad, pubescent, channelled above. Flowers small, greenish, rough, sessile, growing in balls or clusters in the axils of the leaves; two hermaphrodites and one female in an involucre of seven leaves (six only, according to Linneus), permanent; the leaves ovate, pointed, flat, hirsute, the hairs glandular at the extremities. The hermaphrodite flowers may be distinguished by the four stamens, which on the shedding of the pollen fly back with elastic force; the filaments are white and wrinkled transversely; the anthers ovate, obtuse, double; with a white pollen. Germ green, shining, naked; stigma forming a bright scarlet tuft. The female is known by its situation between the two others, and by its want of stamens: the stigma is somewhat larger, and bent a little down.

To obtain a perfect idea of the manner in which the fructification is carried on, in this plant, the flowers should be examined at a very early period of their expansion; we shall then find in each involucre three red stigmas, the two outermost of which belong to hermaphrodite flowers, whose stamens are not yet visible; the middle one, which is largest and most conspicuous, to the female. If a view be taken of the same flowers at the time that the elastic filaments by their sudden expansion are scattering the pollen, the styles and stigmas of the hermaphrodite flowers, visible before, will often be found wanting, and the germ left naked in the centre of the flower: at this period, the segments of the calyx in the same flowers are nearly of the same length as the filaments, the style and stigma of the female flower remain perfect, and the germ is closely surrounded by a green hairy calyx, which never expands: the period of flowering being now over, a considerable alteration takes place in the calyx of the hermaphrodite flowers, each is considerably elongated, becomes more tubular, assumes a redder colour, has its tip pressed down, and soon drops out of the involucre, in which it leaves no appearance of a seed; but on opening them, a seed will be found at the bottom of each, perfectly similar to that produced by, and inclosed in the calyx of the female flower, which does not enlarge as the other does, but partaking more the nature of a capsule, on pressure, divides at top into four parts, and contains a blackish, shining seed.

The manner in which the flowers shed their pollen is curious. The filaments, on their first appearance, all bend inwards; as soon as the pollen is arrived at a proper state to be discharged, the warmth of the sun, or the least touch from the point of a pin, will make them instantly fly back, and discharge a little cloud of dust. This process is best seen in a morning, when the sun shines on the plant in july or august: if the plant be large, numbers will be seen exploding at the same instantⁿ.

Mr. Miller is singular in asserting that the *Parietaria officinalis* of Linneus] grows naturally in Germany and Holland, but was not in England till the year 1727, when he introduced it. [He makes our plant to be the *P. judaica* of Linneus, and the *P. minor ocimi folio* of Caspar Bauhin. In this opinion, says Mr. Curtis, there is the greatest reason to suppose that Mr. Miller is deceived.—It frequently happens that the plant which is common in one country is supposed to be the common plant of other countries, without examination. I do not know that it is the case in this instance. The figures of Dodonæus and Matthioli, from which those of Ger. emac. and Parkinson are copied, are much fuller of leaves than our plant, and the stem is represented with stiff hairs standing out. The description of Pollich agrees very well with our plant, except that I do not remember the leaves to be so large as he describes them, namely two inches and a half; but then he includes the petiole, which is more than half an inch long.

Parietary, corrupted into Pellitory, is absurdly called Pellitory of the wall, being found on walls or among rubbish. It is a native of most parts of Europe, except the most northerly; in Sweden it is not found,

^m Linn. mant.ⁿ Curt's.

but it is in Denmark. Mr. Curtis remarks, that the same degree of cold (about 31° of Fahrenheit's thermometer) which stripped the Mulberry of most of its leaves, destroyed the greatest part of the herbage of this plant.—In the autumn of 1798, Fahrenheit's thermometer being at 46° (in the house) on October the 13th the leaves of Mulberry, Walnut and Ash were completely fetched off by frost, and the herbage of Balm of Gilead cut down to the ground.

Parietary promises little from its sensible qualities: it has no smell, and its taste is simply herbaceous. Formerly it was accounted emollient, but not being mucilaginous, this effect ought rather to be ascribed to the warm water. Its character as a diuretic is better known. Matthioli tells us, that the expressed juice, sweetened with sugar, had a very powerful effect in this way: and Barbeirac informs us, that a decoction of this plant, and *Uva ursi*, was found of great use in clearing the urinary passages of viscid mucus, and fabulous concretions*. Mr. Sole, of Bath, has observed remarkably good effects from the juice of this herb in dropsical cases, in which other diuretics had failed; he converts the juice into a thin syrup, and gives two table spoonfuls thrice a day†.

Tournefort, in his history of plants about Paris, says that the syrup gives great relief in hydropic cases.

Dr. Stokes says, he has been informed, that this herb, as well as *Nitraria*, contains a considerable quantity of nitre; and that in making an extract from it, the mass has taken fire.

It is recommended by Bradley to be laid on corn in granaries, for the purpose of driving away the weevil.]

3. This differs from the former, in having shorter stalks, and smaller oval leaves. The flowers are also less, and in smaller clusters. In other respects they are the same.

[The little balls of flowers are on the branches, scarcely any on the stem. There are two male flowers, which are tubular, cylindrical, with the teeth of the mouth converging. The female flower between them is ovate‡.

According to Gærtner there are two hermaphrodite flowers and one female flower within a six-leaved involucre. The calyx when ripe is closed, loosely embracing and concealing the seed. Receptacle none, except a very small tubercle at the base of the seed, by which it is connected with the bottom of the calyx, as by a pedicel. Seed ovate, narrowing upwards, compressed like a lens, smooth, shining, dark, having a little white umbilical papilla at the base.

Ray believes *Parietaria minor* Ocimi folio *Baub. pin.* and *Parietaria exigua* of Tragus, to be nothing more than a variety of the preceding: but in his Supplement he seems to think them different†.

Native of Switzerland, the South of France, Sicily, Germany about Goettingen, and of Palestine.

4. Boccone says, that this differs from that of Tragus, and from the common sort of Matthioli only in the leaves, which are much smaller, the form and size of Chickweed: but Tournefort says it is an annual plant, and the same with his *Par. lusitanica*, which he found in Portugal, near Lamego upon the Douro.

Ray informs us, that in a specimen of the Portuguese plant shown him by Sherard, the leaves were shorter in proportion to their size and rounder than in the common sort. He found the Sicilian plants in several parts of Sicily; but does not seem to have been aware that they were the same. Boccone says it is very common in that island.

In the Kew catalogue it is said to be a native of Spain and Portugal, without any mention of Sicily; to have been introduced in 1771, by Mons. Richard; and to flower in July.

5. This is a very branching plant, with small leaves, much resembling those of the Nettle.—Found by Mons. Thouin in the isle of Bourbon‡.

6. Found by Tournefort in the island of Crete or Candia.

7. Found at the Cape of Good Hope by Thunberg.

8. Native of New Zealand.

9. Stem herbaceous, perennial, a foot and half high, manifold, slender. Leaves acute, quite entire, small, opposite, having smaller ones mixed with them. Flowers axillary in whorls, in small clusters or balls, male and female together without any hermaphrodites. Seed roundish, inclosed within the converging calyx.

Native of China and Cochinchina. It attracts the worms that infest salted fish or flesh; the natives hang the plant at the mouth of their casks, and the insects get into it of their own accord. It is also esteemed by them to be emollient, refrigerant and diuretic.

10. This is an upright soft shrub, the height of a man. Root woody, branched, fibrous, rufescent. Stem woody, upright, round, the bark full of chinks, ash-coloured. Branches and branchlets alternate, spreading, villose, pithy. Shoots red, very villose with hoary hairs. Leaves alternate, spreading, entire, nerved, three-nerved above the base, veined: nerves and veins prominent underneath, grooved above, somewhat wrinkled, the younger ones very much so, underneath villose soft, above bright green, scarcely paler beneath, from four to six inches long, and from two to four inches wide. Petioles cylindrical, one-streaked, red, very villose, longer than half the leaf. Panicle terminating, erect, composed of simple spikes, leafy, hoary-villose, three inches long. Spikes axillary, erect, sessile, solitary, bracted, villose. Flowers commonly three, clustered, from the axil of each bracte, sessile, in the male yellow, in the female red herbaceous. Bracte linear-lanceolate, acute, villose, longer than the flowers, especially in the female. According to L'Heritier, the male and female flowers are on different plants. What he calls males are imperfect hermaphrodites. In these, he says, the perianth is six-parted; in the female, six or seven-leaved, or one-leaved cloven into so many parts; the germ between two nectaries, which are two roundish-four-cornered bodies, very shortly acuminate, opposite by the side of the germ, and without observing accurately might be taken for germs*: (and probably are so, if we may conjecture from analogy.)

Native of the Canary islands, where it was found by Masson. Introduced in 1779. It flowers from February to May†. L'Heritier says, in autumn or early in spring; that the male flowered at Kew, and the female at Paris. He first made it an *Urtica*, but afterwards removed it into this genus.]

PROPAGATION AND CULTURE.

The common European Pellitories may be propagated in plenty from the seeds. If these be permitted to scatter they will fill the ground with young plants. They are difficult to collect, being thrown out of their covers as soon as ripe. Having little beauty, these plants are seldom cultivated.

[10. Tree Pellitory may be increased by cuttings, and must have the protection of the green-house: as must also the seventh. The first, fifth, eighth and ninth must be kept in the stove.

PARIETARIA. See *Dorstenia*, *Melampyrum*, *Urtica*.

———— ZEYLANICA & MICROPHYLLA. See *Urtica*.

PARIETARIAE AFFINIS. See *Theligonum*.

PARILIUM. See *Nyctanthus*.

PARINARI. See *Petrocarya*.]

PARIS.

Lin. gen. n. 500. *Reich. n.* 542. *Schreb. n.* 683.

Juss. 42. *Herba Paris. Tournef. t.* 177.

Class. 8. 4. *Octandria Tetragynia.*

Nat. order of Sarmenaceæ. Asparagi, Juss.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved, permanent: *leaflets* lanceolate, acute, the size of the corolla, spreading.

COR. *Petals* four, spreading, awl-shaped, (linear, G.) like the calyx, permanent.

STAM. *Filaments* eight, awl-shaped, below the anthers short. *Anthers* long, fastened on both sides to the middle of the filaments.

* Woodville. † Curtis. ‡ Linn. syst. § Linn. suppl.

* L'Heritier, stirp. nov.

† Hort. kew.

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Pist. Germ superior, round-four-cornered, (or subglo-
bular.) Styles four, spreading, shorter than the sta-
mens. Stigmas simple.

PER. Berry globular-four-cornered, four-celled.

SEEDS several, incumbent in a double row.

ESSENTIAL CHARACTER.

Cal. four-leaved. *Pet.* four narrower. *Berry* four-
celled.

SPECIES.

1. *Paris quadrifolia.* *Herb Paris, True-love or One-berry.*
Lin. spec. 526. *synt.* 381. *Reich.* 2. 221. *Fl. lapp.*
n. 155. *succ. n.* 346. *hort. cliff.* 153. *Huds. angl.*
172. *Wither. arr. ed.* 3. 385. *Engl. bot. t.* 7.
Lightf. scot. 209. *Relh. cant. n.* 311. *Sibth.*
oxon. n. 389. *Hall. belv. n.* 1006. *Gmel. fib.* 4.
176. *Willch illustr.* 35. *Neck. gallob.* 188.
Scop. carn. n. 472. *Pollich pal. n.* 389. *Fl. dan.*
t. 139. *Villars dauph.* 3. 526. *Allion. pedem.*
n. 1025. *Krock. files. n.* 615. *Thunb. jap.* 171.
Blackw. t. 286. *Kniph. cent.* 12. *n.* 73. *Plenck,*
ic. 311. *Regn. bot.*

Herba Paris. *Matth.* 1093. *Baub. hist.* 3. 613.
Ger. 328. 1. *emac.* 405. 1. *Park. theat.* 390. 1.
Dod. pempt. 444. *Raii hist.* 670. *syn.* 264. *Petiv.*
brit. t. 44. *f.* 8.

Solanum quadrifolium bacciferum. *Baub. pin.* 167.
Solano congener non ramosum tetraphyllum. *Mor.*
hist. f. 13. *t.* 3. *f.* 6.

Aconitum saluterum. *Tabern. hist.* 720.

A. pardalianches. *Fuchs. hist.* 87.

DESCRIPTION, &c.

[Few plants are more readily distinguished than this, by the proportion and regularity of all the parts. Stalk quite simple or unbranched, upright, smooth, round, naked. Leaves four, in a cross, or a sort of whorl, spreading, sessile at the top of the stalk, ovate, quite entire, drawn to a point, smooth, nerved underneath, three or four inches long, and two wide. Peduncle single, rising from the middle of the four leaves, somewhat angular, about an inch in length, supporting one greenish flower, an inch in diameter. Calycine leaflets four, linear-lanceolate, acute, reflex. Petals also four, very narrow, reflex, a little shorter than the calyx. Stamens eight. Anthers in the middle of the filament. Styles four, three times shorter than the stamens: hardly so long as the berry, purplish black. Berry one, black, large, flattened at top, obscurely four-grooved, smooth, juicy, and containing in each cell six or eight seeds. Root perennial, fleshy.

The regular number in this plant is four, or some aliquot part or multiple of that number. There are however sometimes only three leaves, and they are even said to vary from one to seven. The calyx also has sometimes three leaves.

The leaves and berries are said to partake of the properties of Opium; and the juice of the latter to be useful in inflammations of the eyes. Linneus says the root will vomit as well as *Ipecacuanha*, given in a double quantity.

This is a suspicious plant, which has nevertheless been used in medicine. Bergius recommends the herb for discussing buboes and other inflammatory tumours, in the whooping or convulsive cough, &c. Gesner experienced it to be an antidote to the poison of the *Nux vomica*. Having given a scruple of it to two dogs, he gave one a dram of the *Paris*, and it recovered; the other died. He also took a dram of the herb himself, without any effect except a dryness in the fauces, and some sweat. Burghard on the contrary says, that cardialgia and vomiting ensues from the use of it; and Krocker was credibly informed, that a child died by eating the berries, and that another was recovered with difficulty. Gesner affirms that the berries are baneful to poultry. It ought therefore to be given with great caution. One scruple is given twice a day.

Herb Paris is a native of most countries of Europe, particularly the northern parts; and also of Japan. In Britain it is not uncommon, in woods, especially

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those which are thick, and on strong soil. Gerard says, it grows plentifully in Chalkney-wood; near Wakes Colne in Essex, in the parsonage orchard at Radwinter, and in Bocking-park by Braintree in the same county; in the wood near Robin Hood's well; near Nottingham; in the moor by Canterbury, called the Clapper; in Blackburne at Merton in Lancashire; in Dingley-wood, six miles from Preston, in Aunderness; at Hefset in Lancashire; and in Cotting-wood in the North of England, as that excellent, painful, and diligent physician Mr. Doctor Turner, of late memory, doth record in his Herbal.

Parkinson, in 1640, says it was then lost in the above places, "every one running thereunto, that is next him, and gathering it." He informs us that it was found in his time in Hinbury-wood, three miles from Maidstone in Kent, in a wood called Harwarth, near Pinnenden-heath, by Maidstone, in Long-wood by Chiselmhurst, and in the next called Iseets-wood, and in a wood over against Boxly-abbey near Maidstone.

Mr. Newton found it in the long Spring by Petesbogs at Chiselmhurst; and Mr. Ray in Lampit-grove, at Notley, Essex.

Mr. Charles Miller discovered it in a little wood, not far from Hampstead, and yet Mr. Curtis has not introduced this curious plant in his valuable *Flora Londinensis*. Mr. Blackstone, in Hanging-wood, near Harefield, Middlesex. Mr. Abbot at Hawnes, Renhold and Clapham, Park-wood in Bedfordshire. In Kingston, Everden, and Wood-Ditton woods, Cambridgeshire. In Love-lane near Derby, by Mr. Whately. At Selborne in Hampshire by Mr. White. Ripton-wood in Huntingdonshire by Mr. Woodward. Byseing-wood, in Kent. In Hollinghall, Stocking and Okeley-wood in Leicestershire, by Dr. Pulteney. Norfolk, by Mr. Woodward, but rare. In Brampton, Cransley and Hardwick woods, and Whittleborough-forest, in Northamptonshire, by Morton. In Asply and Colwick woods, Nottinghamshire, by Deering. In Headington-Wick-copse, Oxfordshire, by Dr. Sibthorp. In the wood near the Devil's Den near Clifton upon Teme, woods on the sides of Breedon-hill, and about Frankly, in Worcestershire. Near Gainford and in Raby-park, by Mr. Robson. In Scotland, in a wood a mile to the south of Newbottle, near Dalkeith, by Dr. Parsons. In the Den of Bethaick, four miles from Perth, by Mr. Lightfoot. In the wood of Methven, Perthshire, by Mr. Millar. It flowers in may.]

PROPAGATION AND CULTURE.

This plant is with great difficulty preserved in gardens. Take up the plants from the places where they grow wild, preserving good balls of earth to their roots, and plant them in a shady moist border, where they may remain undisturbed.

[**PARIS.** See *Trillium*.

PARITI. See *Hibiscus*.

PARIVOA. See *Dimorpha*.]

PARKINSONIA. (So named by Plumier, in memory of John Parkinson, Apothecary, of London, author of *Paradisus terrestris*, 1629, and *Theatrum Botanicum*, 1640.)

Lin. gen. n. 513. *Reich. n.* 556. *Schreb. n.* 699.

Plum. 3. *Jacqu. amer.* 121. *Juss.* 347.

Class. 10. 1. *Decandria Monogynia.*

Nat. order of Lomentaceæ. Leguminosæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved; at the base bell-shaped flat-tish, permanent: border five-parted: segments lanceolate-ovate, acute, coloured, reflex, almost equal, deciduous.

COR. Petals five, with claws, almost equal, spreading very much, ovate; the lowest kidney-form; claw upright, very long.

STAM. Filaments ten, awl-shaped, villose below, declined. Anthers oblong, incumbent.

PIST. Germ round, long, declined. Style filiform, rising, the length of the stamens. Stigma blunt.

PER. Legume very long, round, swelling over the seeds, (whence it is necklace-form) acuminate.

SEEDS several, one to each joint of the legume, oblong, subcylindric, blunt.

ESSENTIAL

^a Lyons Mss. in Relh. cant. ^x Withering. ^y Idem.

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ESSENTIAL CHARACTER.

Cal. five-cleft. *Pet.* five, ovate; the lowest kidney-form. *Style* none. *Legume* necklace-form.

SPECIES.

Parkinsonia aculeata. *Prickly Parkinsonia.*

Lin. syst. 392. *Reich.* 2. 248. *hort. cliff.* 157. *t.* 13. *upf.* 99. *Swartz obs.* 155. *Jacqu. amer.* 121. *t.* 80, *piet.* 62. *t.* 119. *Brown. jam.* 222. *Plum. gen.* 25. *Waltb. hort.* 6. *t.* 13.

DESCRIPTION, &c.

[This is a small tree, with a trunk ten or twelve feet high, unarmed, even: branches long, subdivided, flexuose, prickly, strict. Prickles two opposite at the sides of the petioles, one between them three times as long as the others, awl-shaped, upright. Leaves alternate, in fours from the same bud, pinnate, very long, linear. General petioles linear, thicker at the base, flat, somewhat convex, spreading, very smooth. Leaflets extremely small, on very short petioles, ovate, smooth. Racemes terminating and axillary, solitary, shorter than the leaves, erect, (eight to ten) many-flowered: flowers alternate, scattered, yellow, on long peduncles. Calyx five-leaved, inserted into a bell-shaped receptacle. Four of the petals ovate, with short claws; the fifth or uppermost as it were pedicelled, roundish, with blood-red streaks at the base: all waved and curled. Filaments shorter by half than the petals, equal. Anthers purple. Style short, awl-shaped, a little ascending. Legume compressed a little. Seeds brown smooth².

Jacquin describes it as a very elegant tree, with the bark both of trunk and branches remaining a long time green and shining, but when the tree grows old, becoming brownish and streaked. The wood is white. The prickles are solitary, awl-shaped, subaxillary, acuminate, slightly recurved, four lines in length; on the older branches frequently by threes, the middle one very strong and nine lines in length. Leaves shining, three, four, or five from the same axil, on a midrib a foot long, broad and flattened. Leaflets oblong, numerous. Racemes loose, simple, smooth, containing about ten flowers; which smell very sweet, and are yellow with the uppermost petal variegated at the base with scarlet spots. Legumes yellowish brown, containing from one to six shining seeds. Parkinsonia seems to be distinguished from Poinciana merely by the equality of the calycine segments. These two trees sown very thick make most beautiful hedges. Parkinsonia flowers the first year from seed, and grows very fast.—In Jamaica it is called *Jerusalem Thorn*. It was first introduced there from the main, but now grows wild in many parts and in the other islands of the West Indies, where it was originally cultivated for inclosures. It seldom rises above eight feet in height, and is well supplied with strong thorns on every part. The branches are flexible and small, and the trunk seldom grows to any considerable thickness².

The French, in the West Indies, call it *Genet epineux*. It flowers several times in the year, and at the same time bears ripe fruit^b. Mr. Miller cultivated it here in 1739^c.]

He gives it the height of twenty feet, which is nearly twice as much as authors of the best credit attribute to it. It bears, says he, long slender bunches of yellow flowers, hanging down like those of Laburnum: they perfume the air to a considerable distance, for which reason the inhabitants of the West Indies plant them about their houses.

PROPAGATION AND CULTURE.

This plant is propagated by seeds, which should be sown in small pots filled with light fresh earth early in the spring, and the pots must be plunged into a hot-bed of tanner's bark, where, in three weeks or a month's time, the plants will come up, when they should be kept clear from weeds, and frequently refreshed with a little water. In a little time these plants will be fit to transplant, which should be done very carefully, so as not to injure their roots. They must be each planted into a separate halfpenny pot

² Swartz. ^a Browne. ^b Jacquin. ^c Hort. kew.

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filled with light fresh earth, and then plunged into the hot-bed again, observing to stir up the tan; and if it has lost its heat, there should be some fresh tan added to renew it again. Then shade the plants from the heat of the sun, until they have taken new root; after which time they should have fresh air admitted to them every day, in proportion to the warmth of the season. With this management the plants will grow so fast, as to fill the pots with their roots by the beginning of July, at which time they should be shifted into pots a little larger than the former, and plunged again into the bark-bed to forward their taking new root; after which it will be the best way to inure the plants by degrees to bear the open air, that they may be hardened before winter; for if they are kept too warm in winter, the plants will decay before the next spring. The only method by which I have succeeded in keeping these plants through the winter, was by hardening them in July and August to bear the open air; and in September I placed them on shelves in the dry stove, at the greatest distance from the fire, so that they were in a very temperate warmth; and there they retained their leaves all the winter, and continued in health, when those which were placed in a warmer situation, as also those in the greenhouse, were entirely destroyed, but these seldom survived the second winter.

[Jacquin observes, that the seeds continue fertile several years, and germinate readily in the European stoves; that the plants grow luxuriantly to three feet in height the first year, but seldom live through the winter, or if they do, they die without flowering the second summer. I have not heard that Parkinsonia has ever flowered in Europe.]

PARNASSIA. (*From mount Parnassus, on which, according to Dioscorides, a plant called Gramen Parnassii grew. Altered by Tournefort to Parnassia.*)

Lin. gen. n. 384. *Reich. n.* 415. *Schreb. n.* 523. *Tournef. t.* 127. *Juss.* 245. *Gartn. t.* 60.

Class. 5. 4. Pentandria Tetragynia.

Nat. order of Capparides, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted; segments oblong, spreading, permanent.

COR. *Petals* five, roundish, striated, concave, spreading. *Nectaries* five: each a concave, cordate scale, with thirteen rays along the edge gradually higher, on each of which sits a globe: (or three-parted, with equal, globuliferous rays.)

STAM. *Filaments* five, awl-shaped. *Anthers* depressed, incumbent.

PIST. *Germ* ovate, large. *Style* none, but in its place a perforation. *Stigmas* four, obtuse, permanent, greater in the fruit.

PER. *Capful* ovate-four-cornered, one-celled, four-valved. *Receptacle* fourfold, growing to the valves.

SEEDS very numerous, oblong.

OBS. *The essential character is most easily collected from the nectary.*

ESSENTIAL CHARACTER.

Cal. five-parted. *Pet.* five. *Nect.* five, cordate, ciliate with globular apexes. *Capf.* four-valved.

SPECIES.

1. *Parnassia palustris.* *Common Marsh Parnassia* or *Grass of Parnassus.*

Lin. spec. 391. *syst.* 299. *Reich.* 1. 749. *Willd.* 1516. *fl. lapp. n.* 108. *succ. n.* 368. *hort. cliff.* 113. *mat. med.* 90. *Huds. angl.* 131. *Wither. arr. ed.* 3. 319. *Engl. bot. t.* 82. *Lightf. scot.* 172. *Relb. cant. n.* 250. *Sibth. oxon. n.* 323. *Gartn. fruct.* 1. 287. *Gmel. fib.* 4. 91. *Hall. belv. n.* 832. *Pollich pal. n.* 316. *Fl. dan. t.* 584. *Hoffm. germ.* 111. *Roth. germ.* 1. 138. 2. 369. *Scop. carn. n.* 378. *Villars dauph.* 2. 548. *Krock. filef. n.* 484. *Mill. illustr. Ludw. et. t.* 110. *Kniph. cent.* 7. n. 70. *Plenck, ic. t.* 243. *Reliqu. Rudb. app. t.* 34.

P. palustris & *vulgaris.* *Tournef. inst.* 246. *Raii syn.* 355.

Gramen parnassii. *Lob. obs.* 330. 1. *Best. cyst. æst.* 8. *t.* 11. *f.* 3.—minus. *Ger.* 691. 2. *emac.* 840. 1.

Raii

Raii hist. 1049.—vulgare. *Park. theat.* 429. 2.—
 albo simplici flore. *Bauh. pin.* 309. *Lob. ic.* 603.
Gramen parnassium. *Dod. pempt.* 564. 3.—quibusdam
Hepaticus flos. *Bauh. hist.* 3. 537. 2.
Hepatica alba. *Cord. hist.* 53.
Pyrola rotundifolia palustris. *Mor. hist.* 3. 505. f. 12.
 t. 10. f. 3.
 β. *P. pleno flore.* *Mill. dict. n.* 2. *Jung. Lob. Raii*
hist. Hall. Linn. Ger. emac. 840. f. 2. *Park.*
theat. 429. f. 2.
Parnassia with a double flower.

DESCRIPTION, &c.

[Root perennial, small, whitish, fibrous; putting forth several stems and leaves in tufts. Stems erect, unbranched, somewhat twisted, having five sharp corners, a span high, slender, smooth, having only a single embracing leaf below the middle, and a single flower at the top. Root-leaves petioled, ovate, pointed, quite entire, bright green above, underneath cinereous, smooth, netted, nine lines long, six or seven lines wide. Petioles grooved above and an inch and half long. Corolla near an inch in diameter: petals a little scalloped at the edges, slightly emarginate, white with semitransparent grayish veins. Nectaries green, the globules yellow, from ten to fifteen, generally thirteen. Stamens only half as long as the petals, at first not longer than the germ, but each in order becomes longer than the rest, as it sheds its pollen on the orifice of the germ, which closes as soon as all the anthers have shed their pollen^d. Linneus also observes, that whilst this plant is in flower, the germ is open at the top, that the stamens lay their anthers alternately upon the orifice, and having discharged their pollen, recede to the petals. The elegant nectaries, terminated by threads, each tipped with a little yellow pellucid sphere, sufficiently distinguish this plant. Capsule ovate-globular, terminated by the four reflex stigmas, obsoletely four-grooved, one-celled or incompletely four-celled, four-valved. Receptacles four, spongy, oblong, narrow. Seeds irregular like saw-dust, with an oblong turgid nucleus in the middle, and surrounded with a membranaceous rim at the side, of a russet colour^e.

Parnassia is a native of most parts of Europe, by the side of bogs and moors, and in wet meadows. In Britain, it is common in Scotland, Wales, the northern counties of England, Norfolk, Staffordshire and Worcestershire.] It does not grow, says Mr. Miller, in the neighbourhood of London, any nearer than the other side of Watford, in the low meadows by Cassioberry, where it is in pretty great plenty. [We may suppose that Mr. Miller is right, since so remarkable a plant could not well have escaped Mr. Curtis, and it is not found in Dr. Milne's indigenous botany. It grows however near Harefield in Middlesex, according to Mr. Blackstone; about Ongar in Essex; on Hinton, Teversham, and Trumpington moors, and near Linton in Cambridgeshire; on Stevington, Turvey and Ampt-hill bogs in Bedfordshire; in peat-bogs on Bullington-green, and under Headington-wick copse, in Oxfordshire; near Buddon-wood in Leicestershire; about Rowel and Thorp in Northamptonshire; at Basford Scotum, and Papplewick in Nottinghamshire.—Old Gerarde notices its being found in the moor near Linton in Cambridgeshire, at Hestet in Suffolk, at a place named Drinkstone, in Butcher's mead; plentifully in Lanchall and Craven in Yorkshire, at Doncaster, and in Thornton-fields in the same county. Mr. Goodyer found it in the boggy ground below the red well of Wellingborough in Northamptonshire; and Mr. William Broad observed it plentifully in the Castle-fields of Berwick upon Tweed^f. Parkinson also notices its growing at Linton in Cambridgeshire, Hestet and Drinkstone in Suffolk, in the great field of Headington near Oxford, and on the other side of Oxford, in the pasture next to Botley, in the high way; and at the bottom of Barton-hills in Bedfordshire. Merret found it with a double flower in Lancashire; and Mr. Wood about Edinburgh^g. It flowers in july and august.]

^d V. sering, Pollich. ^e Gartner. ^f Ger. emac.

^g Ray's syn.

PROPAGATION AND CULTURE.

This plant may be taken up from the natural place of growth, with balls of earth to the roots, and planted in pots filled with pretty strong, fresh undunged earth, and placed in a shady situation, where, if they are constantly watered in dry weather, they will thrive very well, and flower every summer; but if the plants are planted in the full ground, it should be in a very moist shady border, otherwise they will not live; and these should be as duly watered as those in the pots in dry weather, to make them produce strong flowers.

They may be propagated by parting their roots, which should be done in march, before they put out new leaves; but the roots should not be divided too small, for that will prevent their flowering the following summer. These roots should always be planted in pretty strong fresh earth, for they will not thrive in a light rich soil. In the spring they must be constantly watered, if the season should prove dry, otherwise they will not flower; nor should they be parted oftener than every third year, to have them strong. These plants flower in july, and their seeds are ripe the latter end of august.

PARONYCHIA. See [*Achyranthes*, *Asplenium*, *Draba*,] *Illecebrum*, [*Saxifraga*.

PARONYCHIAE FACIE. See *Houstonia*.]

PARSLEY. See *Apium*.

——, [MACEDONIAN. See *Bubon*.

——, MOUNTAIN. See *Athamanta*.

——, PIERT. See *Aphanes*.

——, STONE. See *Athamanta*.

——, WILD. See *Cardiospermum*.]

PARSNIP. See *Pastinaca*.

——, [Cow. See *Heracleum*.

PARSONSIA. See *Lytbrum*.

PARTHENIASTRUM. See *Parthenium*.]

PARTHENIUM (of Pliny, Παρθένιον of Dioscorides; so named from its supposed effect in medicine.)

Lin. gen. n. 1058. *Reich. n.* 1154. *Schreb. n.* 1428.

Gartn. t. 168. *Juss.* 191. *Partheniastrum. Niff.*

act. gall. 1711. *Dill. gen.* 13. *eltb.* 225. *Hyl-*

terophorus. Vaill. act. gall. 1720. f. 4, 8, 34,

35, 42.

Class. 21. 5. Monoecia Pentandria.

Nat. order of *Nucamentaceæ*. *Corymbifera*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* common quite simple, five-leaved, spreading: *leaflets* roundish, flat, equal.

COR. *Compound* convex. *Corollets* *hermaphrodite* many in the disk: *females* five in the ray, scarcely surpassing the others.

Proper of the Hermaphrodites one-petalled, tubular, erect, with the *mouth* five-cleft, the length of the calyx: of the *Females* one-petalled, tubular, ligulate, oblique, blunt, roundish, the same length with the other.

STAM. in the Hermaphrodites—*Filaments* five, capillary, the length of the corollet. *Anthers* as many, thickish, scarcely cohering.

PIST. of the Hermaphrodite, *Germ* below the proper receptacle, scarcely observable. *Style* capillary, generally shorter than the stamens. *Stigma* none: of the Female, *Germ* inferior, turbinate-cordate, compressed, large. *Style* filiform, the length of the corollet. *Stigmas* two, filiform, the length of the style, spreading a little.

PER. none. *Calyx* unchanged.

SEEDS in the *Hermaphrodites* abortive; in the *Females* solitary, turbinate-cordate, compressed, naked.

REC. scarcely any, flat. *Chaffs* separate the florets, so that each female has two hermaphrodites behind.

ESSENTIAL CHARACTER.

MALE. Cal. common five-leaved. Cor. of the disk one-petalled.

FEM. Cor. of the ray five; on each side two males, with one female between, superior.

SPECIES.

1. *Parthenium Hyterophorus. Cut-leaved Parthenium* or *Bastard Feverfew*.

Lin. spec. 1402. *Juss.* 852. *Reich.* 4. 140. *hort.*

cliff. 242. *ups.* 285. *Brown. jam.* 340. *Niff.*

7 A

act.

art. 1711. p. 423. t. 13. f. 2. (Partheniastrum.)

Pluk. phyt. t. 45. f. 3. (Absinthium).

Leaves compound-multifid.

2. Parthenium integrifolium. Entire-leaved Parthenium.

Lin. spec. 1402. syst. 852. hort. cliff. 442. Gertn.

fruct. 2. 429. Gron. virg. 147. Mill. illustr.

Pluk. phyt. t. 53. f. 5. & t. 219. f. 1. Mor.

blas. 297. & hist. 3. 41. (Ptar mica). Raii hist.

344. n. 4. & 363. n. 3. (Pseudocostus).

Partheniastrum helenii folio. Dill. elth. 302. t. 225.

f. 292.

Leaves ovate crenate.

DESCRIPTIONS, &c.

1. This is an annual plant, growing wild in great plenty in the island of Jamaica, where it is called *Wild Wormwood*. [It thrives very luxuriantly about all the settlements in the low lands. It is observed to have much the same qualities with Feverfew; and may be used, like that, in resolute baths and infusions^b. It was cultivated in 1739, by Mr. Miller; and flowers here in July and August^c.]

2. This is a perennial plant, which dies to the ground every autumn, and shoots up again the following spring. [Height three feet and more, with thick, round, fleshy stems. Leaves half-embracing, hirsute, not hairy, somewhat paler underneath, resembling those of *Inula Helenium*, with frequent oblique veins or nerves: root-leaves larger and longer, on keeled petioles. The flowers grow in a corymb at the ends of the stem and branches: the heads are snow-white above, like those of *Gnaphalium*, whitish green below, villose at first. The florets are white, and much larger than in the first species^k. Receptacle conical, short, very narrow, so that it is almost awl-shaped, covered with difform chaffs: those of the ray five, very much like the calycine leaflets, and alternating with them, roundish, concave, having within one female and two androgynous florets placed by the side of the female, and each covered in front by its own chaff, which is linear-acuminate; in the disk the chaffs are very numerous, oblong, widening upwards, keeled, emarginate at the end, and scurfy-villose on the outside. Seeds in the female florets obovate, remarkably acuminate at bottom, three-sided and compressed, smooth, black, bald. The calycine leaflets are oblong, acuminate, a little longer than the flower, rugged on the outside, within from the base to the middle polished and whitish. Florets of the ray five or ten, with ovate, three-toothed petals. The large chaffs, seem by their shape, substance and situation to belong to the calyx^l.]

Native of Virginia, cultivated about 1661, by Mr. Walker, as appears from Plukenet^m; who says, that thirty years before (he published his *Phytographia*) he gathered a specimen of this plant in a garden belonging to Mr. Walker, at Westminster. Mr. Ray also (in 1686) says, that he cultivated it some years in his little garden at Cambridge, and that he had it from Walker, a gardener at London, whose son brought it, with other rare plants, from Virginia. Mr. Miller had seeds of it from his good friend Dr. Thomas Dale, who sent them from South Carolina: he says, that it grows also plentifully in several parts of the Spanish West Indies. It flowers in July, but seldom produces good seeds in England.

PROPAGATION AND CULTURE.

1. The first may be propagated by sowing the seeds on a hot-bed early in the spring; and when the plants come up, they should be transplanted on another hot-bed, at about five or six inches distance, observing to water and shade them until they have taken new root; after which time they must have a pretty large share of fresh air in warm weather, by raising the glasses of the hot-bed every day, and they must be duly watered every other day at least. When the plants have grown so as to meet each other, they should be carefully taken up, preserving a ball of earth to their roots, and each planted into a separate pot filled with light rich earth; and if they are plunged into a moderate hot-bed, it will greatly facilitate their taking fresh root; but where

this conveniency is wanting, the plants should be removed to a warm sheltered situation, where they must be shaded from the sun until they have taken new root; after which time they may be exposed, with other hardy annual plants in a warm situation, where they will flower in July, and their seeds will ripen in September. But if the season should prove cold and wet, it will be proper to have a plant or two in shelter, either in the stove, or under tall frames, in order to have good seeds, if those plants which are exposed should fail, whereby the species may be preserved.

2. This may be propagated by parting the roots in autumn, and may be planted in the tull ground, where it will abide the cold of our ordinary winters very well.

[PARTHENIUM. See *Achillea*, *Chrysanthemum*, *Iva*, *Mutricaria*.

PARXU. See *Cestrum*.

PASPALUM. (Παιπαλη or Πασπαλη, very fine meal or pollen: *res vulgaris* & *minima*.)

Lin. gen. n. 75. Reich. n. 81. Schreb. n. 107.

Gertn. t. 80. Juss. 29.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume one-flowered, two-valved, membranaceous: valves equal, orbicular, plano-concave: inner flatter, placed outwardly.

COR. two-valved, the size of the calyx: valves roundish, cartilaginous, outwardly convex, inflex at the base.

STAM. Filaments three, capillary, the length of the glume. Anthers ovate.

PIST. Germ roundish. Styles two, capillary, the length of the flower. Stigmas pencil-form, hairy, coloured.

PER. none. Glumes permanent, closed, growing to the seed.

SEED single, roundish, compressed, convex on one side.

Obs. *P. virgatum* has the outer valve of the calyx very short. Gartner says, that in his specimens the valves are equal. In *P. stoloniferum* the corolla is shorter than the calyx.

ESSENTIAL CHARACTER.

Cal. two-valved, orbicular. Cor. of the same size. Stigmas pencilled.

SPECIES.

1. *Paspalum dissectum*. Cut *Paspalum*.

Lin. spec. 81. syst. 104. Reich. 1. 151. Willd.

330. Thunb. jap. 45. Kniph. cent. 11. n. 74.

Pluk. mant. t. 330. f. 2.

Panicum dissectum. Lin. spec. ed. 1. 57.

Spikes alternate, rachis membranaceous, flowers alternate hairy at the tip.

2. *Paspalum scrobiculatum*. Dimpled *Paspalum*.

Lin. syst. 104. Reich. 1. 152. Willd. 330. mant.

29.

Spikes alternate, rachis membranaceous, flowers alternate, calyxes many-nerved dimpled or pitted on the outside.

3. *Paspalum villosum*. Villose *Paspalum*.

Lin. syst. 105. Willd. 331. Thunb. jap. 45. t. 8.

P. distichum. Houtt. syst. 12. t. 89. f. 4.

Spikes alternate directed one way with a hirsute rachis flowers in a double row, alternately directed one way.

4. *Paspalum virgatum*. Rodlike *Paspalum*.

Lin. spec. 81. syst. 105. Reich. 1. 152. Willd. 331.

Gertn. fruct. 2. p. 1. Jacqu. collect. 1. 112.

Sloan. jam. 1. 112. t. 72. f. 1.

Spikelets panicled alternate villose at the base, flowers in pairs.

5. *Paspalum paniculatum*. Panicled *Paspalum*.

Lin. spec. 81. syst. 105. Reich. 1. 152. Willd.

331. Gertn. fruct. 2. p. 2. Sloan. jam. 1. 115.

n. 33. t. 72. f. 2.

Spikes panicled verticillate aggregate.

6. *Paspalum stoloniferum*. Stoloniferous *Paspalum*.

Lin. spec. ed. Willd. 331. Bosc. in Linn. trans. 2. 83.

t. 16.

P. racemosum. Jacqu. ic. 2. 302. collect. suppl. 32.

Spikelets spiked, rachis waved, flowers alternate directed one way, stem knee-jointed, prostrate at the base and stoloniferous.

7. *Paspalum*

^a Browne. ^b Hort. kew. ^c Dillenius. ^d Gartner.

^e Hort. kew.

7. *Paspalum repens*. *Creeping Paspalum*.
Lin. spec. ed. Willd. 332. Berg. in act. helv. 7. 129. t. 7.
Spikes panicled subverticillate, nodding, culm creeping.
8. *Paspalum hirsutum*. *Shaggy Paspalum*.
Lin. spec. ed. Willd. 332. Retz. obs. 2. 7. n. 3.
Spikes alternate subbinate, rachis membranaceous, calyxes many-nerved even, leaves and pedicels hirsute.
9. *Paspalum Kora*. *Smooth Paspalum*.
Lin. spec. ed. Willd. 332.
P. orbiculare. Forst. prodr. n. 35?
Spikes alternate subbinate, rachis membranaceous, calyxes roundish five-nerved, culm and leaves smooth.
10. *Paspalum longiflorum*. *Long-flowered Paspalum*.
Lin. spec. ed. Willd. 332. Retz. obs. 4. 15.
Spikes two sessile upright, florets oval-oblong, culm ascending branched.
11. *Paspalum distichum*. *Two-spiked Paspalum*.
Lin. spec. 82. syst. 105. Reich. 1. 152. Willd. 332. amoen. 5. 391. Swartz obs. 35. t. 2. f. 1. Sloan. jam. 1. 111. Gært. fruct. 2. p. 2.
Spikes two almost erect, one of them sessile, florets oblong smooth, culm ascending.
12. *Paspalum conjugatum*. *Conjugate-spiked Paspalum*.
Lin. spec. ed. Willd. 333. Swartz prodr. 21. descr. 133. Berg. in act. helv. 7. 129. t. 8.
Spikes two horizontal conjugate, spikelets ovate, culm erect, leaves involute.
13. *Paspalum vaginatum*. *Sheathed Paspalum*.
Lin. spec. ed. Willd. 333. Swartz prodr. 21. descr. 135.
Spikes two, spikelets bifarious acuminate, culm branched knee-jointed, joints sheathed.
14. *Paspalum filiforme*. *Filiform Paspalum*.
Lin. spec. ed. Willd. 333. Swartz prodr. 22. descr. 136.
Spike subsolitary linear-one-ranked, spikelets ovate compressed, culm and leaves filiform.
15. *Paspalum decumbens*. *Prostrate Paspalum*.
Lin. spec. ed. Willd. 333. Swartz prodr. 22. descr. 138.
Spike single directed one way, peduncles very long, spikelets alternate orbiculate-acuminate smooth, culm procumbent.

DESCRIPTIONS, &c.

These Grasses are all of foreign growth, none natives of Europe, but of the East or West Indies, except two, one indigenous of China, the other of Japan.

1. This is a prostrate annual grass with the sheaths of the leaves almost spathaceous. Spikes few, with the rachis dilated to the width of the spike itself, which is distich and directed one way. Flowers orbiculate. Leaves pubescent on both sides: very hairy in Thunberg's specimen. Inner glume of the calyx convex even; outer flat with a raised line.—Native of South America, and Japan^a.

2. Culms erect, hirsute at the base, a foot high and more. Sheaths of the leaves purple, ciliate at the edge, and covering the joints at the base, hirsute. Leaves even, with a longitudinal whitish line above. Spikes often reflex. Calyxes roundish, ovate, smooth, blunt, gibbous; the flatter valve pushed in at the base, and impressed with a pair of dimples in the middle^b.

Native of the East Indies. Introduced in 1778, by Sir Joseph Banks. It flowers from July to September, and is perennial^c.

3. Culm smooth, three feet high. Leaves somewhat rugged, smooth, striated, short. Spikes three or four. Calycine glumes equal, ovate, acute, villose, pale with three raised lines. It differs from *P. distichum* in having a hirsute rachis; and ovate, acute, villose flowers: from *P. virgatum* in being less, and in having the flowers alternate in a double row only.—Native of Japan near Nagasaki^d.

4. This grows spontaneously in the Caribbee islands, where it is called by the French *Herbe à oisillons*. The root is thickly fibrose, and perennial, and throws up

several annual, erect stems, of about four feet high, and thicker than a quill at the base; round, glossy, and in part covered by the sheaths of the leaves. The leaves are seated at the joints of the stems, and are smooth on both sides, and hispid in a retroverted direction on the borders. They are about two feet and a half long, with a sheath almost a foot long, and about an inch wide. The spikes are alternate, at the top of the stem, very spreading, shortly footstalked, hairy at their origin, and about four inches long; and in number uncertain, from four to twelve. The shaft or midrib of the spike is flat-membranaceous, and smooth, green. The flowers are obversely ovate, very compressed, and marked on each side by a longitudinal nerve. The glumes of the calyx are villose at their tips on the borders. The anthers are oblong, hastated, and incumbent, and of a dingy yellow: the stigmas purplish: the seeds glossy and brownish^e. Outer valve of the calyx very short, with the edge hirsute.—Native of Jamaica^f. Perennial.

5. This is an annual grass, and more erect, with the panicle as it were in whorls, with very numerous, linear, filiform, very narrow spikelets, all directed one way: the flowers are digested in a double row, and are sharpish^g. Culm a foot high. Leaves nine inches long, sheath rough. Panicle three inches long, purple or green.

Native of Jamaica, in clayey moist grounds^h. Introduced in 1782, by Mons. Thouin. It flowers here in July and Augustⁱ.

6. Root perennial, fibrose, whitish. Culm flexuose, smooth, cylindric, two feet high, solid, rooting at the knots: branches alternate. Leaves lanceolate, smooth, slightly streaked, a little waved at the edge, often three inches long, and eight lines wide. Sheath a little shorter than its internode, stipuled and rusted at the top. Each sheath, besides the part of the stem which belongs to it, incloses the rudiment of another stem. Stipule very short, ciliate, whitish. Spike simple, five or six inches long. Common peduncle or rachis alternate, membranaceous, ciliate at the edge, seven or eight lines long, and a line wide, bearing on its lower surface as far as eighteen flowers. Pedicel flattened, scarcely a line in length. Calyx rusted: valves oblong, ciliate at the point, very much waved on the sides, principally at the base; the upper convex, the lower concave. Valves of the corolla equal, oval, membranous, uncoloured, a little shorter than the calyx: upper convex, lower concave. Filaments attached to the base of the germ, and twice as long as the corolla. Anthers elongated, twin, reddish. Germ oval, very small and smooth. Styles the length of the corolla. Stigmas nearly the same length, white and very hairy. They issue from the flower and bend to each side at the time of fecundation. Seed covered by the corolla, and of the same size and colour with it: truncate at the top of the convex side, and a little grooved on the flat side: substance horny, semitransparent. It differs from this genus only in having the corolla shorter than the calyx, and the filaments longer than the flower.

It is a native of Peru, whence it passed into Spain and France. It has been cultivated with success at Paris. The seeds have been in part abortive, but as it runs at the root it may be easily increased. The height and abundance of its stems, the size of its leaves, and the succulence of all its parts render it a proper grass for cultivation^j. But these grasses from hot countries never are found to answer in England.

7. This is very like the preceding, differing only in its creeping culm, rooting at the joints, narrower leaves, and a more slender panicle.—Native of Surinam. Perennial^k. By the preceding Willdenow must surely mean the *paniculatum*.

8. Culms erect, leafy, hairy above. Leaves and sheaths hairy all over, and bearded at the mouth, flat, nerved. Spikes almost erect, subsessile. Rachis narrower than in *P. scrobiculatum*. Flowers directed one way, alternate, smooth, on hairy pedicels, calyxes

^a Linn. spec. & syst. & Thunb. jap.

^b Hort. kew.

^c Linn. mant.

^d Thunberg.

^e Jacquin.

^f Hort. kew.

^g Linn. syst.

^h Linn. spec.

ⁱ Sloane.

^j Willdenow.

marked with from three to five nerves.—Native of China, whence it was sent by Bladh.

Retzius affirms, that in the *P. dissectum*, which he received from Tranquebar, the leaves were entirely smooth, as well as in the cultivated grass: which contradicts what is said above from Linneus and Thunberg.

9. This, according to Willdenow, differs from *P. dissectum* in the smoothness of the leaves and flowers. Is not then the *P. dissectum* of Retzius the same with this?—Native of the East Indies; and of the Society Isles, if this be the same with *P. orbiculare* of Forster, as Willdenow suspects.

10. Culms filiform, slender. Leaves short, acute, spreading at the base of the culm; and thence the sheath extending almost to the base of the culm terminate in a very short leaf. Spikes linear. Flowers alternate, pedicelled, pressed close. Rachis flat, somewhat flexuose. Calyxes oval, acute, flat, green, striated, naked; valves equal. One valve of the corolla of the same form and size with the calyx; the other smaller. It has the appearance of *Panicum distachyon*, and associates rather with this genus than with *Milium*.

Native of Malabar, on the borders of fields; sent by Koenig^a. It varies sometimes with three spikes together^b.

11. Culm simple, decumbent towards the root. Leaves lanceolate, acute, flat, short. Sheaths striated, hairy at the base. Spikes almost four-cornered, one shortly pedicelled. Rachis flat, even. Florets approximating, alternate, subsessile, ovate, acute. Glumes both of calyx and corolla equal, ovate, striated. Filaments longer. Anthers very dark blue. Stigmas pencilled, blue^c.

According to Linneus it is a foot high. Leaves involute-subulate. Spikes upright, approximating, directed one way; with alternate, acuminate flowers, all having three stamens.

Native of Jamaica, and other islands of the West Indies, in moist meadows. Introduced in 1776, by John Fothergill, M. D. It is a biennial grass, and flowers in July^d.

12. Height from one to two feet. Culm simple, compressed a little, smooth. Leaves linear-lanceolate, a span long at most, quite entire, striated, smooth, rolled in at the edge, ciliate at the base. Sheaths compressed, villose at the neck. Spikes two, sometimes but seldom three, sessile, equal, from three to five inches long, linear, yellowish. Rachis linear, compressed, smooth. Spikelets in pairs, directed one way, subsessile. Valves of the calyx equal; outer roundish, convex, with whitish hairs thinly set about the edge; inner flat or concave, pale green. Valves of the corolla a little less than those of the calyx, more tender, whitish. Anthers whitish. Styles filiform. Stigmas villose, whitish.

P. distichum is decumbent: the leaves of that are shorter and flat; the spikes almost erect, shorter, somewhat quadrangular; the florets larger, oblong, acute; the genitals blue, and the colour of the whole bright green.

P. conjugatum is common in the West Indies in moistish meadows. The English there call it *Sour-grass*, and cattle do not eat it.

13. This is a foot high. Roots numerous, filiform. Culm creeping, sheathed at the joints. Sheaths distich, compressed, wide, striated, smooth. Leaves lanceolate-linear, acute, spreading, hairy at the neck of the sheath. Spikes spreading, an inch long, pedicelled. Rachis linear, subflexuose. Spikelets ovate, plano-convex, on very short pedicels. Calycine glumes equal, ovate, acute, smooth. Corolla scarcely smaller. Anthers and stigmas purple. It is known by its branching culm, by its sheaths and spikelets.

Native of Jamaica, in pastures where the soil is clay.

14. This is a tufted grass, two feet high. Culm upright, simple, somewhat compressed, sheathed, striated. Joints blackish. Leaves equalling the culm,

half round, somewhat three-sided, acute, striated, smooth. Sheaths somewhat hairy at the neck of the leaves. Spike upright, scarcely wider than the culm, compressed, smooth, from two to three inches in length. Rachis linear, convex not flat, a little flexuose. Spikelets pedicelled, approximating, smooth, a little convex on the inner side. Calycine glumes ovate, smooth. Corolline of the same length and form with the outer ones. Anthers yellow. Stigmas pencilled, blueish.—In a more fertile soil, sometimes it has three or four spikes, but the culm and leaves are always filiform, by which it is distinguished from *P. dissectum*, which is prostrate and not caespitose, the leaves linear, the florets oval and pubescent, and it grows in a dry calcareous soil.

P. filiforme is common in the West Indies, in open hard fields.

15. This is a procumbent grass scarcely a foot in length. Culm branched, divaricating, round, smooth. Leaves widish, lanceolate, pubescent on both sides, with the edge subciliate. Sheaths the length of the leaves, even, villose at the neck. Peduncles from the sheaths solitary, from four to six inches long, loose, one-spiked. Spikes nodding, an inch long. Spikelets directed one way, on short pedicels. Rachis membranaceous, linear, flat. Calycine glumes ovate, smooth. Corolline very like them. Anthers pale. Stigmas long, pencilled. This differs from its congeners, in its divaricating diffused culm, and solitary, axillary spike, on a long pedicel.

Native of Jamaica, on the western side of the island, on the mountains, in a dry sandy soil.

PASQUE-FLOWER. See *Anemone*.]

PASSERINA. (So named from the form of the seed, like a bird's tongue.)

Lin. gen. n. 489. Reich. n. 530. Schreb. n. 668. Juss. 77.

Class. 8. 1. Octandria Monogynia.

Nat. order of *Vepreculæ*. *Thymelææ*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. one-petalled, shrivelling. Tube cylindrical, slender, ventricose below the middle. Border four-cleft, spreading: segments concave, ovate, blunt.

STAM. Filaments eight, bristle-shaped, the length of the border, placed upon the point of the tube. Anthers subovate, erect.

PIST. Germ ovate, within the tube of the corolla. Style filiform, springing from the side of the very point of the germ, the same length with the tube of the corolla. Stigma capitate, hispid all over with villose hairs.

PER. coriaceous, ovate, one-celled.

SEED single, ovate, acuminate at both ends, with the points oblique.

OBS. *P. capitata* has flowers without a tube, and sixteen stamens, the eight inner ones castrated. *P. uniflora* has eight stamens, besides the rudiments of eight anthers at the bottom of the flower.

ESSENTIAL CHARACTER.

Cal. none. Cor. four-cleft. Stam. placed on the tube. Seed one, corticate.

SPECIES.

1. *Passerina filiformis*. *Filiform Sparrow-wort*.
Lin. spec. 513. Syst. 374. Reich. 2. 197. hort. cliff. 246. t. 11. Berg. cap. 130. Thunb. prodr. cap. 75.
Leaves linear convex, imbricate in four rows, (three-cornered, acute) branches tomentose, (flowers racemed. Th.)
2. *Passerina hirsuta*. *Shaggy Sparrow-wort*.
Lin. spec. 513. Reich. 2. 198.
Thymelæa tomentosa, foliis fedi minoris. Bauh. pin. 461. Raii hist. 1589.
Sanamunda 3. Clus. hist. 1. 89. Breyn. cent. t. 19.
Sesamoides parvum Dalechampii. Bauh. hist. 1. 595.
Leaves fleshy smooth on the outside, stems tomentose.

• Swartz.

^a Retzius.

^b Willdenow.

^c Swartz.

^d Hort. kew.

- [3. *Passerina ericoides*. *Heath-like Sparrow-wort*.
Lin. syst. 374. *Reich.* 2. 198. *mant.* 236. *Burm.*
prodr. 12.
Leaves linear even subimbricate, corollas globular.
4. *Passerina capitata*. *Headed Sparrow-wort*.
Lin. spec. 513. *syst.* 374. *Reich.* 2. 198. *amoen.* 6.
af. 16. *Berg. cap.* 127. *Burm. afr.* 133. *t.* 48. *f.* 3.
Leaves linear smooth, heads peduncled tomentose.]
5. *Passerina ciliata*. *Ciliated Sparrow-wort*.
Lin. spec. 514. *syst.* 374. *Reich.* 2. 199. *hort. cliff.*
146. *Berg. cap.* 126. *Gron. orient.* 126. *Thunb.*
prodr. cap. 75.
Thymelæa foliis chamæleæ minoribus hirsutis. Bauh.
pin. 463.
T. foliis oblongis acutis ad oras fimbriatis. Burm.
af. 129. *t.* 47. *f.* 2.
Sanamunda 1. *Clus. hist.* 1. 88.
Erica africana rufci folio. Seba mus. 2. 15. *t.* 12. *f.* 9.
Leaves lanceolate ciliate, branches naked, (flowers sub-
solitary.)
6. *Passerina uniflora*. *One-flowered Sparrow-wort*.
Lin. spec. 514. *syst.* 374. *Reich.* 2. 199. *Berg.*
cap. 128. *Thunb. prodr. cap.* 75.
Thymelæa foliis triquetris cruciatim oppositis, flore
sericeo. Burm. afr. 132. *t.* 48. *f.* 2.
T. ramosa, linearibus fol. angustis, flore solitario.
Burm. afr. 131. *t.* 48. *f.* 1.
Leaves linear opposite (lanceolate even,) flowers termi-
nating solitary, branches smooth.
- [7. *Passerina anthylloides*.
Lin. syst. 374. *suppl.* 225. *Thunb. prodr. cap.* 76.
Leaves oblong villose, flowers in heads.
8. *Passerina spicata*. *Spiked Sparrow-wort*.
Lin. syst. 374. *suppl.* 226. *Thunb. prodr. cap.* 75.
Leaves ovate villose, flowers lateral sessile.
9. *Passerina laxa*. *Loose-branched Sparrow-wort*.
Lin. syst. 374. *suppl.* 226. *Thunb. prodr. cap.* 75.
Leaves ovate hairy, flowers in heads, branches loose.
10. *Passerina grandiflora*. *Great-flowered Sparrow-wort*.
Lin. syst. 374. *suppl.* 226. *Curt. magaz.* 292.
Very smooth, leaves oblong acute concave wrinkled on the
outside, flowers terminating sessile solitary.
11. *Passerina Gnidia*.
Lin. syst. 374. *suppl.* 226.
Bankia Gnidia. Forst. gen. n. 4. act. upf. 3. 173.
Two-stamened very smooth, leaves lanceolate acute.
12. *Passerina pilosa*. *Hairy Sparrow-wort*.
Lin. syst. 374. *suppl.* 226.
Bankia tomentosa. Forst. gen. n. 4.—pilosa. Act.
upf. 3. 174.
Two-stamened hairy, leaves linear blunt.
13. *Passerina prostrata*. *Prostrate Sparrow-wort*.
Lin. syst. 374. *suppl.* 227.
Bankia prostrata. Forst. gen. n. 4. Act. upf. 3. 175.
Two-stamened hairy, leaves ovate.
14. *Passerina cephalophora*.
Thunb. prodr. cap. 75.
Leaves three-cornered in four rows, heads woolly.
15. *Passerina linoides*.
Thunb. prodr. cap. 75.
Leaves linear-lanceolate smooth three-ribbed, flowers ter-
minating solitary.
16. *Passerina nervosa*.
Thunb. prodr. cap. 75.
Leaves lanceolate smooth three-ribbed, flowers in heads.
17. *Passerina fetosa*.
Thunb. prodr. cap. 75.
Leaves lanceolate smooth five-nerved, flowers in heads
bristly on the outside.
18. *Passerina stricta*.
Thunb. prodr. cap. 75.
Leaves ovate hirsute, flowers in heads, branches rigid.
19. *Passerina pentandra*.
Thunb. prodr. cap. 76.
Leaves ovate hirsute, spike ovate terminating.]

DESCRIPTIONS, &c.

1. This rises with a shrubby stalk five or six feet high, sending out branches the whole length, which, when young, grow erect, but as they advance in length, they incline towards a horizontal position; but more so, when the small shoots at the end are full of flowers and seed-vessels. The branches are covered

with a white down like meal, and are closely beset with very narrow leaves in four rows, so that the young branches seem as if they were four-cornered. The flowers come out at the extremity of the young branches, from between the leaves on every side, they are small and white, so that they make no great appearance. The seed-vessels are small, and seem withered and dry. [The tube of the corolla is the length of the germ. The floral leaves have a wide membranaceous rim at the base, which is not the case in the rest ^f.]

It is a native of the Cape of Good Hope, whence it was first brought to the gardens in Holland. [Mr. Miller cultivated it here in 1752. It flowers from June to August ^g.]

2. This has shrubby stalks, which rise to a greater height than the former; the branches grow more diffused, and are covered with a mealy down. Leaves imbricate, short, thick, succulent, smooth and green on the outside, but downy on the inner. Flowers small and white, like those of the former, and appearing about the same time.

Native of Spain and Portugal, [Provence, Italy and the Levant ^h. Reichard remarks, that Gouan (*illustr.* 27. *t.* 17. *f.* 1.) refers Sanamunda 3. of Clusius to his *Daphne dioica*.]

3. This has so entirely the appearance of an *Erica*, that at first sight no one would doubt of its being one. It has the stature of the first species. The branchlets are pubescent. The leaves short, (like those of *Erica*) ovate-oblong, fleshy, opposite, the floriferous one subcordate. Flowers sessile, on the uppermost branchlets, lateral. Seeds ovate, black, shining. Tube of the corolla globular, inflated, (like that of *Erica*) coloured, as the border.—Native of the Cape of Good Hope ⁱ.

4. Leaves scattered. Heads terminating, globular. Peduncles tomentose, thickened. Flowers many, white, sessile without a tube. Stamens above the throat sixteen, the eight inner of which are castrated ^k. Stems shrubby, compound, with rod-like red branches. Leaves erect, acuminate. Common peduncles from the end of the branches, turbinate, tomentose ^l.—Native of the Cape of Good Hope.]

5. This has a shrubby stalk, rising five or six feet high, sending out many branches which are naked to their ends, where they have oblong leaves, standing erect, and having hairy points. The flowers are small, white, and come out among the leaves at the end of the branches. [Linneus remarks, that the flowers are purple, with the throat villose.]

Native of the Cape of Good Hope, Spain and the Levant.] It flowers here in June, but no seeds are produced.

6. This has a shrubby stalk, seldom rising more than a foot high, dividing into many branches, which are slender, smooth, and spread out on every side. Leaves dark-green, having the appearance of those of the Fir-tree, but narrower. The flowers are larger than those of the former, and the upper part of the petals is spread open flat; they are of a purple colour, and appear about the same time as the former.

[There are eight stamens at the throat of the corolla, and eight rudiments of anthers lie concealed at the bottom ^m.—Native of the Cape of Good Hope.]

7. Flowers on the outside very hirsute, white; within, in the living plant yellow, in the dry plant black.

8. The flowering branches resemble a leafy spike.

9. This resembles *P. ericoides*, but differs by having the flowers in heads.—These were found at the Cape of Good Hope by Thunberg.

10. Branches one-flowered. Leaves opposite, subimbricate, blunt with a point, on the outside wrinkled as it were with the veins raised, within concave, very smooth. Stamens eight, above the tube. Stigma capitate, without the tube. It is easily distinguished by the large borders of the flowers, silky on the outside.

^f Linn. syst.^g Linn. mant. and syst.^h Hort. kew.ⁱ Linn. syst.^k Linn. syst.^l Linn. spec.^m Linn. amoen.

Native of Africa. Recently introduced, says Mr. Curtis, from the Cape. It flowered in 1794, at Mess. Lee and Kennedy's, and forms a small neat shrub, like *Phyllica ericoides*.

11. The leaves are more rigid, and very like those of *Gnidia*.—Native of New Zealand, in the fissures of rocks, by the sea coast, and at the tops of mountains.

12. Native of New Zealand.

13. Native of New Zealand, on dry mountains.

These diandrous *Passerinas* have the smell of *Syringa* flowers, and are evergreen. They are not separated from their natural genus, though the number of stamens be less. The *Struthiola* might have been referred to this genus, had it not been for the nectaries. *Daphne* also agrees with *Passerina*.

14 to 19. Natives of the Cape of Good Hope, where they were found by Thunberg.]

PROPAGATION AND CULTURE.

These shrubs from the Cape of Good Hope may be increased by cuttings during the summer months, planted in a bed of loamy earth, and closely covered with a bell or hand-glass to exclude the air, shading them from the sun, and refreshing them now and then with water. They will take root in about two months, when they may be planted each in a small pot filled with loamy earth; placing them in the shade till they have taken new root: then remove them into a sheltered situation, there to remain till October, when they must be placed in the green-house, and treated as *Myrtles*.

Those also which produce seeds, or when they can be procured, may also be propagated that way. Sow them in autumn, soon after they are ripe, in small pots filled with light earth, plunged into an old bark-bed, under a common frame in winter. The plants will come up in the spring, and may be treated like the cuttings: but the seedling plants will grow more erect, and make a handsomer appearance.

2. The second sort will live abroad in common winters, in a dry soil and warm situation; but in hard frosts, the plants are frequently destroyed; one or two therefore should be kept in pots, and sheltered in winter.

PASSERINA. See *Gnidia*, *Lachnæa*, *Linum*, *Stellera*, and *Struthiola*.]

PASSIFLORA. (Altered by Linneus, from the old name *Flos Passionis*, which was given it at the first discovery by the Europeans, from a fancy that they saw all the instruments of our Saviour's passion in the flower.)

Lin. gen. n. 1021. *Reich.* n. 1110. *Schreb.* n. 509. *Juss.* 397. *Granadilla.* *Tournef.* t. 124. *Dill. elth.* 137, 138. *Gertn.* t. 60, 177, 180. *Murucua.* *Tournef.* t. 125.

Class. 20. 4. *Gynandria Pentandria.* — *Pentandria Trigynia.* *Schreb. Thunb. &c.* *Monadelphia Pentandria.* *Swartz.*

Nat. order of *Cucurbitaceæ*.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, flat, coloured.

COR. *Petals* five, semilanceolate, flat, blunt, of the same size and form with the calyx.

Nectary a triple crown: the outer longer, encircling the style within the petals, more contracted above.

STAM. *Filaments* five, awl-shaped, fastened to a column at the base of the germ, and united at bottom, spreading. *Anthers* incumbent, oblong, blunt.

PIST. *Germ* roundish, placed on the apex of a straight, cylindrical column. *Styles* three, thicker above, spreading. *Stigmas* capitate.

PER. *Berry* fleshy, subovate, one-celled, pedicelled.

SEEDS very many, ovate, arilled. *Receptacle* of the seeds triple, growing longitudinally to the rind of the pericarp.

OBS. In *Granadilla* of *Tournefort* the nectary is composed of fibres in a ring. *Murucua* of *Tournefort* consists of a conical truncated membrane. *P. suberosa* is apetalous.

^a *Linn. suppl.*

ESSENTIAL CHARACTER.

Styles three. *Cal.* five-leaved. *Pet.* five. *Nect.* a crown. *Berry* pedicelled.

SPECIES.

* *With undivided leaves.*

1. *Passiflora ferratifolia.* *Notch-leaved Passion-flower.*
Lin. spec. 1355. *fyst.* 821. *Reich.* 4. 47. *hort. cliff.* 431. *amoen.* 1. 217. *f.* 1. *Jacqu. hort.* 1. 4. *t.* 10. *Mart. dec.* 4. *t.* 36. (*Granadilla*).

Leaves ovate serrate.

- [2. *Passiflora pallida.* *Pale Passion-flower.*
Lin. spec. 1355. *Reich.* 4. 47. *amoen.* 1. 218. *f.* 2. *Lour. cochinch.* 527. *Plum. amer.* 74. *t.* 89. *Mer. hist.* 3. 7. *f.* 1. *t.* 2. *f.* 4. (*Clematis*).
Murucua quinta. *Piso bras. l.* 4. *c.* 60. *p.* 243. *fig.*
Leaves ovate quite entire, petioles biglandular.]

3. *Passiflora cuprea.* *Copper-coloured Passion-flower.*
Lin. spec. 1355. *Reich.* 4. 47. *amoen.* 1. 219. *f.* 3. *Dill. elth.* 165. *t.* 138. *f.* 165. *Mart. dec.* 4. *t.* 37. *Catesb. car.* 2. *t.* 93. (*Granadilla*).

Leaves ovate commonly quite entire, petioles equal.

- [4. *Passiflora tiliaefolia.* *Lime-leaved Passion-flower.*
Lin. spec. 1355. *Reich.* 4. 48. *amoen.* 1. 219. *f.* 4. *Feuill. peruv.* 1. 720. *t.* 12. (*Granadilla*).

Leaves cordate quite entire, petioles equal.]

5. *Passiflora maliformis.* *Apple-fruited Passion-flower.*
Lin. spec. 1355. *Reich.* 4. 48. *amoen.* 1. 220. *f.* 5. *Plum. amer.* 67. *t.* 82. *Raii suppl.* 340. *n.* 9. (*Clematis*).

Leaves cordate-oblong quite entire, petioles biglandular, involucre quite entire.

6. *Passiflora quadrangularis.* *Square-stalked Passion-flower.*
Lin. spec. 1356. *fyst.* 821. *Reich.* 4. 48. *Jacqu. amer.* 231. *t.* 143. *piet.* 113. *t.* 218. *Swartz obs.* 332. *Sowerby in Linn. transf.* 2. 21. *t.* 3. *f.* a. *Brown. jam.* 327. *n.* 2.

Leaves oval subcordate smooth many-nerved, petioles glandular, stem membranaceous four-cornered, stipules oval-oblong.

- [7. *Passiflora alata.* *Wing-stalked Passion-flower.*
Ait. hort. kew. 3. 306. *Curt. magaz.* 66. *Sowerby in Linn. transf.* 2. 23. *t.* 3. *f.* 6.

Leaves ovate subcordate even few-nerved, petioles glandular, stem membranaceous four-cornered, stipules lanceolate serrate.]

8. *Passiflora laurifolia.* *Laurel-leaved Passion-flower or Water Lemon.*

Lin. spec. 1356. *fyst.* 822. *Reich.* 4. 48. *amoen.* 1. 220. *f.* 6. *Jacqu. obs.* 1. 35. *hort.* 2. *t.* 162. *amer. piet.* 113. *t.* 219. *Swartz obs.* 333. *Sowerby in Linn. transf.* 2. *t.* 4. *f.* c. *Brown. jam.* 327. *n.* 3. *Pluk. phyt.* t. 211. *f.* 3. *Plum. amer.* 64. *t.* 80. *Raii suppl.* 341. *n.* 15. (*Clematis*).

Marquias. Mer. surin. t. 21.

Leaves ovate quite entire, petioles biglandular, involucre toothed.

9. *Passiflora multiflora.* *Many-flowered Passion-flower.*
Lin. spec. 1356. *Reich.* 4. 49. *amoen.* 1. 221. *f.* 7. *Plum. amer.* 75. *t.* 90. *Raii suppl.* 343. *n.* 22. (*Clematis*).

Leaves oblong quite entire, flowers in clusters.

- [10. *Passiflora angustifolia.* *Narrow-leaved Passion-flower.*
Swartz prodr. 97.

Leaves subcordate lanceolate entire, petioles biglandular, flowers solitary.

11. *Passiflora adulterina.*
Lin. fyst. 822. *suppl.* 408. *Smith ic. ined.* 1. *t.* 24. *Leaves* oblong-oval entire, flowers tubular, calyxes three-leaved.

** *With two-lobed leaves.*

12. *Passiflora perfoliata.* *Perfoliate Passion-flower.*
Lin. spec. 1356. *Reich.* 4. 49. *amoen.* 1. 222. *f.* 8. *Swartz obs.* 334. *Brown. jam.* 328. *10.* *Sloan. jam.* 1. 230. *t.* 142. *f.* 3, 4. *Raii suppl.* 342. *n.* 20. (*Flos passionis*).

Leaves oblong transverse embracing petioled dotted underneath, crown simple many-parted.

13. *Passiflora rubra.* *Red-fruited Passion-flower.*
Lin. spec. 1356. *fyst.* 822. *Reich.* 4. 50. *amoen.* 1. 222. *f.* 9. *Jacqu. collect.* 1. 136. *Swartz. obs.* 336. *Plum. amer.* 68. *t.* 83. *Raii suppl.* 341. *n.* 17. (*Clematis*).

Leaves

- Leaves cordate, lobes acuminate subtomentose underneath, stem villose.
14. *Passiflora normalis*.
Lin. spec. 1357. *syft.* 822. *Reich.* 4. 50. *amoen.* 5. 408. *Brown. jam.* 328. n. 11. *Gärtn. fruct.* 2. 479. (Granadilla).
Coanepilli f. Contrajerva. Hern. mex. 301. *Raii hist.* 651.
 Leaves emarginate at the base, lobes linear blunt divaricate, the middle one obsolete mucronate.
15. *Passiflora Murucujā*.
Lin. spec. 1357. *syft.* 822. *Reich.* 4. 50. *amoen.* 1. 223. f. 10. *Swartz obs.* 336. *Brown. jam.* 328. n. 12. *Plum. amer.* 72. t. 87. *Raii suppl.* 342. n. 19. (Clematis).
 Leaves ovate undivided at the base, dotted underneath, nectary one-leaved.
16. *Passiflora Vespertilio*. Bat-winged Passion-flower.
Lin. spec. 1357. *syft.* 822. *Reich.* 4. 50. *amoen.* 1. 223. f. 11. *vir. cliff.* 91. *hort. cliff.* 431. *Dill. elth.* 164. t. 137. f. 164. (Granadilla).
 Leaves rounded at the base and glandular, lobes acute divaricate dotted underneath.
- [17. *Passiflora lunata*. Crescent-leaved Passion-flower.
Smith ic. rar. 1. t. 1. *Sowerby in Linn. transf.* 2. 26. t. 5. f. e. *Mart. dec.* t. 52. (Granadilla).
P. biflora. Cavan. diff. 437. t. 288.
P. punctata. Hort. angl. 25. *Lin. syst. descr. & mant.* 492.
 Leaves dotted, at the base slightly cordate and having two glands, outer rays of the nectary club-shaped compressed obtuse.]
18. *Passiflora capularis*.
Lin. spec. 1357. *Reich.* 4. 51. *Plum. spec.* 6. ic. 138. f. 2. *Barr. obs. præf.* 1. titul. f. 1. (Granadilla).
 Leaves cordate oblong petioled.
- *** With three-lobed leaves.
- [19. *Passiflora rotundifolia*. Round-leaved Passion-flower.
Lin. spec. 1357. *syft.* 822. *Reich.* 4. 51. *Jacqu. obs.* 2. t. 46. f. 1. *Swartz obs.* 337. *Plum. spec.* 6. ic. 138. f. 1. *Barr. obs. præf.* 1. titul. f. 2. (Granadilla).
 Leaves roundish three-lobed only at top, dotted underneath; nectary simple.]
20. *Passiflora oblongata*.
Swartz prodr. 97.
 Leaves elliptic, subtrilobate in front, dotted underneath, lobes sharpest, the middle one shorter.
21. *Passiflora punctata*. Dotted-leaved Passion-flower.
Lin. spec. 1358. *syft.* 822. (non descr.) *Reich.* 4. 51. *amoen.* 1. 224. f. 12. *Feuill. peruw.* 1. 718. t. 11.
 Leaves oblong dotted underneath, the middle one smaller.]
22. *Passiflora lutea*. Yellow Passion-flower.
Lin. spec. 1358. *syft.* 822. *Reich.* 4. 52. *amoen.* 1. 224. f. 13. *hort. cliff.* 431. *Gron. virg.* 112, 140. *Jacqu. ic. vol.* 2. *Mor. hist.* 1. 7. f. 1. t. 2. f. (Clematis). *Sloan. jam.* 1. 231. (Flos passionis).
 Leaves cordate smooth, lobes ovate, petioles without glands.
- [23. *Passiflora parviflora*. Small-flowered Passion-flower.
Swartz prodr. 97.
 Leaves smooth, lobes ovate entire, the middle one more produced, petioles biglandular, stem herbaceous.]
24. *Passiflora glauca*. Glauous-leaved Passion-flower.
Ait. hort. kew. 3. 308.
 Leaves cordate smooth, lobes ovate equal, petioles glandular, stipules semiovate.
25. *Passiflora minima*. Dwarf Passion-flower.
Lin. spec. 1359. *syft.* 823. *Reich.* 4. 52. *amoen.* 1. 229. f. 18. *Jacqu. hort.* t. 20. *Swartz obs.* 338. *Brown. jam.* 328. n. 5. *Pluk. phyt.* t. 210. f. 3. *Sowerby in Linn. transf.* 2. 27. t. 5. f. f.
 Leaves smooth, lobes lanceolate quite entire, the middle one more produced, petioles biglandular, stem even suberous at bottom.
26. *Passiflora heterophylla*. Narrow-leaved Passion-flower.
Ait. hort. kew. 3. 309.
 Leaves undivided linear oblong and three-lobed smooth quite entire, petioles biglandular.]
27. *Passiflora suberosa*. Cork-barked Passion-flower.
Lin. spec. 1358. *syft.* 823. *Reich.* 4. 52. *amoen.* 1. 226. f. 14. *Jacqu. hort.* 2. 77. t. 163. *Gärtn. fruct.* 2. 480. *Plum. amer.* 70. t. 84. *Raii suppl.* 339. n. 6. (Clematis). *Pluk. phyt.* t. 210. f. 4. (Passifloræ affinis).
β. Plum. amer. 70. t. 85. *Sloan. jam.* 1. 320.
 Leaves subpeltate, lobes ovate entire, petioles biglandular; stem suberose.
28. *Passiflora holosericea*. Silky-leaved Passion-flower.
Lin. spec. 1359. *syft.* 823. *Reich.* 4. 53. *amoen.* 1. 226. f. 15. *hort. cliff.* 432. *Mart. dec.* 5. t. 51. (Granadilla).
 Leaves with a reflex toothlet on each side at the base.
- [29. *Passiflora hirsuta*. Hairy Passion-flower.
Lin. spec. 1359. *Reich.* 4. 53. *amoen.* 1. 227. f. 16. *Pluk. phyt.* t. 212. f. 1. *Plum. amer.* 74. t. 88. f. A. (Clematis). *Herm. par.* t. 176. (Flos passionis).
 Leaves villose, the lower smooth above, lobes oblong quite entire, the middle one more produced, petioles biglandular.]
30. *Passiflora foetida*. Stinking Passion-flower.
Lin. spec. 1359. *syft.* 823. *Reich.* 4. 54. *amoen.* 1. 228. f. 17. *phil. bot.* 260. *hort. cliff.* 431. *Giseck. ic. fasc.* 1. t. 20. *Gärtn. fruct.* 1. 289. *Brown. jam.* 327. 1. *Plum. amer.* 71. t. 86. (Clematis). *Herm. par.* t. 173. (Flos passionis).
β. Pluk. phyt. t. 104. f. 1.
 Leaves cordate hairy, involucre capillary-multifid.]
- [31. *Passiflora ciliata*. Ciliated Passion-flower.
Ait. hort. kew. 3. 310. *Curt. magaz.* 288.
 Leaves smooth ciliate-ferrate, the middle one very long petioles not glandular.]
32. *Passiflora incarnata*. Rose-coloured Passion-flower.
Lin. spec. 1360. *syft.* 823. *Reich.* 4. 54. *amoen.* 1. 230. *hort. upf.* 278. *cliff.* 432. *Jacqu. collect.* 1. 107. *Gron. virg.* 140. *Hern. mex.* t. 888.
Clematis trifolia, flore roseo clavato. Baub. pin. 301. *Mor. hist.* 2. 6. f. 1. t. 1. f. 9.
Granadilla Hispanis, Flos passionis Italici. Col. Raii hist. 649.
Murucujā maliformis alia. Marcgr. bras. 71.
Balsamina indica repens triphylla, f. folio hastato. Ambr. phyt. 89. t. 90.
Marococ f. Clematis virginiana. Park. parad. 393. 10. t. 395. f. 7.
 Leaves ferrate equal, petioles biglandular.]
- [33. *Passiflora aurantia*. Orange Passion-flower.
Forst. prodr. austral. n. 326.
 Leaves three-lobed, lobes parabolical distant, the middle one more produced.]
34. *Passiflora mixta*.
Lin. syst. 823. *suppl.* 408. *Smith ic. ined.* 1. t. 25.
 Leaves trifid ferrate, flowers tubular, calyxes one-leaved.]
- **** With multifid leaves.
35. *Passiflora cœrulea*. Common or blue Passion-flower.
Lin. spec. 1360. *syft.* 823. *Reich.* 4. 55. *amoen.* 1. 231. f. 20. *hort. upf.* 278. *cliff.* 432. *Lour. cochinch.* 527. *Sowerby in Linn. transf.* 2. 25. t. 4. f. d. *Mill. illustr. Knorr. del.* 1. t. P. *Kniph. cent.* 2. n. 50. *Curt. magaz.* t. 28. *Rob. ic.* (Clematis).
Granadilla polyphyllos, fructu ovato. Tournef. inst. 241.
G. pentaphyllos, flore cœruleo magno. Boerb. lugdb. 1. 81. *Dubam. arb.* 1. 272. t. 107.
G. indica scandens & sempervirens, radice repente, foliis palmatis, &c. Mich. flor. 46.
Flos passionis major petaphyllus. Sloan. jam. 1. 229. *Raii suppl.* 339.
 Leaves palmate quite entire.]
- [36. *Passiflora ferrata*. Serrate-leaved Passion flower.
Lin. spec. 1360. *Reich.* 4. 55. *amoen.* 1. 231. f. 21. *Plum. amer.* 62. t. 79. *Raii suppl.* 340. n. 14. (Clematis).
Granadilla polyphyllos fructu colocynthidis. Tournef. inst. 241.
 Leaves palmate serrate.]
37. *Passiflora pedata*. Curl-flowered Passion-flower.
Lin. spec. 1360. *Reich.* 4. 55. *amoen.* 1. 233. f. 22.

f. 22. *Plum. amer.* 66. t. 81. *Raii suppl.* 341.
n. 16. (*Clematis*).

Leaves pedate ferrate.

DESCRIPTIONS, &c.

This beautiful genus is composed of climbing herbaceous plants, sometimes woody, especially at bottom. Leaves alternate, stipulaceous, simple; in a few undivided; in a few others multifid or palmate; but in the greater part lobed: lobes in some two, but in more three. In *P. heterophylla*^o, the lower leaves are undivided, and the upper ones pedate. The petiole in some species is naked, in others glandular on each side. The tendrils or claspers by which the slender weak stems sustain themselves are axillary. The peduncles are also axillary, from one to three together, each sustaining a single flower, (except in *P. holosericea*, in which they are many-flowered;) below the calyx they are commonly jointed; and have an involucre at the joint, which is frequently three-leaved or three-parted; the divisions entire, or sometimes, but rarely, cut or jagged; sometimes however this involucre is very small, or consists only of one leaf, or is entirely wanting.—This genus, according to Jussieu, is allied to the *Cucurbitaceæ* in habit, number of parts, lateral receptacles of the seed, and petaloid calyx: for he considers *Passiflora* as having no corolla, but a calyx divided into ten parts; five of which are exterior, and constitute the calyx of Tournefort and Linneus; the other five interior and petaloid, the petals of those celebrated authors. This genus however differs from the plants of that natural order in the stipules of the leaves, the situation of the stamens and germs, the crown, the perisperm, and especially in having hermaphrodite, not monoecous or androgynous flowers.

The crown, which Linneus calls the *nectarium*, constitutes great part of the beauty of the flower in many of the species. In these it consists of an inner crown, springing from the base of the petals or inner calyxine segments and beneath them, coloured, many-parted, consisting of numerous filiform segments, radiating or erect: within this is another double crown, of the same shape, but shorter and more flattened, inserted into the pitcher; the inmost frequently converges round the central column^p.

Mr. Sowerby, who has bestowed much attention on this genus remarks, that the larger species, as far as he has seen, have constantly two rows of principal radiated nectaries; the smaller commonly but one, and but half the number of divisions in the corolla, namely, only five, whereas the others have from ten to twelve: that the repository for honey also differs much in different species, and is a part very distinct from the crown, which perhaps may serve as a conductor, or help to screen or secure the nectareous juice: and lastly, that there is another sort, which serves as an *operculum* under various forms, sometimes plaited, or plaited and fringed, besides a kind of imperfect rays, in different situations and shapes^q.

The fruit is a fleshy berry, differing in shape and size, but most frequently an oblong spheroid, sometimes covered with a solid rind, smooth on the outside (except in *P. rotundifolia*, which is hairy), one-celled, containing numerous, compressed seeds, covered with a membranaceous pulpy aril: the corcle or embryo is flat, surrounded by a thin fleshy perisperm or albumen^r.

Gartner remarks, that the surface of the albumen being *scrobiculate* or full of little pits or holes, the seed in this genus may readily be distinguished by this mark; which occurs only in *Guajacum*, one species of *Uvaria*, and a few others besides.

Jussieu separates *P. Murucuia* from this genus, as Tournefort had done, under the name of *Murucuia*; on account of the difference in the crown.

Linneus placed this genus in the class Gynandria, on account of the situation of the stamens at the base of the germ. Swartz removed it to Monadelphia, because they are united at bottom. Schreber and Thunberg have sunk it in the ocean of Pentandria.

^p Plum. spec. 7. mfs. 2. t. 21. *Juss. gen.* ^r Juss. gen.
^q Linn. transf. 2. 19.

1. This is a perennial shrubby species; the stems are round; the younger ones very slightly villose, and climbing very high: the stipules are linear and acuminate: the footstalks of the leaves are furnished with two pair of glandules: the leaves are ovate, smooth, and slightly ferrated round their whole outline: the peduncles are one-flowered and solitary: the calyx is outwardly green, inwardly whitish: the petals pale purple: the filaments of the nectary are deep purple at their base, from thence blueish, and at length pale: the anthers are yellow: the stigmas greenish. The flowers have an extremely agreeable odour^s.

Mr. Miller has wholly omitted this species in his descriptions, though he has inserted it in his list of species.

Native of the West Indies. Introduced in 1731, by William Houstoun, M.D. It flowers from may to october^t.

2. Stem perennial, long, round, branching, climbing by solitary tendrils. Leaves smooth, opposite. Flowers pale, large, axillary, two together. Corolla five-petalled, flat, with a crown. Berry egg-shaped, small^u.

Linneus observes, in the *Amoenitates Academicæ*, that the figure by Piso and Marcgrave approaches to this species, and is cited as such by Plumier; but that the description which Ray has copied from Marcgrave differs from this in having cordate leaves, a large ferrated involucre, and ten petals: and that therefore the figure of Marcgrave relates to this species, but the description to another.

Native of Brasil, the island of Dominica, and Cochinchina.]

3. This has slender three-cornered stalks, which send out tendrils at each joint, fastening themselves to any neighbouring support by them, and climbing to the height of twelve or fourteen feet. Leaves about two inches long, and one inch wide, of a light green colour; on slender petioles, an inch in length, from which arise three longitudinal veins, one running through the middle of the leaf, the other two diverging to the sides, but drawing towards each other again at the point. Flowers axillary, on slender peduncles, an inch long. Calyx composed of five oblong, narrow, purplish leaves; within which are five narrower petals of the same colour, turning back after they have been some time expanded. The column in the middle of the flower is very long and slender, supporting a round germ, from the base of which spread out five slender stamens. Fruit oval, about the size of a sparrow's egg, changing to a purple colour when ripe; and filled with oblong seeds inclosed in a soft pulp.

[Linneus remarks, that the leaves are ovate, but the older ones subcordate; that the young ones are scarce apparently ferrate; and that the glands on the petioles are hardly visible.

According to Dillenius, the stem attained the height of three cubits in three years from the seed, with few branches. Leaves close, rigid, smooth, deep green above, somewhat paler underneath. Petals of an obsolete purple colour, or such as is seen on polished copper, whence the trivial name. Crown very small; rays short, rigid, smooth, saffron-coloured, very dark violet and shining at the base, not spreading out but converging, and in the centre a cavity full of clear honey juice. Styles purple, green at the end. Filaments also purple. The flowers open in the evening, and last a day or two; but have no smell^x.]

It grows naturally in the Bahama islands, whence Mr. Catesby sent the seeds to England. [Cultivated by Mr. Miller about 1731.

4. With a perennial root, and a climbing stem of about a finger's thickness: the leaves cordate, acute, footstalked, reticulated towards the base: the footstalks destitute of glands: the flowers red: the nectaries red with a white ring: the involucre quite entire: the fruit globose, and variegated with red and yellow, and having a sweet pulp.

^s Jacquin.

^t Hort. kew.

^u Loureiro.

^x Hort. elth.

Native of South America, about Lima; found there by Feuillée^y.]

5. Stem thick, triangular, by slender tendrils thrown out at every joint rising to the height of fifteen or twenty feet. At each joint is one leaf, six inches long, and four broad in the middle, of a lively green and thin texture, having a strong midrib, whence arise several small nerves, diverging to the sides, and curving up towards the top. Petioles pretty long, having two small glands in the middle. Two large stipules encompass the petioles, peduncles and tendrils at the base. Peduncles pretty long, having also two small glands in the middle. The cover of the flower is composed of three soft velvety leaves, of a pale red, with some stripes of a lively red colour; the petals are white, and the rays are blue. The flowers being large make a fine appearance, but they are of short duration; there is however a succession on them for some time. Fruit roundish, the size of a large apple, yellow when ripe, having a thicker rind than any of the other sorts; inclosing a sweetish pulp, in which are lodged many oblong black seeds, of a brownish colour, a little rough to the touch. It grows naturally in the West Indies, where the inhabitants call it *Granadilla*. The fruit is served up there in deserts.

[Linneus says it is a native of Dominica and Tortuga. In the Kew catalogue it is said to be a native of Dominica; and to have been cultivated by Mr. Miller in 1731.

6. Stem almost simple, thick, membranaceous at the four corners, somewhat hispid. Leaves petioled, five or six inches long, entire, somewhat rugged, but without any pubescence. Tendrils very long, axillary. Stipules in pairs, ovate, at the base of the petioles; on which there are six glands. Peduncles opposite to the petioles, thicker. Flowers very large, encompassed by a three-leaved involucre, the leaves of which are roundish, concave, entire, smooth, pale. Calyx five-leaved: the leaflets broad-lanceolate, membranaceous at the edge, thick in the middle, somewhat spongy, very white within. Petals of the same shape, but thinner, blunter, red within, white on the outside. Crown five-fold: outer rays in a double row, longer than the petals, filiform, round, white and violet variegated; two inner also in a double row, very short, erect; inmost flat near the column of the germ. Column straight, cylindrical, variegated. Germ white. Styles purple. Stigmas black, bifid within. Fruit very large, oblong, fleshy; the pulp purple^z.]

Mr. Miller says it has much the appearance of the preceding both in stalk and leaves; but the stalk has four angles, the leaves also of that are not hollowed at the base: the flower is much larger, though very like the other in colour; the fruit is near twice as large, and of a very agreeable flavour.

Jacquin remarks that the flowers are very sweet as well as beautiful, resembling in colour and structure those of *P. laurifolia*, but a little larger; that the fruit is shaped like an egg, shining, greenish yellow, larger than a goose's egg, smelling sweet, having a soft spongy rind, a finger in thickness, brittle, whitish, insipid: the pulp succulent, of a waterish colour, and sweetish smell, and very pleasant taste, sweet and gently acid, contained in a membrane or bag, which may be easily separated from the rind.

Mr. Sowerby distinguishes this from the next species, with which it has been confounded. They are very much alike, as to general appearance, before they flower, excepting that the leaves in this have generally twice as many side veins. The flowering, even at a distance, will distinguish them pretty easily, the *quadrangularis* being rather compressed and never oblong, as that of the *alata* always is; the former being also destitute of awns. The glands on the petioles are said to be six in this, but it is not constantly so; and there are sometimes six in the *alata*. The peduncle affords a most certain distinction. The colour of the plant will not distinguish them.—He then proceeds to describe the flower thus: Peduncle triangular. In-

volucre of three large concave oval leaves, ferrate towards the base. Pedicel cylindrical, rather more slender at the insertion into the concave base of the flower. Petals ten or twelve, the outer five or six thick and somewhat spongy, a little concave, broad, ending obtusely and without awns, the inner five or six thinner and smaller. Principal rays (of the crown) in two rows close to each other, alike, awl-shaped and standing perpendicularly, or nearly at right angles with the petals, which they exceed in length. Imperfect rays, four or five rows of irregularly-situated protuberances, nearly conical; very small, on an inclined plane. Imperfect operculum, or cover to the antinectary, horizontal, partly divided into rays, which by their tips rest on a thickened part of the column supporting the fructification. This seems to be one part more than in any other *Passiflora*. Operculum or cover to the nectary horizontal, and flattish at the end, which is edged with two rows of little imperfect or irregular teeth, resting on the column. Nectary round the concave base of the corolla, with a protuberant half partition on the side farthest from the column^a.

What are here called the petals, Juslieu regards as the calyx. Linneus takes the middle way, naming the outer leaflets the calyx, and the inner more tender ones the corolla. Mr. Sowerby considers the involucre as the perianth. It suffices to mention the difference of opinion in a matter of too little consequence to excite a controversy. I only remark, that in doubtful cases of little moment, it is far better to leave things as we find them, than to make changes which only serve to breed confusion.

Native of Jamaica and other islands of the West Indies, in woods^b. Jacquin says he did not find it wild any where, but in gardens every where; to the ornament of which it contributes very much, by forming large and very close arbours in a few months. It is attended however with this inconvenience, that these arbours serve to shelter venomous serpents, which lurk there to seize on little animals that come for the fruit, of which they are very fond.

The fruit is brought to table whole, and is much esteemed; and the pulp taken out of the rind, with or without the seeds, first put into wine. The French call it *Granadille*; and Browne, the *Granadilla Vine*.

Jacquin has a variety, which he names *Passiflora sulcata*. It perfectly resembles the *quadrangularis*, except in the size and form of the fruit, which is roundish, frequently larger than a child's head, and marked with a circular transverse groove, deep enough to lay a finger in. It grows on Terra firma.

P. quadrangularis was cultivated by Mr. Miller in 1768, and flowers in our stoves in august and september^c.

7. This is very like the preceding at first sight; the open flower has also a general resemblance: but the peduncle is cylindrical; the three divisions of the involucre small, lanceolate, with glandular serratures; the pedicel thickest at the insertion into the convex base of the flower; the five or six outer petals oblong with an awn, the inner longer; the outer principal rays thinnest and shortest; imperfect rays in a double row, below and distinct from them a single row: no imperfect operculum; operculum partly horizontal and partly turning up to the column, then folding back down again and embracing the column, with which it is so connected that it appears inseparable, but it is not joined to the column; nectary round the column, confined by the base of the flower—the column comes to the bottom of it, which is not the case in the *quadrangularis*^d.

If this species does not equal the *coerulea* in elegance, it exceeds it in magnificence, in brilliancy of colour, and in fragrance, the flowers being highly odoriferous^e.—It is a native of the West Indies, and according to the Kew catalogue, was introduced in 1772, by Mr. William Malcolm. Mr. Curtis informs us, the nurserymen report, that it was first raised

^a Linn. transf.

^b Swartz.

^c Hort. kew.

^d Sowerby in Linn. transf.

^e Curtis.

^y Linn. amœb.

^z Swartz.

in this country, by a gentleman in Hertfordshire, from West Indian seeds.

8. Stem suffrutescent, with very divaricating, filiform branches. Leaves a little emarginate at the base, nerved and very smooth, on short petioles compressed a little, having two glands under the base of the leaf. Tendrils very long. Peduncles the length of the petioles. The three leaflets of the involucre are roundish, concave, with blunt glandular toothlets about the edge, and pale. The five leaflets of the calyx are broad-lanceolate, slightly membranaceous at the edge, horned with a point or awn, smooth, variegated on the inside with blood-red dots. Petals five, the length of the calyx, narrower, acuminate, with blood-red dots scattered over them. Crown triple; the outer rays half the length of the petals, the middle longer than the petals with toothed points, the inner shorter near the column, all variegated with red and violet. Column cylindrical, straight. Filaments variegated. Germ yellow. Styles variegated. Stigmas bifid, black above. Fruit ovate, watery^f.

Jacquin describes it as a woody plant, smooth all over; the younger branches round and green. Leaves some acute, others obtuse, shining, flat. Peduncles solitary. Flowers very handsome and odoriferous. Involucre close to the calyx; leaflets ovate, acute, greenish, either quite entire or having a few teeth. Calycine leaflets pale green on the outside, variegated pale and flesh-colour within. Petals rose-coloured within, pale without. Crown elegantly variegated transversely with white, purple and violet. Fruit three inches long, with a coriaceous, yellow, soft, tough rind, containing a watery, sweet, tasteful juice, having a peculiar fine smell. In the West Indies they suck this pleasant juice through a hole in the fruit. The French call it *Pommes de Liane*, and the English *Honeyfuckle*. Browne says it is cultivated in many parts of America for the sake of its fruit, which is very delicate, and much esteemed by most palates; it is about the size of a hen's egg, and full of a very agreeable gelatinous pulp. He calls his fourth species *Water Lemon*, and informs us that it is a native of Jamaica, frequent in the woods, and supplying the wild hogs with a great part of their food in the season. Jacquin says it grows every where in the island of Martinico; Merian in Surinam; it is pretty general in the West Indies. Mr. Bentick introduced it here in 1690. It flowers in June and July^g.

Mr. Sowerby gives the following particulars to distinguish this species. Peduncle, the lower part cylindrical, becoming triangular at the insertion of the involucre, which consists of three large concave obovate leaves, ferrate towards their extremities with large glands, ending in two or three simple ferratures; pedicel almost conical, narrowing into the deep base of the flower; the six outer petals lanceolate with an awn, the inner smaller; principal rays in two sets, the outer shortest, spreading diagonally, base cylindrical, apex abrupt and irregular, flattish, the inner nearly upright, some a little clavated, others bluntly awl-shaped; imperfect rays in two or three rows irregularly situated; operculum a horizontal plane, touching the base of the column, which confines it by spreading a little over the edge; nectary below the base of the column, round the concave base of the flower.]

9. This has slender stalks, sending out many small branches, and climbing to the height of twenty-five or thirty feet; by age they become woody towards the bottom, and their joints are not far asunder. Leaves on short slender petioles, three inches and a half long, and two broad in the middle, rounded at the base, but terminating in a point at top, smooth, entire, and of a lively green colour. Flowers axillary, on long peduncles. Calycine leaves oblong, green on the outside, but whitish within. Petals oblong, white. Rays blueish purple, inclining to red at bottom. Column short and thick. Germ oval, swelling to the size of a pullet's egg, and changing to a pale yellow when ripe. The flowers have an agreeable odour, but seldom continue twenty hours open: there is a succession

^f Swartz.

^g Hort. kew.

of them from June to September, and sometimes the fruit will ripen here.

It grows naturally at La Vera Cruz in New Spain, where it was found by Dr. Houstoun, who sent the seeds to England in 1731. [It had been before found by Plumier in the island of Dominica.

10. Native of Jamaica^h.

11. Stem angular, lanuginose all over. Tendrils simple, smooth. Leaves petioled, rolled back at the edge, sometimes toothletted, veined, smooth above, lanuginose underneath. Stipules in pairs, linear-lanceolate, toothed, sharp. Flowers solitary, peduncled, pendulous, purple. Peduncles round, smooth. Calyx (Involucre) three-leaved, smooth, deciduous, much shorter than the tube. Corolla tubular, as in *Gardenia Thunbergia*, permanent: tube the length of the finger, slightly angular, smooth; border ten-cleft, with the segments ovate, concave, mucronate below the tip, the five outer (calyx) thicker, the five inner (corolla) thinner and more coloured. Nectary (crown) in the throat, very short. Column the length of the tube. Berry ovate, spotted.

Native of New Granada; where it was found by Mutisⁱ.

12. Stem herbaceous, climbing and twining, three-cornered, subdivided, striated, pubescent. Leaves cordate, ovate, entire, besides the two lobes having a third between them extremely obscure, a very small bristle; they are nerved, smooth on both sides, glaucous underneath and pubescent: the younger ones very thin: at the base the leaves are lobate-cordate, embracing, with the lobes lying over each other, so that the stem is as it were perfoliate: lateral lobes emarginate, with a very short bristle. Petioles very short, curved inwards, round, without glands. Stipules awl-shaped, bent down, at the base of the petiole. Tendrils supraaxillary, very long. Peduncles axillary, solitary, shorter than the leaves. Flowers middle-sized, scarlet. Calyx bell-shaped, growing to the corolla: segments erect, linear, of the same colour with the corolla. Petals between the segments of the calyx, and double their length; lanceolate, from erect spreading. Nectary single, many-parted: segments erect, linear, fleshy, green, with blunt scarlet tips. Column long. Germ ovate. Berry roundish.

Native of Jamaica, in dry hedges near the coast, on the southern side of the island; flowering in the middle of summer^k.

Reichard supposes that this may be the *P. Murucua* of Miller, *n.* 14.

13. Stem herbaceous, twining round, grooved, hirsute, red. Lobes of the leaves entire, nerved, somewhat hispid, soft. Petioles round, red, villose, without glands. Tendrils subaxillary. Flowers alternate, nodding, on solitary one-flowered peduncles. Calyx ovate at the base: leaflets membranaceous at the edge, white within, green without, villose. Petals whitish or pale flesh-colour. Crown triple: outer rays the length of the petals, multifid, pale red; middle one-leaved, very short, plaited: inner a fleshy white rim. Germ small, villose, green. Fruit spherical, marked with six lines, scarlet when ripe, hirsute; pulp whitish. Seeds black, tubercled, shining, covered with a pulpy aril^l.

Native of the West Indies. Cultivated in 1748, by Mr. Miller^m. It flowers in April and Mayⁿ.]

14. This has slender angular stalks, which rise twenty feet high, sending out many branches. The flowers and tendrils come out from the same joints. The former are of a pale colour and small. Fruit egg-shaped, ovate, purple, the size of small grapes.

[The lobes of the leaves divaricate at a right angle; and the petioles are without glands^o.

The berry is spherical, herbaceous-fleshy, marked with six streaks, hirsute, pale, hollow. Receptacles linear. Seeds numerous, but only three or four ripening, ovate, pointed at both ends, turgidly lenticular, transversely wrinkled, shining, having an umbilical cord growing close to it on one side, ferruginous. Aril

^h Swartz.

ⁱ Smith.

^k Swartz.

^l Idem.

^m Granddilla 10. edit. 5.

ⁿ Hort. kew.

^o Linn. syst.

membranaceous, pedicelled, white, at the top pervious and toothletted. Outer cover crustaceous, brittle. Albumen fleshy, hard, snow-white^p.

Native of South America.] Mr. Miller says it was found by Dr. Houstoun, growing naturally at La Vera Cruz.

[The root is much extolled by Hernandez, as a counterpoison and diuretic, for easing pain and creating appetite.

15. Stem herbaceous, grooved, smooth. Leaves ovate or oblong, two-horned, with an intermediate bristle, three-nerved, veined, smooth, entire: dots on the back hollowed, pellucid. Petioles grooved, smooth, destitute of glands. Tendrils subaxillary, filiform, long. Flowers in pairs, axillary, scarlet, large. Peduncles longer than the petioles, having two very small, filiform stipules in the middle. Petals almost upright, blunt, a little smaller than the calyx. Nectary one-leaved, tubular, growing to the petals and calyx, with a yellow crown at the throat. Column longer than the corolla, erect. Berry ovate, the size of a pigeon's egg, pedicelled^q.

According to Browne, it is of an oblong oval form, about the size of a large Olive, and flesh-coloured when ripe. Both the syrup and decoction of the plant is much used in the leeward parts of Jamaica, where it is frequent; and it is said to answer effectually all the purposes for which syrup of Poppies and liquid Laudanum are generally administered. The flowers are most in use: they are commonly infused in, or pounded, and mixed immediately with wine or spirits; and the composition generally thought a very effectual and easy narcotic. Browne names it *Bull-hoof* or *Dutchman's Laudanum*, which are probably the vulgar names of the country.

Native of the West Indies.]

16. This has slender, striated [roundish stalks, less than a straw, and of the same thickness from top to bottom,] of a brownish red colour, dividing into many slender branches. Leaves shaped like the wings of a bat when extended, about seven inches in length or rather breadth, from the base to the top not more than two inches and a half, [the upper ones smaller, the middle wider, and the lower narrower, smooth and somewhat shining, the colour in the upper ones pale, in the middle deeper, in the lower darker green, with two purple tubercles or glands towards the base, where they are connected with the petiole;] which is set half an inch from the base of the leaf, three nerves springing from it, two extending each way to the narrow points of the leaf, the other rising upright to the top, where is the greatest length of the leaf. [Flowers on short round peduncles from the axils of the middle and upper leaves, white and of a middle size,] about three inches in diameter when expanded: [calyx greenish on the outside, whitish within: petals somewhat smaller, white: rays very long and white, twisted in the middle; at the base of these others more slender, like hairs; next to them a ring of white plaited scales collected into a short tube, from the middle of which arises the short purple column, supporting the germ, which is green and of an oblong spheroidal form. The flowers are without scent, open in the evening or during the night, in the month of July, and finally close about eight or nine o'clock in the morning.

Dr. Sherard received it from the Amsterdam garden, without any notice of its native place of growth^r. It is however a native of the West Indies.] Mr. Miller, who cultivated it about the same time, says that it was discovered by Mr. Robert Millar, growing naturally near Carthagen in New Spain.

17. [Stems several, above thirty feet high in a cultivated state, roundish and woody at the base: in the upper part acutely angular, striated, almost herbaceous, nearly smooth, alternately branched. Lobes of the leaves very remote, elongated, entire, obtuse, terminated by a small bristle, similar to one placed between them in the middle of the leaf, each marked by a series of nectariferous dots between the larger veins; leaves veined, bright green and smooth above,

underneath a little glaucous, permanent; on short, roundish petioles, slightly downy, without glands. Stipules small, semilanceolate, acute, entire, smooth. Tendrils axillary, simple, very long, smooth. Flowers axillary, two together, drooping; opening early in the day, and smelling like honey. Peduncles twice as long as the petioles, round, swelling at the top, slightly downy, each bearing a single flower. Bractes three, small, setaceous, below the joint, at a little distance from each other. Corolla flattish at the base, deeply divided into ten segments, whitish and smooth; segments oblong, ovate, obtuse; the five outermost (calyx) thickest, externally green; the innermost (petals) narrower and shorter. External crown of the nectary consisting of about thirty yellow rays, a little shorter than the corolla: middle, of greenish capillary rays, much shorter: innermost, a single, green, plaited, truncated membrane, closely covering the cell where the honey juice is lodged. Genitals as long as the corolla, smooth. Column cylindrical, thickish, white. Germ oval, slightly triangular^s.

Mr. Sowerby remarks that the flower is much smaller than in *quadrangularis*, *alata*, *laurifolia*, and *caerulea*; and is remarkably different in having but one row of principal rays, and that of a quadrangular form; with the operculum or cover of the nectary curiously plaited: but this is a common case with the still smaller ones^t.

The description of *P. punctata* in Linn. syst. veg. belongs to this plant, as well as his observation in his Mantissa, p. 492. but the latter is so obscure and erroneous, that it neither agrees with the plant, nor with the original manuscript from which it was printed^u.

It was gathered at Vera Cruz by Dr. Houstoun, who sent seeds of it to Mr. Miller^x. It was also found by Dr. Wright in Jamaica^y.]

18. Stalks slender, rising to twenty feet high when supported, and dividing into many weak branches. Leaves four inches long and three broad, ending at their points in two horns, in some more acute than in others, several of them appearing as if cut a little hollow at the top, like those of the Tulip-tree: they have three longitudinal veins, which join at the base of the leaf to the foot-stalk, but the two outer diverge towards the borders of the leaf in the middle, drawing in again at the top; they are of a deep green on their upper side, but pale underneath, and stand on short foot-stalks. Peduncles very slender, an inch and half long, purplish. Flowers, when expanded, not more than an inch and half in diameter, of a soft red colour, with little scent. Fruit small, oval, when ripe purple.

Native of Jamaica; whence Dr. Houstoun sent the seeds to England.

[19. Stem suffrutescent at bottom, subdivided, angular, grooved. Leaves semiovate, three-nerved, veined, smooth on both sides, marked behind longitudinally with pellucid dots: lobes terminated by very small bristles; the middle one a little larger than the others. Petioles short, without glands. Tendrils filiform, very long. Stipules two, opposite, awl-shaped. Peduncles axillary, filiform, an inch long. Flowers nodding, pale green, rather large. Calycine segments ovate, acute, erect, concave, forming a goblet at the base. Petals semilanceolate, acute, erect, pale green. Crown simple; the segments awl-shaped, erect, converging, having tawny glands at the tip. Column longer than the corolla, round. Filaments awl-shaped, dilated. Germ roundish. Berry egg-shaped.—It is distinguished from the other species by its rounded leaves slightly three-lobed at top only^z.

Jacquin observes, that the glandular dots on the under side of the leaf are six or seven in a longitudinal row along the inner side of the two lateral nerves; that the stipules are acuminate, shining, embracing, and resembling bull's horns; that the peduncles are the same length with the leaves; that the flowers are middle-sized and void of scent; that there is a three-leaved involucre; the leaflets ovate, concave, small,

^p Gartner.

^q Swartz.

^r Dillen. elth.

^s Smith.

^t Linn. trans.

^u Hort. kew. n. 7.

^x Smith.

^y Mart. dec.

^z Swartz.

firm, shining, smooth, yellowish with a tinge of green; that the petals are white and twice as long as the calyx; the nectary multifid and yellow; that the berry is roundish, small and juiceless; and that in most of the leaves the middle lobe is scarcely to be observed. He says it is very common in the woods about Carthage in New Spain. Swartz found it in coppices on the southern side of Jamaica; flowering at the beginning of the year. According to the Kew catalogue, it was introduced in 1786.

20. Native of the island of Jamaica^a.

21. This species was known to Linneus, who had never seen it, only by the description of Feuillée. Cavanilles has given a figure of it from a plant which flowered in the royal garden at Paris^b. It is a native of Peru.]

22. Root creeping, sending up many weak stalks three or four feet high. Leaves shaped like those of Ivy, and almost as large, but of a pale green and very thin consistence. Peduncle slender, an inch and half long. Flowers dirty yellow, not larger than a sixpence when expanded.

Native of Virginia and Jamaica. [Cultivated here in 1714. It flowers in May and June^c.

23. Native of Jamaica^d.

24. The whole plant is very smooth and even. Leaves glaucous underneath, undotted. Petioles furnished with two or four glands below the middle. Stipules acute, quite entire, more than half an inch in length. Calycine leaflets lanceolate, green underneath, whitish above, a little more than an inch in length. Petals lanceolate, blunt, white, the length of the calyx. Nectary shorter by half than the petals: rays violet, white at the tip. Flowers sweet.

Native of Cayenne. Introduced in 1779, by Messrs. Kennedy and Lee^e.

25. Stem twining, simple, becoming corky at the base with age, round, smooth. Leaves subpeltate, subcordate: lateral lobes almost horizontal; all acute, nerved, smooth on both sides. Petioles short, round, reflex, smooth. Glands two opposite, small, sessile, concave, brown, in the middle of the petioles. Stipules two, opposite, awl-shaped, by the side of the petioles. Tendrils long, between the petioles. Peduncles axillary, solitary, longer than the petioles, loose, one-flowered. Flowers small, whitish. Calyx none, except the flattish base of the corolla. Petals five, lanceolate, reflex at the tips. Nectary four-fold: inmost, a membranaceous rim, entire, brown, at the base of the column: inner one-leafed, plaited, crenate, dusky purple: outer ciliated with capillary erect hairs, black with yellow tips: outmost with cilia twice as long as the others, reflex, very dark purple, yellow from the middle to the tip. Column longer than the corolla. Germ roundish. Berry small, blue, egg-shaped.

It is nearly allied to *P. suberosa*; but differs in the lobes of the leaves being narrow and divaricated: the stem herbaceous, becoming like cork only when old; and the flowers smaller^f.

Mr. Sowerby remarks, that though this has its name from its smallness, there are others nearly if not quite as small, and not well distinguished; that several of them have no involucre, though there is a joint on the peduncle, or as he has it, between the peduncle and pedicel; and that they have but five petals, consequently nothing that serves as a calyx.

He thus describes the flower of this species: Peduncle cylindrical. Pedicel also cylindrical, curved a little, thickest at the flat base of the flower. Petals lanceolate, turned back. Principal rays cylindrical, spreading, curved back. Imperfect rays mostly clubbed, sometimes bifid. Operculum plaited and fringed at the edge. Nectary as in *lunata*, except that at the ridge of the protuberating bank are some small, regular roundish glands or imperfect rays^g.

Native of Curassao^h, and Jamaicaⁱ. Introduced in 1690 by Mr. Bentick. It flowers in July^k.

26. Native of the West Indies. Introduced about 1773. It flowers from June to September^l.]

^a Swartz.

^b Smith ic. rar.

^c Hort. kew.

^d Swartz.

^e Hort. kew.

^f Swartz.

^g Linn. transf.

^h Linn.

ⁱ Swartz.

^k Hort. kew.

^l Idem.

27. This rises with a weak stalk to the height of twenty feet. As the stalks grow old, they have a thick fungous bark like that of the Cork-tree, which cracks and splits. The smaller branches are covered with a smooth bark. Leaves smooth, on very short petioles. The middle lobe is much longer than the lateral ones, so that the whole leaf is halbert-shaped. The flowers are small, of a greenish yellow colour. Fruit egg-shaped, dark purple when ripe.

[Stem perennial. Flowers axillary, in pairs, white, apetalous. Leaves in the young plants peltate, but scarcely so when farther advanced; always shining, very smooth. Petioles without glands^m.

The fruit is thus described by Gärtner. Berry elliptic (an oblong spheroid, or shaped like an olive), very smooth, dark blue, filled with a watery pulp. Seeds twelve, obovate, mucronate at both ends, full of little pits, having an umbilical cord fastened to it at one edge, shining, blackish. Aril membranaceous-pulpy, transparent, not peduncled, with the mouth obliquely truncated, toothless. Shell of the seed crustaceous, brittle. Albumen snow-white, full of pits like the shell. Embryo almost the length of the albumen.

Jacquin remarks that Plumier's figures do not agree with this plant.

Native of the West Indies. Cultivated in 1759 by Mr. Miller. It flowers from June to Septemberⁿ.]

28. The stalks rise twenty feet high, dividing into many slender branches, covered with a soft hairy down. Leaves shaped like the point of a halbert, three inches long, and an inch and half wide at the base, light green, soft and silky to the touch, standing obliquely to the footstalks. Flowers not half so large as those of the common or blue Passion-flower. Petals white. Rays purple with a mixture of yellow. Fruit small, roundish, yellow when ripe. [The petioles have two opposite glands. Leaves ovate, tomentose on both sides: lateral lobes short; with an obsolete gland underneath behind the sinus of the lobe^o.]

It was discovered by Dr. Houstoun, growing naturally at La Vera Cruz: [and therefore was introduced before 1733, in which year he died. It flowers most part of the summer^p.

29. Native of the West Indies. Introduced in 1778, by Mr. Gilbert Alexander. It flowers in September^q.]

30. Root annual, [or rather biennial.] The stalks rise five or six feet high, when supported; they are channelled and hairy. The middle lobe of the leaf is three inches long, and one and a half broad; the two side-lobes are short but broad; they are covered with short brown hairs. Flowers on strong hairy peduncles, two inches long. Calyx composed of slender hairy filaments, wrought like a net, longer than the petals, and turning up round them. They are white, and of short duration. Fruit roundish-ovate, about the size of a golden Pippin, of a yellowish green colour, inclosed in the netted calyx. The whole plant has a disagreeable scent when touched.

[The stipules are ciliary. The petioles have viscid hairs but no glands. The involucre, (which Mr. Miller calls the calyx) resembles that of *Nigella damascena*^r.

Berry oblong-spheroidal, pedicelled, villose, marked with three lines of a deeper colour longitudinally, green on the outside, within silky white, membranaceous. Rind thin. Cavity empty, inflated. Seeds numerous, but scarcely twelve ripening in Europe, oblong-spheroidal, peduncled, hanging down from three lines in the shell of the berry. They are præmorse and three-toothed at the top, in other parts compressed a little, pitted, of a dark chestnut colour: Covers three; the outmost pulpy, but becoming dry; the middle crustaceous, hard, brittle, deeply pitted; the inner membranaceous, white. Albumen ovate-oblong, truncated above, pitted and almost like a sieve from the impressions of the middle coat! fleshy, white. Embryo shorter by half than the albumen, milk-white. Cotyledons cordate-orbicular, leafy,

^m Linn. spec. & syst.

ⁿ Hort. kew.

^o Linn. syst.

^p Hort. kew.

^q Idem.

^r Linn. syst.

very thin. Radicle short, thicker outwards; centrifugal*.]

It grows naturally in most of the islands of the West Indies, where the British inhabitants call it *Love in a Mist* which is one vulgar name of *Nigella damascena*, that it resembles in the involucre. It was cultivated by Mr. Miller in 1731; and flowers in July and August.

31. Native of Jamaica. Cultivated in 1783, by Mrs. Norman†. It runs to a great height, and has dark-green glossy leaves; the involucre is composed of three leaves divided into capillary segments, each terminating in a viscid globule: the pillar supporting the germen is bright purple with darker spots: the petals are greenish on the outside, and red within. The crown consists of four rows of radii*, which are varied with white and purple. The leaves of this species vary occasionally, and Mr. Curtis suspects it to be a variety of *P. fatida*.]

32. Root perennial. Stalks annual, slender, rising four or five feet high. At each joint one leaf, on a short foot-stalk, having mostly three oblong lobes, but the two side ones are sometimes divided part of their length into two narrow segments, and thus becoming five-lobed; they are thin, of a light green, and slightly ferrate. The flowers are produced from the joints of the stalk, at the foot-stalks of the leaves, on long slender peduncles, in succession as the stalks advance in height during the summer months. Calycine leaflets oblong, blunt, pale green. Petals white, with a double circle of purple rays, the rays of the lower circle longest. The flowers have an agreeable scent, but are of short duration, opening in the morning, and fading away in the evening. Fruit as large as a midling Apple, changing to a pale orange colour when ripe; inclosing many oblong rough seeds, lying in a sweetish pulp.

It grows naturally in Virginia and other parts of North America, and was the first known in Europe of all the species, but was not very common in the English gardens till of late years.

[It was cultivated here in 1629, according to Parkinson‡, who has given a good figure and description of it, with a copy of the Jesuit's sophisticated figure to contrast with his own, and a copious abuse of their attempts to deceive mankind.]

33. Native of New Caledonia‡.

34. Stem angular, smooth. Leaves petioled, smooth on both sides, veined underneath; lobes equal, divaricated, acute. Stipules in pairs, crescent-shaped, embracing, acute at the top, toothed. Flowers solitary, peduncled, nodding, red; on round, pubescent peduncles. Calyx (or involucre) tubular, pubescent, three or five-cleft at the top, one-third of the length of the corolla. Corolla also tubular, the whole of it very softly pubescent before it expands. Tube the length of the finger, round, pubescent. Border ten-cleft: segments ovate; the five outer (calyx) pubescent at the back, terminated by a filiform pubescent point below the tip; the five inner (petals) smooth, with a very small point. Nectary very short, in the throat. Column the length of the tube. Berry obovate, smooth.—Native of New Granada, whence it was sent by Mutis.

Dr. Smith collects from this species and *P. adulterina*, that the flower of *Passiflora* is ten-petalled; and that what Linneus calls the involucre is the calyx. Jussieu on the contrary calls the whole the calyx, and asserts the *Passiflora* to have no corolla. In most of the species the involucre cannot properly be regarded as a perianth, and even in this species it is permanent, and in the fruiting state at a considerable distance from the fruit.]

35. This rises in a few years to a great height with proper support. It may be trained up more than forty feet high. The stalks will grow almost as large as a man's arm, and are covered with a purplish bark, but

* Gartner.

† Hort. kew.

* Mr. C. probably means by this that the crown is marked by four circles alternately purple and white.

† Hort. kew.

‡ Forster.

do not become very woody. The shoots often grow to the length of twelve or fifteen feet in one summer, and being very slender must be supported, otherwise they will hang to the ground, intermix with each other, and appear very unsightly. At each joint is one leaf composed of five smooth entire lobes; the middle one, which is longest, almost four inches long, and one inch broad in the middle, the others are gradually shorter, and the two outer lobes are frequently divided on their outer side into two smaller ones. Their foot-stalks are near two inches long, and have two embracing stipules at their base; and from the same point issues a long clasper or tendril. The flowers come out at the same joint with the leaves, on peduncles almost three inches long. The outer cover (or involucre) is composed of three concave ovate leaves, of a paler green than the proper leaves of the plant, and are little more than half the length of the calyx; the leaflets of which are oblong, blunt, pale green: the petals are nearly of the same shape and size, and stand alternately between them. Column about an inch long. Germ oval. Styles purplish, near an inch long. Rays of the crown in two circles; the inner, which is the shortest, inclines towards the column; the outer, which is near half the length of the petals, spreads open flat upon them, and is purple at bottom, but blue on the outside. The flowers have a faint scent, and continue but one day. Fruit egg-shaped, the size and shape of the Mogul Plum, and when ripe, of the same yellow colour, inclosing a sweetish disagreeable pulp, in which are lodged oblong seeds.

[Linneus remarks, that the petioles have two glands on them, and the stipules are crescent-shaped‡.

Peduncle cylindrical, swelling a little at the base. Pedicel also cylindrical, thickening at each end. The outer five or six petals (or calycine leaflets) a little fleshy, oblong, rather obtuse; inner narrower and thinner, about the same length. Principal rays of the crown in two rows horizontal, thread-like, a little pointed, nearly alike, under each other. Imperfect rays in one regular row, with roundish heads, on little footstalks standing erect on an horizontal elevated plane at the base of the principal rays: within these imperfect rays are a very different set, entire at the insertion, divided into threads about half way down, and inclining against the column. On the under side is a protuberance, which catches the margin of the operculum; and that spreads from the column under the aforesaid rays. Nectary round the base of the column, with a thick protuberance round the side of the lower part of the flower, on which rests the operculum and which almost divides it into two cells‡.]

There is a variety of this with much narrower lobes, divided almost to the bottom. The flowers come later in the summer; the petals are narrower, and of a purer white.

There is a variety also of the *fatida*, (n. 30.) if it is not a distinct species, with hairy narrower lobes. The whole leaf is shaped more like the point of a halbert, and the upper ones having very small indentures, approach to simple leaves without lobes. The flowers are also smaller, but of the same form, and the roots are of a shorter duration.

The blue Passion-flower grows naturally in Brazil. Being hardy enough to thrive in the open air, it is now become the most common species in England, though it was introduced long after the *incarnata*. It was cultivated in 1699, by the Dutchess of Beaufort‡.

36. Stems woody. At each knot, about half a foot distant, a single leaf, nearly the size of the hand extended, smooth, divided into seven lobes, which widen towards the end, acuminate, reaching almost to the petiole, which is four or five inches in length. A tendril and a flower come out from the same point with the leaf. Peduncle two inches long. The flower is inclosed in an involucre, and together are larger than a hen's egg. The involucre opens into three equal whitish leaves, dotted on the inside, and streaked with

‡ Syft.

‡ Sowerby in Linn. transf.

‡ Hort. kew.

a few purple veins. The lower half of the flower when expanded resembles a cup with a pentagon rim, white on the inside, hairy at bottom; the hairs very short, with a little red gland at top: it is furrounded with a double fringe, the threads of which are a line in thickness, tender and pointed, almost square and contiguous: the outer row an inch and half long, the inner an inch; all white towards the end, thence violet to the middle, the lower part pale; adorned with five bands; standing right up: the inner row is a little more depressed, but has the same colour and consistence with the outer. The corolla is composed of ten violet-coloured petals in two rows, five in each, the inner much narrower than the outer, all an inch and half long, with a small point at the end verging outwards. In the centre of the cup is a sort of base, of a cylindrical form, from three to four lines in thickness, excavated with a little trench, and furrounded by many very short hairs of a russet colour. On this is placed the column, which is white, small, perfectly round, eight or nine lines in height, and a line and half in diameter. Fruit the size of an Orange, round, polished, like that of *Coloquintida*, except that next the peduncle it is drawn out like a Pear. It is filled with a white mucilaginous pulp, containing many seeds, a little larger than grains of wheat, oval, a little compressed, pointed at one end, hardish, shining, hairy.—Native of the island of Martinique.

37. Stems angular. Leaves pedate; a petiole two or three inches long, being divided into three others shorter and more slender, the middle sustaining one leaf only larger than the rest, the two others forked, the leaflet next the middle one of the same form but smaller, the outer still smaller, cut to the base, but the segment next the petiole resembling rather an earlet than a leaflet: each taken separately is somewhat like a bay-leaf: they are all toothletted, smooth, shining, bright green, paler underneath: the middle leaflet is four inches long, and almost two wide; the least is not more than an inch in length, and half an inch in width. The flowers are a little larger than those of the preceding. The rays of the crown are very close, deep red with two or three white rings, very slender at the end and violet; they are twisted so as to resemble the serpents about Medusa's head. The five inner parts of the corolla are entirely blue; the five outer pale green within with abundance of little red dots, on the outside clear green. The three leaves of the involucre are hollowed out like the bowl of a spoon, fringed all round, deep green, with many ribs underneath. Fruit the size and form of a middling Apple: rind regular and smooth, of a shining green colour, with still brighter dots.

Native of the island of Dominica^b, and other islands of the West Indies. Introduced in 1781, by Mr. Francis Masson^c.

The following distinctions, however incomplete, may assist in discriminating the species. The Stem is round in n. 2. 8. 9. 13. 16. 25. 32. 36. Angular in n. 11. 14. 15. 17. 19. 34. 37. Triangular in n. 3. 5. 12. Quadrangular in n. 6. The Leaves in most of the species are alternate: in n. 2. they are opposite. They vary in form: in n. 19. they are roundish: in many, the leaves or leaflets are ovate, as in n. 1. 2. 3. 8. 12. 15. 23. 28: oblong in n. 9. 18. 21. 29: oblong-oval in n. 11: cordate in n. 4. 5. 6. 7. 12. 13. 18. 22. 24. 25. 30: crescent-shaped in n. 16. 17: palmate five-lobed in n. 35: palmate seven-lobed in n. 36: pedate in n. 37: in general the leaves or lobes are entire on the edge, but in n. 1. 36. 37. they are ferrate. The Petioles in many species have a pair of glands on them; as in n. 2. 3. 5. 7. 8. 23. 25. 26. 28. 29. 32. 35: in n. 3. they are scarcely visible: in n. 24. there are sometimes two, and sometimes four glands: n. 6. has six glands: in n. 4. 12. 13. 14. 15. 16. 17. 19. 22. the petiole is naked: and in n. 16. 17. the leaves themselves are glandular near the base.

The Flowers in most of the species are solitary, or come out singly from the axil of a leaf: but in n. 2. 15. 17. 27. they come out two together; and in n. 9.

several together. Their colours are various. Pale in n. 2. 14. 19. 27. White in n. 16. 30. White and pale red in n. 13. 32. White and blue in n. 9. 24. White red and blue in n. 5. 6. 7. 8. White green and yellow in n. 17. White purple and yellow in n. 25. 28. White purple and blue in n. 36. Red in n. 13. 34. Scarlet in n. 12. 15. Red green and blue in n. 37. Purple in n. 3. 11. Yellow in n. 22. These colours take in the rays, and as usual are by no means certain. The Crown, which constitutes great part of the singular beauty of this flower in many species, is single in n. 12. 19. double in n. 32. 35. triple in n. 3. 8. 13. 16. 17. quadruple in n. 25. and quintuple in n. 6. 7. In n. 16. it is very long; and in n. 11. 34. it is very short. N. 32. is distinguished from all the rest by its capillary-multifid involucre, resembling that of Devil-in-a-bush.

The Fruit in most of the species is egg-shaped, more or less prolonged. It is obovate in n. 34: spherical in n. 13. 14: roundish in n. 5. 12. 28. 32. 36. 37. It is of various colours: purple in n. 3. 12. 14. 18. 27: flesh-coloured in n. 15: scarlet in n. 13: pale orange in n. 32: yellow in n. 5. 8. 9. 23. 35: greenish yellow in n. 6. 30. 36: green in n. 37: blue in n. 25: spotted in n. 11.

These beautiful plants were unknown till the discovery of America. They are found in various parts both of the Continent, chiefly of South America, and of the Islands. N. 35. is found in Brazil: n. 24. in Cayenne: n. 3. in the Bahama islands: n. 22. and 32. in Virginia.]

PROPAGATION AND CULTURE.

All the perennial sorts which are natives of the hot parts of America, require a stove to preserve them here, without which they will not thrive; for although some of the sorts will live in the open air during the warm months in summer, yet they make but little progress; nor will the plants produce many flowers, unless the pots in which they are planted are plunged into the tan-bed of the stove, and their branches are trained against an espalier. The best way to have them in perfection, is to make a border of earth at the back of the tan-bed, which may be separated by planks to prevent the earth from mixing with the tan; and when the plants are strong enough, they should be turned out of the pots, and planted in this border, adjoining to which, should be a trellis erected to the top of the stove; against this the stalks must be trained, and as they advance they will form a hedge to hide the wall of the stove, and their leaves continuing green all the year, together with their flowers, which will be plentifully intermixed in summer, will have a very agreeable effect.

As there will be only a plank partition between the earth and the tan, the earth will be kept warm by the tan-bed, which will be of great service to the roots of the plants. This border should not be less than two feet broad and three deep, which is the usual depth of the pit for tan; so that where these borders are intended, the pits should not be less than eight feet and a half or nine feet and a half broad, that the bark-bed, exclusive of the border, may be six and a half or seven feet wide. If the border is fenced off with strong ship planks, they will last some years, especially if they are well painted over with a composition of melted pitch, brick-dust and oil, which will preserve them sound a long time; and the earth should be taken out carefully from between the roots of the plants, at least once a year, putting in fresh: with this management, I have seen these plants in great perfection. But where there has not been this convenience, I have turned the plants out of the pots, and planted them into the tan-bed when it was half rotten, into which they have rooted exceedingly, and have thriven for two or three years as well as could be desired; but when their roots extended to a great distance in the tan-bed, they have been injured by renewing the bark; and when it has fermented pretty violently, the roots have been scalded, and the plants have been killed, so that the other method is more eligible.

These plants are propagated by seeds, which should be sown upon a good hot-bed in the spring, and when

^b Plumier.

^c Hort. kew.

the plants are fit to remove, they should be each planted in a small pot filled with good kitchen-garden earth, and plunged into a bed of tanner's bark, observing to shade them from the sun till they have taken new root; then they must be treated like other tender plants from the same countries. When they are too high to remain under the glasses of the hot-bed, they should be turned out of the pots and planted in the stove, in the manner before mentioned.

As these plants do not often perfect their seeds here, they may be propagated by laying down their branches, which, if done in april, they will put out roots by the middle of august, when they may be separated from the old plants, and either planted in pots to get strength, or into the border of the stove, where they are to remain.

Some of these sorts may also be propagated by cuttings; these should be planted into pots about the middle or latter end of march, and plunged into a moderate hot-bed, observing to screen them from the sun, and refresh them with water gently, as often as the earth may require it; and in about two months or ten weeks, they will put out roots, and may then be treated as the seedling plants.

22. The Yellow Passion-flower may be propagated by its creeping roots, parted in april, and planted where they are to remain. This will live in a warm border, if treated as directed for n. 32. It lived many years in a south-west border in the Chelsea garden; but in the year 1740 all the plants were killed by the frost.

30. Is propagated by seeds, sown upon a hot-bed early in the spring. When the plants are fit to be removed, transplant each into a small pot filled with light kitchen-garden earth; plunge them into a hot-bed again, and shade them from the sun till they have taken new root. Shift them into larger pots as the roots increase; and when the plants are too tall to remain in the hot-bed, remove them into an airy glass-case; admitting air in warm weather but screening them from cold. In this situation the plants will flower in july, and the seeds ripen in autumn.

32. This sort is usually propagated by seeds which are brought from America, for the seeds do not often ripen in England; though I have sometimes had several fruit perfectly ripe on plants, which were plunged in a tan-bed under a deep frame; but those plants which are exposed to the open air, do not produce fruit here. The seeds should be sown upon a moderate hot-bed, which will bring up the plants much sooner than when they are sown in the open air, so that they will have more time to get strength before winter.

When the plants are come up two or three inches high, they should be carefully taken up, and each planted in a separate small pot filled with good kitchen-garden earth, and plunged into a moderate hot-bed to forward their taking new root; after which they should be gradually inured to bear the open air, to which they should be exposed in summer, but in the autumn they must be placed under a garden-frame to screen them from the frost; but they should have the free air at all times in mild weather. The spring following some of these plants may be turned out of the pots, and planted in a warm border, where, if they are covered with tanner's bark every winter to keep out the frost, they will live several years, their stalks decaying in the autumn, and new ones arising in the spring, which in warm seasons will flower very well. If those plants which are continued in pots are plunged into a tan-bed, some of them may produce fruit; and, if the stalks of these are laid down in the beginning of june, into pots of earth plunged near them, they will take root by the end of august.

35. The common or blue Passion-flower may also be propagated by seeds, which should be sown in the same manner as those of the thirty-second sort, and the plants treated in the same way till the following spring, when they should be turned out of the pots, and planted against a good aspected wall, where they may have height for their shoots to extend, otherwise they will hang about and entangle with each other, so as to make but an indifferent appearance; but where buildings are to be covered, this plant is very proper for the purpose.

After they have taken good root in their new quarters, the only care they will require, is to train their shoots up against the wall, as they extend in length, to prevent their hanging about, and if the winter proves severe, the surface of the ground about their roots should be covered with mulch to keep the frost from penetrating the ground; and if the stalks and branches are covered with mats, peas-haulm, straw, or any such light covering, it will protect them in winter against severe frosts; but this covering must be taken off in mild weather, otherwise it will cause the branches to grow mouldy, which will be more injurious to them than the cold. In the spring the plants should be trimmed, when all the small weak shoots should be entirely cut off, and the strong ones shortened to about four or five feet long, which will cause them to put out strong shoots for flowering the following year.

This plant is also propagated by laying down the branches, which in one year will be well rooted, may be taken off from the old plants, and transplanted where they are designed to remain. The cuttings of this will also take root, if they are planted in a loamy soil not too stiff, in the spring, before they begin to shoot. If these are covered with bell or hand-glasses to exclude the air, they will succeed much better than when they are otherwise treated; but when the cuttings put out shoots, the air should be admitted to them, otherwise they will draw up weak and spoil, and they must be afterwards treated as the layers. Those plants which are propagated by layers or cuttings, do not produce fruit so plentifully as the seedling plants; and I have found the plants which have been propagated two or three times, either by layers or cuttings, seldom produce fruit, which is common to many other plants.

If in very severe winters the stalks of these plants are killed to the ground, the roots often put out new stalks the following summer, therefore they should not be disturbed; and where there is mulch laid on the ground about their roots, there will be little danger of their being killed, although all the stalks should be destroyed.

PASSIFLORÆ AFFINIS and PASSION-FLOWER. See *Passiflora*.

PASTINACA. (A pascendo, on account of the nourishing quality of the roots. Or, according to Turnebus, because they resemble the pastinum, the tool used in digging vineyards. *Pastinando loco. Linn.*)

Lin. gen. n. 362. Reich. n. 392. Schreb. n. 494.

Tournef. t. 170. Juss. 219. Gertn. t. 21.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Umbellatæ* or *Umbelliferæ*.

GENERIC CHARACTER.

CAL. *Umbel universal* manifold, flat: *partial* manifold.

Involucre universal none: *partial* none.

Perianth proper obsolete.

COR. *universal* uniform. *1* *lorets* all fertile.

Proper of five lanceolate involute entire petals.

STAM. *Filaments* five capillary. *Anthers* roundish.

PIST. *Germ* inferior. *Styles* two, reflex. *Stigmas* blunt.

PER. none. *Fruit* compressed flat, elliptic, bipartile.

SEEDS two, elliptic, girt round the edge, almost flat on both sides.

ESSENTIAL CHARACTER.

Fruit elliptic, compressed flat. *Petals* involute, entire.

SPECIES.

[1. *Pastinaca lucida. Shining-leaved Parsnep.*

Lin. syst. 290. Reich. 1. 719. Willd. 1465. mant.

58. Jacqu. hort. t. 199. Gouan illustr. 19.

t. 11, 12. Retz. obs. 5. p. 3.

P. foliis quasi libanotidis latifolia. Boerb. lugdb. 1. 67.

Root-leaves simple cordate lobate shining acutely crenate: (stem-leaves ternate and pinnate, branch-leaves simple wedge-shaped, Gouan.)

2. *Pastinaca lativa. Common Parsnep.*

Lin. spec. 376. Reich. 1. 719. Willd. 1466. hort.

cliff. 105. upf. 66. fl. suec. n. 259. mat. med. 84.

Gertn. fruct. 1. 87. t. 21. f. 5. Hudf. angl. 125.

Witther. arr. ed. 3. 309. Hall. belv. n. 808.

Pollich pal. n. 303. Allion. pedem. n. 1290. Scop.

carn. n. 233. Villars dauph. 2. 637. Hoffm.

germ.

- germ. 106. Krock. files. n. 474. Retz. obs. 5. p. 3. Plenck, ic. t. 227. Kniph. cent. 6. n. 70.
- α. *P. sylvestris*. Wild Parsnep.
 Mill. dict. n. 1. Wither. arr. var. 1. Relb. cant. n. 237. Sibth. oxon. n. 311. Neck. gallob. 151.
P. sylv. latifolia. Baub. pin. 155. Dod. pempt. 680. 2. Ger. emac. 1025. 2. Park. theat. 944. n. 2. Raii hist. 409. syn. 206. Riv. pent. t. 6. Mor. hist. 3. 314. f. 9. t. 16. f. 2.
P. germanica sylv. quibundam Elaphoboscum.. Baub. hist. 3. 149.
 Spondylium. Ger. 856. fig.
- β. *P. sativa*. Garden Parsnep.
 Mill. dict. n. 2.
P. sat. latifolia. Baub. pin. 155. Blackw. t. 379. Fuchsf. 751. Matth. 747. Dod. pempt. 680. 1. Lob. obs. 407. 2. ic. 1. 709. 2. Baub. hist. 3. 150. Raii hist. 410. Ger. 870. 1. 2. emac. 1025. 1. Park. theat. 944. 1. Mor. umb. t. 1. f. 26. 26. hist. 3. 314. f. 9. t. 16. f. 1.
 Leaves simply pinnate.
3. *Pastinaca Opopanax*. Rough Parsnep.
 Lin. spec. 376. syst. 290. Reich. 1. 719. Willd. 1466. mant. 357. hort. cliff. 105. mat. med. 84. Woodv. med. bot. 309. t. 113. Gouan illustr. 19. t. 13, 14. Allion. pedem. n. 1289. Retz. obs. 5. p. 3. Plenck, ic. t. 228.
Panax costinum. Baub. pin. 156.
P. herculeum majus. Ger. emac. 1003. Raii hist. 410.
P. heracleum. Mor. hist. 3. 315. f. 9. t. 17. f. 2.
Selinum Opopanax. Crantz. umb. 63.
 Leaves pinnate and bipinnate, leaflets gashed at the base in front.

DESCRIPTIONS, &c.

[1. Root biennial, thick, milky. Stem stiff, rugged, grooved and angular, branched from the bottom, almost the height of a man, when cut yielding a fetid, rue like, whitish, tenacious gum. Branches numerous, panicled. Root-leaves cordate, of different sizes, seldom lobed, netted-scabrous, acutely crenate; petiole angular above. The first (or lower stem-leaves) ternate, with the lateral leaflets sessile and obliquely ovate, the end leaflet petioled, cordate, three-lobed or five-lobed. The second (or upper stem-leaves) quinate (or pinnate with two pairs of lobes and an odd one), but very like the others; the leaflets three inches long, with sharp notches terminating in a white point, but sometimes obliterated. Nerves of the terminating leaflet always opposite, but in the lateral leaflets scattered. The uppermost leaves are quite simple, cordate-ovate, lobed, like those of the Fig. All the branch-leaves wedge-shaped, quite entire from the base to the middle; thence to the tip acutely-crenate, an inch long, on a petiole of the same length. Umbels very numerous, commonly with ten rays; the principal one terminating the stem: at the base of this are two, three or four branches, whence the top of the stalk becomes as it were proliferous. Seed suborbiculate, about three lines in diameter^d.

According to Linneus; the stem is smooth and even, a foot and half high and more. Leaves cordate, sometimes lobed, stiffish, wrinkled, shining, acutely notched or ferrate. Petals yellow, entire, acute, bent in. Seeds compressed, orbiculate^e.

Native of the South of Europe. Introduced in 1771, by Monf. Richard. It flowers in June and July^f.

2. The Wild Parsnep has a biennial, simple, whitish root, putting forth some large fibres from the side. Stem single, three or four feet high, erect, rigid, angular, pubescent, hollow, branched. Leaves alternate, smaller than those of the garden Parsnep and of a darker green; in open situations pubescent, especially the root-leaves. Flowering-branches come out from the axils of the leaves from top to bottom, supporting umbels which are smaller than that which terminates the stem. Flowers small, yellow, with inflex regular petals. There is no involucre either general or partial^g. Dr. Withering says, that there is sometimes an involucre of one leaf. He adds, that the stem is membranaceous at the corners, that the rays of the

umbel are from six to twelve; those of the umbellets short and numerous. Mr. Relhan remarks, that the petioles are pubescent; the leaflets very soft, ferrate, and frequently three-lobed; the universal umbel consisting of ten rays or more; the partial of twenty and upwards.

Gærtner observes that there are sometimes a few leaflets under the universal umbel. He describes the seeds as middle-sized, elliptic or obovate, slightly emarginate above, leafy-compressed, pale straw-coloured, in the fresh seeds mixed with purple: back very slightly convex, with three capillary streaks in the middle, and another more raised near the edge: rim narrow, thin: belly flat, with two ferruginous bowed long fillets, but not resembling *Ferrum equinum*, as in *Spondylium*, but at the base converging inwards and acuminate.

Wild Parsnep is native of most parts of Europe, on the borders of ploughed fields and on the banks of hedges, chiefly in a calcareous or marly soil. It flowers from the end of June through August.]

β. Garden Parsnep has smooth leaves, of a light or yellowish green colour, in which it differs from the wild plant; the stalks also rise higher, and are deeper channelled; the peduncles are much longer, and the flowers of a deeper yellow colour.

[Retzius remarks, that it has pinnate and subpinnate leaves with ear-like appendages; but this, I presume, applies both to the wild and garden plant. He adds, that α, that is, the wild Parsnep, is smooth; and β, that is, the garden Parsnep, hairy. Which is directly contrary to what Mr. Miller affirms. The truth is, that the wild plant is sometimes smooth, but more often hairy; and the garden plant sometimes hairy, but generally smooth.

The roots are sweeter than Carrots, and are much eaten by those who abstain from animal food in Lent, or eat salt-fish on fast-days: they are highly nutritious. In the north of Ireland they are brewed, instead of malt, with hops, and fermented with yeast. The liquor thus obtained is agreeable. Hogs are fond of these roots, and quickly grow fat with them^h.

Old Gerarde says, "there is a good and pleasant food or bread made of the roots of Parsneps, as my friend master Plat hath set forth in his book of experiments."

It is asserted, says Ray, by some of our writers, that the roots, when old, bring on delirium and madness, and hence are called *Madneps*.

Parkinson, after informing us that the seed ripens the second year after sowing, adds; "if they do flower the first year, the country people call them madde Neepes."

Allione observes, that although the old roots of the wild Parsnep be hot and acrimonious, yet we are not to attribute to them the bad effects which some affirm them to have.

The seeds contain an essential oil, and will often cure intermittent feversⁱ. The seeds used in medicine should be those of the wild plant] but the druggists commonly sell the seed of the garden kind for it, which they may purchase at an easy price when it is too old to grow.

[Villars says that they have two remarkable varieties of the Wild Parsnep in Dauphiné: one with an angular branched stem approaching very near to the Garden Parsnep; the other with a simple round stem, very slightly striated, and receding so far from the cultivated plant, that it seems to be a distinct species.

3. Root perennial, as thick as the human arm, yellow, branched; the branches an inch or an inch and half in thickness, a foot and half in length, tubercled, with a corky bark. Stem from three feet to the height of a man, the thickness of a finger, striated, covered at the base with scariosé membranaceous scales, like the Ferns; in other parts very smooth and shining; angular at top, especially at the branches. Primary (or root) leaves quite simple, cordate, acutely crenate; the others ternate or quinate, with the end

^d Gouan. ^e Mant. ^f Hort. kew. ^g Ray hist.

^h Withering.

ⁱ Idem.

leaflet always cordate and very large; the lateral ones obliquely cordate, with the upper lobe shorter. The lowest stem-leaves more compound, considered as a whole triangular, two feet long, bipinnate, having five pinnules on each side; the lowest pinna pinnate, commonly with five leaflets, the end one cordate, the rest sessile and obliquely cordate: the leaflets are an inch to two inches long; the other pinnules are first ternate, then simple. The other stem-leaves decrease, and are first quinate, next ternate, and at the branches simple. Petiole of the root-leaves from the sheath to the first pinna flattish above and thence angular-keeled; on the contrary that of the branch-leaves is furrowed. Sheaths wide striated, in the root-leaves very strigose; in the stem-leaves smooth. All the leaflets are hairy, especially at the back. At the flowering-branches there are spathaceous sheaths, which are naked or destitute of leaves. The umbelliferous branches are very smooth; first alternate, erect, then two, three, or four together in a sort of whorl, two or three inches long, with one or two spathaceous leaflets towards the middle or at the top. The universal umbels have usually seven or eight rays, an inch long, of a yellowish green colour. Involucres with from four to six leaflets, scarcely more than a line in length: the involucels have as many. Fruits flat, with the rim thicker, three or four lines in diameter, and a little longer. The involucres and involucels are frequently permanent. Juice yellow, bearing no marks of a resinous or aromatic principle^k.]

This juice flows out where either the leaf or stalk is broken. They are both very rough; the former dark green, the latter seven or eight feet high. The stalks divide towards the top into many horizontal branches, each terminated by a large umbel of yellow flowers. They appear in July.

[Native of the South of Europe, South of France, Italy and Sicily. Cultivated in 1731 by Mr. Miller^l.

This plant commonly ripens its seeds with us, and its juice manifests some of the qualities discovered in the officinal *Opopanax*: but it is only in the warmer regions of the East, where this plant is also a native, that the juice concretes into this gum-resin. It is obtained by means of incisions made at the bottom of the stalk: and is imported from Turkey and the East Indies sometimes in little round drops or tears, but more commonly in irregular lumps, of a reddish yellow colour, specked with white on the outside; internally paler, and frequently variegated with large white pieces.

This gum-resin has a strong disagreeable smell, and a bitter, acrid, somewhat nauseous taste. It readily forms a milky liquor with water by rubbing; and this on standing deposits a portion of resinous matter, and becomes yellowish: to rectified spirit it yields a gold-coloured tincture, which tastes and smells strongly of the drug. Water distilled from it is impregnated with its smell, but no essential oil is obtained on committing moderate quantities to the operation.

Opopanax has been long esteemed for its attenuating, deobstruent and aperient virtues; but as it is commonly prescribed in combination with other medicines, these qualities are by no means ascertained, nor do its sensible qualities indicate it to be a medicine of much power. Dr. Cullen classes it with the antispasmodics; it is however less fetid than galbanum, though more so than ammoniacum. It has commonly been given in hypochondriacal affections, visceral obstructions, menstrual suppressions, and asthmas, especially when connected with a phlegmatic habit of body. In the London Pharmacopœia it is directed in the *pillulæ e gummi*^m.]

PROPAGATION AND CULTURE.

2. The Parsnep is cultivated in kitchen-gardens, the roots being large, sweet, and accounted very nourishing. It is propagated by seeds, which should be sown in February or March, in a rich mellow soil, well dug, that their roots may run downwards, the greatest excellency being the length and bigness of the roots. These may be sown alone, or with Carrots,

as is practised by the kitchen-gardeners near London; some of whom also mix Leeks, Onions, and Lettuce, with their Parsneps; but this I think very wrong, for it is not possible, that so many different sorts can thrive well together, except they are allowed a considerable distance; and if so, it will be equally the same to sow the different sorts separate. However, Carrots and Parsneps may be sown together very well, especially where the Carrots are designed to be drawn off very young; because the Parsneps generally spread most towards the end of the summer, when the early Carrots are gone.

When the plants are come up, hoe them out to ten or twelve inches asunder, cutting up all the weeds. This must be repeated three or four times, according as you find the weeds grow; but in the latter part of summer, when the plants cover the ground, they will prevent the growth of weeds.

When the leaves begin to decay, the roots may be dug up for use. Before this they are seldom well tasted; nor are they good for much in the spring; after they are shot out again. To preserve them for this season, dig them up the beginning of February, and bury them in sand in a dry place, where they will remain good until the middle of April or later.

To save seeds make choice of some of the longest, straightest and largest roots, and plant them two feet asunder, where they are defended from strong south and south-west winds, for the stems grow to a great height; keep them clear from weeds, and if the season should prove dry, water them twice a week. At the end of August or the beginning of September, the seeds will be ripe: then carefully cut off the umbels, and spread them upon a coarse cloth for two or three days to dry; after which, beat off the seeds and put them up for use. Never trust to the seeds that are more than a year old, for they will seldom grow beyond that age.

The leaves are dangerous to handle, especially in a morning, while the dew remains upon them. I have known gardeners, when they have been drawing up Carrots from among Parsneps, when their leaves were wet with dew, and have turned the sleeves of their shirts up to their shoulders, have their arms covered with large blisters, full of a scalding liquor, which have proved very troublesome for several days.

[To cultivate Parsneps for the farmer sow the seed in autumn, soon after it is ripe; by which means the plants will come on early the following spring, and will get strong before the weeds can grow so as to injure them. The young plants never materially suffer through the severity of the seasons.

The best soil for them is a rich deep loam; next to this is sand, or they will thrive well in a black gritty soil; but will never pay for cultivating in stone brash, gravel or clay soils; and they are always the largest where the staple is deepest. If the soil be proper, they do not require much manure. A very good crop has been obtained for three successive years without any. Forty cart-loads of sand laid on an acre of very stiff loam, and ploughed in, has answered very well.

Sow the seed in drills eighteen inches distant, that the plants may be horse or hand-hoed: they will be more luxuriant if they have a second hoeing, and are carefully earthed so as not to cover the leaves.

If land cannot be got in proper condition to receive the seed in autumn, sow a plat in the garden or the corner of a field, and transplant thence at the end of April or early in May. The plants must be carefully drawn, and the land that is to receive them well pulverized by harrowing and rolling. When it is thus in order, open a furrow six or eight inches deep, and lay the plants in it regularly at the distance of ten inches or a foot, taking care not to let the root be bent, and that the plant stand upright after the earth is closed about it, which should be done immediately by persons following the planter with a hoe, and who must be attentive not to cover the leaves. Open another furrow eighteen inches distant from the last, plant it as before, and so proceed till the field is completely cropped. When any weeds appear, hoe the ground, and earth the plants.

^k Gouan.^l Hort. kew.^m Woodville.

Dibbling in Parsneps is a bad method, as the ground thereby becomes so bound as not easily to admit the lateral fibres, with which the root of this plant abounds, to fix or work in the earth, on which account the roots never attain their proper size.

With attention to the soil, the season for sowing, cleaning and earthing the plants, and raising the seed from the largest and best Parsneps, there is no doubt but the crop would answer much better than a crop of Carrots. They are equal to them if not superior in fattening pigs; for they make the flesh whiter, and the animals eat them with more satisfaction. Clean washed and sliced among bran, horses eat them greedily, and thrive with them; nor do they heat horses, or like Corn fill them with disordersⁿ.

In France, and our islands adjoining to it, Parsneps are held in high esteem both for cattle and swine. In Brittany this crop is said to be little inferior in value to Wheat. Milch cows fed with it in winter give as much and as good milk, and yield butter as well-flavoured, with Parsneps, as with Grass in May or June^o.

1. 3. The two other species may be propagated from seeds, and are hardy enough to bear the open air in our climate.

PASTINACA. See *Daucus*, *Echinophora*, *Heracleum*.

SECACUL. See *Tordylium*.]

PASTURE.

Pasture ground is of two sorts: the one is low meadow land, which is often overflowed, and the other is upland, which lies high and dry. The first of these will produce a much greater quantity of hay than the latter, and will not require manuring or dressing so often; but then the hay produced on the upland is much preferable to the other, as is also the meat which is fed in the upland more valued than that which is fatted in rich meadows; though the latter will make the fatter and larger cattle, as is seen by those which are brought from the low rich lands in Lincolnshire. But where people are nice in their meat, they will give a much larger price for such as has been fed on the downs, or in short upland Pasture, than for the other, which is much larger. Besides this, dry Pastures have an advantage over the meadows, that they may be fed all the winter, and are not so subject to poach in wet weather; nor will there be so many bad weeds produced, which are great advantages, and do, in a great measure, recompense for the smallness of the crop.

I have already mentioned the advantages of meadow land, or such as is capable of being overflowed with water, and given directions for draining and improving low Pasture land; therefore shall not repeat what is there said, but just mention some methods for improving upland Pasture.

The first improvement of upland Pasture is, by fencing it, and dividing it into small fields of four, five, six, eight, or ten acres each, planting timber-trees in the hedge rows, which will screen the Grass from the drying pinching winds of March, which prevent the Grass from growing in large open lands; so that if April prove a cold dry month, the land produces very little hay; whereas in the sheltered fields the Grass will begin to grow early in March, and will soon after cover the ground, and prevent the sun from parching the roots of the Grass, whereby it will keep growing, so as to afford a tolerable crop, if the spring should prove dry. But in fencing land, it must be observed not to make the inclosures too small, especially where the hedge rows are planted with trees; because when the trees are advanced to a considerable height, they will spread over the land; and, where they are close, will render the Grass four; so that instead of being an advantage, it will greatly injure the Pasture.

The next improvement of upland Pasture is, to make the turf good, where, either from the badness of the soil, or want of proper care, the Grass has been destroyed by rushes, bushes, or mole-hills. Where the surface of the land is clayey and cold, it may be improved by paring it off, and burning it: but if it is a

hot sandy land, then chalk, lime, marle, or clay, are very proper manures to lay upon it; but this should be laid in pretty good quantities, otherwise it will be of little service to the land.

If the ground is over-run with bushes or rushes, it will be of great advantage to grub them up towards the latter part of the summer, and after they are dried to burn them, and spread the ashes over the ground just before the autumnal rains; at which time the surface of the land should be levelled, and sown with Grass-seed, which, if done early in the autumn, will come up in a short time, and make good Grass the following spring. So also, where the land is full of mole-hills, these should be pared off, and either burnt for the ashes, or spread immediately on the ground, where they are pared off, observing to sow the bare patches with Grass-seed, just as the autumnal rains begin.

There are some Pasture lands which are full of ant-hills, which are not only disagreeable to the sight, but where they are in any quantity, the Grass cannot be mowed; therefore the turf which grows over them should be divided with an instrument into three parts, and pared off each way; then the middle or core of the hills should be dug out and spread over the ground, leaving the holes open all the winter to destroy the ants, and in the spring the turf may be laid down again, and after the roots of the Grass are settled again in the ground, it should be rolled to settle the surface, and make it even. If this is properly managed, it will be a great improvement to such land.

Where the land has been thus managed, it will be of great service to roll the turf in the months of February and March, with a heavy wood roller, always observing to do it in moist weather, that the roller may make an impression: this will render the surface level, and make it much easier to mow the Grass, than when the ground lies in hills; and will also cause the turf to thicken, so as to have what the people usually term a good bottom. The Grass likewise will be the sweeter for this husbandry, and it will be a great help to destroy bad weeds.

Another improvement of upland Pasture is the feeding them every other year; for where this is not practised, the land must be manured at least every third year; and where a farmer has much arable land, he will not care to part with his manure to the Pasture. Therefore every farmer should endeavour to proportion his Pasture to his arable land, especially where manure is scarce, otherwise he will soon find his error; for the Pasture is the foundation of all the profit, which may arise from the arable land.

Whenever the upland Pastures are mended by manure, there should be a regard had to the nature of the soil, and a proper sort of manure applied: as for instance, all hot sandy lands should have a cool manure; neats dung and swines dung are very proper for such lands, as also marle and clay; but for cold lands, horse dung, ashes, or sand, and other warm manures, are proper. And when these are applied, it should be done in autumn, before the rains have soaked the ground, and rendered it too soft to cart on; and it should be carefully spread, breaking all the clods as small as possible, and early in the spring harrowed with bushes, to let it down to the roots of the Grass. When the manure is laid on at this season, the rains in winter will wash down the salts, so that the following spring the Grass will receive the advantage of it.

There should also be great care taken to destroy weeds in the Pasture, every spring and autumn; for where this is not practised, the weeds will ripen their seeds, which will spread over the ground, and thereby fill it with such a crop of weeds as will soon over-bear the Grass, and render it very weak, if not destroy it; and it will be very difficult to root them out, after they have got possession; especially Ragwort, Hawkweed, Dandelion, and such other weeds as have down adhering to their seeds.

These upland Pastures seldom degenerate the Grass which is sown on them, if the land is tolerably good; whereas the low meadows, which are overflowed in winter, in a few years turn to a harsh rushy Grass, but the

^a Hazard, in Bath papers, vol. 4. p. 244.
^o Bath papers, 4. 287.

the upland will continue a fine sweet Grass for many years without renewing.

There is no part of husbandry, of which the farmers are in general more ignorant, than that of the Pasture; most of them suppose, that when the old Pasture is ploughed up, it can never be brought to have a good sward again; so their common method of managing their land after ploughing, and getting two or three crops of Corn is, to sow with their crop of Barley, some Grass-seeds as they call them; that is, either the red Clover, which they intend to stand two years after the Corn is taken off the ground, or Ray-grass mixed with Trefoil; but as all these are at most but biennial plants, whose roots decay soon after their seeds are perfected, so the ground having no crop upon it, is again ploughed for Corn; and this is the constant round which the lands are employed in, by the better sort of farmers: for I never have met with one of them, who had the least notion of laying down their land to Grass for any longer continuance; therefore the seeds which they usually sow, are the best adapted for this purpose.

But whatever may have been the practice, I hope to show, that it is possible to lay down land, which has been in tillage, with Grass, in such manner as that the sward shall be as good, if not better, than any natural Grass, and of as long duration. But this is never to be expected, in the common method of sowing a crop of Corn with the Grass-seeds; for wherever this has been practised, if the Corn has succeeded well, the Grass has been very poor and weak; so that if the land has not been very good, the Grass has scarcely been worth standing; for the following year it has produced but little hay, and the year after the crop is worth little, either to mow or feed. Nor can it be expected it should be otherwise, for the ground cannot nourish two crops; and if there were no deficiency in the land, yet the Corn being the first, and most vigorous of growth, will keep the Grass from making any considerable progress; so that the plants will be extremely weak and but very thin, many of them which came up in the spring being destroyed by the Corn; for wherever there are roots of Corn, it cannot be expected there should be any Grass. Therefore the Grass must be thin, and, if the land is not in good heart to supply the Grass with nourishment, that the roots may branch out after the Corn is gone, there cannot be any considerable crop of Clover; and as the roots are biennial, many of the strongest plants will perish soon after they are cut; and the weak plants, which had made but little progress before, will be the principal part of the crop for the succeeding year, which is many times not worth standing.

Therefore, when ground is laid down for Grass, there should be no crop of any kind sown with the seeds; and the land should be well ploughed, and cleaned from weeds; otherwise the weeds will come up the first, and grow so strong, as to overbear the Grass, and if they are not pulled up, will entirely spoil it. The best season to sow the Grass-seeds upon dry land is about the middle of august, if there is an appearance of rain; for the ground being then warm, if there happen some good showers of rain after the seed is sown, the Grass will soon make its appearance, and get sufficient rooting in the ground before winter, so will not be in danger of having the roots turned out of the ground by the frost, especially if the ground is well rolled before the frost comes on, which will press it down, and fix the earth close to the roots. Where this has not been practised, the frost has often loosened the ground so much, as to let in the air to the roots of the Grass, and done it great damage; and this has been brought as an objection to the autumnal sowing of Grass; but it will be found to have no weight, if the above direction is practised; nor is there any hazard in sowing the Grass at this season, but that of dry weather after the seeds are sown; for if the Grass comes up well, and the ground is well rolled in the middle or end of october, and repeated the beginning of march, the sward will be closely joined at bottom, and a good crop of hay may be expected the same summer. In very open, exposed, cold lands, it is

proper to sow the seeds earlier than is here mentioned, that the Grass may have time to get good rooting, before the cold season comes on to stop its growth; for in such situations, vegetation is over early in the autumn, so the Grass being weak, may be destroyed by frost: but if the seeds are sown in the beginning of august, and a few showers follow soon after to bring up the Grass, it will succeed much better than any which is sown in the spring, as I have several years experienced, on some places as much exposed as most in England. But where the ground cannot be prepared for sowing at that season, it may be performed the middle or latter end of march, according to the season's being early or late; for in backward springs and in cold land, I have often sowed the Grass in the middle of april with success; but there is danger in sowing late of dry weather, and especially if the land is light and dry; for I have seen many times the whole surface of the ground removed by strong winds at that season, so that the seeds have been driven in heaps to one side of the field. Therefore whenever the seeds are sown late in the spring, it will be proper to roll the ground well soon after the seeds are sown, to settle the surface, and prevent its being removed.

The sorts of seeds which are the best for this purpose, are the best sort of upland Hay-seeds, taken from the cleanest Pastures, where there are no bad weeds; if this seed is sifted to clean it from rubbish, three, or at most four bushels, will be sufficient to sow an acre of land. The other sort is the *Trifolium pratense album*, which is commonly known by the names of White Dutch Clover, or White Honeyfuckle Grass. Eight pounds of this seed will be enough for one acre of land. The Grass-seed should be sown first, and then the Dutch Clover-seed may be afterward sown; but they should not be mixed together, because the Clover-seeds being the heaviest, will fall to the bottom, and consequently the ground will be unequally sown with them.

After the seeds are sown, the ground should be lightly harrowed to bury the seeds; but this should be performed with a short-toothed harrow, otherwise the seeds will be buried too deep. Two or three days after sowing, if the surface of the ground is dry, it should be rolled with a Barley roller to break the clods and smooth the ground, which will settle it, and prevent the seeds from being removed by the wind.

When the seeds are come up, if the land should produce many weeds, these should be drawn out before they grow so tall as to overbear the Grass; for where this has been neglected, the weeds have taken such possession of the ground, as to keep down the Grass and starve it; and when these weeds have been suffered to remain until they have shed their seeds, the land has been so plentifully stocked with them, as entirely to destroy the Grass; therefore it is one of the principal parts of husbandry, never to suffer weeds to grow on the land.

If the ground is rolled two or three times at proper distances after the Grass is up, it will press down the Grass, and cause it to make a thicker bottom; for as the Dutch Clover will put out roots from every joint of the branches which are near the ground, so by pressing down the stalks, the roots will mat so closely together, as to form a sward so thick as to cover the whole surface of the ground, and form a green carpet, which will better resist the drought. For if we do but examine the common Pastures in summer (in most of which there are patches of this White Honeyfuckle Grass growing naturally) we shall find these patches to be the only verdure remaining in the fields. And this the farmers in general acknowledge, is the sweetest feed for all sorts of cattle, yet never had any notion of propagating it by seeds till of late years. Nor has this been long practised in England; for till within a few years, that some curious persons imported the seed from Brabant, where it had been long cultivated, there were not any of the seeds saved in England; though now there are several persons who save the seeds here, which succeed full as well as any of the foreign seeds which are imported.

As this White Clover is an abiding plant, so it is certainly

certainly the very best sort to sow where Pastures are laid down to remain; for as the Hay-seeds which are taken from the best Pastures, will be composed of various sorts of Grass, some of which may be but annual and others biennial, so when those go off, there will be many and large patches of ground left bare and naked, if there is not a sufficient quantity of the White Clover to spread over and cover the land. Therefore a good sward can never be expected where this is not sown; for in most of the natural Pastures, we find this plant makes no small share of the sward; and it is equally good for wet and dry land, growing naturally upon gravel and clay in most parts of England; which is a plain indication how easily this plant may be cultivated to great advantage, in most sorts of land throughout this kingdom.

The true cause why the land which is in tillage is not brought to a good turf again, in the usual method of husbandry is, from the farmers not distinguishing which Grasses are annual, from those which are perennial; if annual or biennial Grasses are sown, these will of course soon decay; so that unless where some of their seeds may have ripened and fallen, nothing can be expected on the land but what will naturally come up. This, together with the covetous method of laying down the ground with a crop of Corn, has occasioned the general failure of increasing the Pasture in many parts of England, where it is now much more valuable than any arable land.

After the ground has been sown in the manner before directed, and brought to a good sward, the way to preserve it good is, by constantly rolling the ground with a heavy roller, every spring and autumn, as has been before directed. This piece of husbandry is rarely practised by farmers, but those who do, find their account in it, for it is of great benefit to the Grass. Another thing should also be carefully performed, which is, to cut up Docks, Dandelion, Knapweed, and all such bad weeds, by their roots, every spring and autumn; this will increase the quantity of good Grass, and preserve the Pastures in beauty.

Dressing these Pastures every third year, is also a good piece of husbandry, for otherwise it cannot be expected the ground should continue to produce good crops. Besides this, it will be proper to mow one season, and feed the next; but where the ground is every year mown, it must be constantly dressed, as most of the Grass grounds near London, otherwise the ground will be soon exhausted.

Of late years there has been an emulation, especially among gentlemen, to improve their Pastures, by sowing several sorts of Grass-seeds; and there have been some persons of little skill in these matters, who have imposed on many ignorant people, by selling them seeds of some foreign Grass, recommending them for some particular quality, but when tried have proved of little worth, whereby they have lost a season or two, and have had their work to begin again. Therefore I would advise every person, not to trust too much upon the faith of such practitioners, who, upon slight experiments, have ventured to recommend without judgment; for of all the sorts of Grass-seeds which have been brought from America (of which I have, at various times, sown more than a hundred different species) I have found none equal to the common *Poa* Grass, which grows naturally in England, either for duration or verdure; therefore that, and about six or seven other sorts, are the best worth cultivating; but the trouble of collecting these in quantity is so great, as to deter most people from attempting it; and in the purchasing of Hay-seeds, there is generally more seeds of weeds than Grass, which will fill the ground; therefore for some years past, I have recommended and sown only the White Dutch Clover-seeds, and have waited for the natural Grass coming up amongst it, and have generally succeeded better this way than by sowing Hay-seed with it; for if the Pasture is duly weeded, rolled, and dressed, all bad weeds may be destroyed, and a fine durable turf obtained: whereas the Burnet, and many other plants, which have been extolled as a good winter food, being of short duration, are very improper for improving land; nor are there two better plants yet

known for the purpose of fodder, than the Lucern and Saintfoin; for where these are properly sown upon right soils and duly cultivated, they will produce a much greater quantity of food, than can be procured from the same quantity of land, sown with any other abiding plant: therefore I wish those who are curious to have much fodder for their cattle, to apply themselves to the culture of these, and not engage in uncertain experiments.

[The following directions for laying down land to Grass are given by Mr. Stillingfleet. Plough the land in march as deep as the nature of the soil will admit. Harrow when the weeds are about flowering, namely, some time in may, or sooner, if it be a forward spring. Plough about ten days after harrowing. Harrow when the weeds are come up again. If any dung or compost be prepared for the land, let it be laid on. Plough at this time, and plough it in a moderate depth immediately, so that the teeth of the harrow after rolling may reach it. Roll the land down every day as it is ploughed with a light roller, and observe not to spread the dung long before it is ploughed in. Harrow well when the weeds come up that are produced by the dung, so as to bring the dung up and mix it with the soil; observing not to harrow more at once than can be ploughed in one day. Plough it up after the harrows the same depth as before, and follow the plough with a roller. The land will now lie under the proper preparation for the seeds, which may be sown after the first soaking rain from the end of august to the end of september, in the following manner. Plough the land about the same depth as before. Harrow it once in a place, and sow the seeds after the harrow. Then with a hurdle bushed with black-thorn-bushes harrow the seeds in. When the plants appear, roll the land with a light roller, and not before, except the weather prove very dry, in which case it will be necessary to roll it with a very light roller after the bush-harrow. A light dressing of good manure laid on with the first frost, will be of great use in preserving the Grass the first season, and encouraging its growth afterwards. And a light roller used after every frost will be of great service the first winter.

In Yorkshire they have three ways of sowing Grass-seeds: 1st, in august; 2dly with Barley, which is most used; 3dly, upon Wheat, in march. The first way is the best; and the second is better than the last.

The quantity sown is ten bushels to the acre, four pounds of hop-trefoil (*Medicago lupulina*, Black Nonesuch) or White Clover, and some add two pounds of Ray-grass.

After the crop is cut, suffer no cattle to enter, till next hay-harvest, when the Grass may be either cut or fed. But there is danger from the cattle in the last way. The farmers generally mow the first crop for the sake of seeds, because that affords more than the succeeding ones. If sown with Barley, roll as soon as the Barley is off the ground. Lay on dung after the first crop of Grass is mowed.

The following is a list of Herbs of Pasture, or of such plants as are commonly found growing among Grass, whether useful or injurious, with observations; disposed alphabetically according to their botanical names: with references from their common English ones.

ACHILLEA MILLEFOLIUM. *Common Yarrow* or *Milfoil*. Common on all soils. Perennial. Flowering from june to august. The white and purple flowers differ only in colour. The roots creep prodigiously, especially where rubbish or dung has been laid. It has been generally execrated as a weed, but sheep and sometimes cattle will eat it; and Dr. Anderson has recommended it for cultivation on poor lands. In a dry summer, animals eat this and many other plants in the following list, which they leave untouched when there is plenty of Grass. Perhaps some of them act medicinally, and ought not therefore to be rejected in mowing and pasture grounds.—Milfoil is reputed an excellent vulnerary and styptic, good in hæmorrhages and dysenteries, and the scab in sheep.

ACHILLEA PTARMICA. *Sneezewort*. Chiefly in moist meadows, or among bushes on the sides of pastures; or on

on the banks of ditches or in moist woods, and sometimes on the balks of corn fields. It is hardly common enough among Grasses to be considered as making a part of Pasture herbage. It is perennial and creeps. Flowers in July and August. In spring the young shoots are put into salads, to correct their coldness. The roots being hot and biting are used in the tooth-ach; whence it has the name of Bastard Pellitory. From the form of the leaf it is called Goose-tongue. The leaves dried and powdered provoke sneezing, whence its common name. With double flowers it is common in old gardens, under the name of double Ptarmica or Batchelor's buttons. The flowers are white.

ADDER'S TONGUE. See *Ophioglossum*.

AGRIMONIA EUPATORIA. *Common Agrimony*. Chiefly on the borders of Pastures, but sometimes in the body of them. Perennial. Flowers yellow, appearing in June and July. Dyes yellow. Dresses leather. Good in the jaundice and all obstructions.

AJUGA REPTANS. *Common Bugle, Middle Confound, Sicklewort, or Herb Carpenter*. Frequent in moist meadows and woods. Perennial, increasing greatly by the side shoots. Flowers blue; in May and June. Vulnerary, cooling and astringent.

ALCHEMILLA VULGARIS. *Common Ladies Mantle, or Bear's-foot*. In high pastures, not very common in the south of England; it spreads greatly in the soil it likes. Vulnerary and astringent. Horses, sheep and goats eat it; but kine are not fond of it. Flowers small and herbaceous, appearing from June to August.

ALLIUM VINEALE. *Crow Garlick*. Frequent, and giving butter an insufferably strong taste. Perennial, bulbous, flowering in June.

ALLIUM URSINUM. *Wild Garlick or Ramsons*. Woods and hedges; sometimes in meadows, giving also a strong flavour to milk and butter. Flowering in May.

ALSINE MEDIA. *Common Chickweed*. Wild almost every where: but not so common in pastures as in gardens and arable land. Annual.

ANEMONE NEMOROSA. *Wood Anemone*. Most common in woods and hedges, but sometimes in pastures. Perennial: flowering from March to May. Acrid: according to Linneus, cattle (or sheep) brought from open to woody pastures, and eating this plant, are affected with the bloody flux, or make bloody urine.

ANEMONE PULSATILLA. *Pasque-flower*. Only on high pastures or downs, and not common. Flowers purple and handsome. Acrid, but seems not to be eaten by sheep.

ANONIS. See *Ononis*.

ANTHEMIS NOBILIS. *Common or Sweet Chamomile*. Perennial, trailing; on dry commons; flowering in July and August. The flowers are generally known as an excellent medicine, and the single wild flowers are far superior to the double ones which are found in the shops.

ANTHYLLIS VULNERARIA. *Common Ladies-finger, or Kidney-Vetch*. In dry pastures, chiefly in a calcareous soil. It is perennial; and in its natural state dry and rather astringent. It remains to be seen, whether it would prove succulent and productive enough in a good soil to render it worth cultivation. Mr. Young says, it abounds in the best meadows of the Pyrenees: but it will probably never rival *Lotus Corniculata*, with which it has been confounded. The flowers are yellow, and the whole plant has a whitish appearance.

ANTIRRHINUM LINARIA. *Common Toadflax, Wild Flax, Flax-weed, Butter and Eggs*. Chiefly in barren pastures. Perennial; creeping very much. It flowers from June to August. Abounds in an acrid oil. Recommended in the dropsy, but most approved as a cataplasm, with lard, in the piles. The juice, with milk, is a poison to flies. Flowers pale yellow, with an orange palate.

APIANES ARVENSIS. *Parsley-piert*. A little annual plant, with inconsiderable herbaceous flowers, growing in dry pastures and on fallow fields, flowering from May to August.

ARCHANGEL. See *Lamium*.

ARSMART. See *Polygonum*.

ASTRAGALUS GLYCYPHYLLUS. *Wild Liquorice or Liquorice Vetch*. Pastures, especially in a calcareous soil, but more common in hedges. A large plant, sweet with a mixture of bitterness: on the latter account seemingly less agreeable to cattle than most of the leguminous plants. Flowers greenish yellow, appearing in June and July. Dr. Anderson treats largely of *Lotus corniculata* or Bird's-foot Trefoil under this name.

ASTRAGALUS HYPOGLOTTIS. *Purple mountain Milk-Vetch*. Astrag. arenarius of British writers. A small perennial plant, with elegant purple flowers, large for the size of the plant, found in sandy and chalky pastures, flowering from May to July.

BASIL. See *Clinopodium*.

BEDSTRAW. See *Galium*.

BELL-FLOWER. See *Campanula*.

BELLIS PERENNIS. *Perennial or common Daisy*. In Yorkshire *Dog-Daisies* and *Bairn-worts*. A well known weed in most pastures, that seems not to be eaten by any quadrupeds.

BETONICA OFFICINALIS. *Wood Betony*. The growth of woods, as the English name implies; but found also in pastures, chiefly such as are overrun with bushes. Mr. Marshall says it is a common article of herbage in the grass-lands of Yorkshire, in every soil and situation from the marsh to the mountains. In other parts of the island it is a certain indication of the land having been in wood.

BISTORTA. See *Polygonum*.

BLUE-BOTTLE. See *Centaurea*.

BRAKES. See *Pteris*.

BUGLE and BUGULA. See *Ajuga*.

BUNUM BULBOCASTANUM. *Earth-nut, Pig-nut, Kipper-nut, Hawk-nut, Fur-nut or Yer-nut, Earth Chestnut, Ground-nut*. On heaths, commons and dry pastures, chiefly among bushes, in a gravelly or sandy soil; flowering in May and June. The tuberous root is coveted by swine, and sometimes eaten by children.

BURNET. See *Poterium* and *Sanguisorba*.

BUTTER-BUR. See *Tussilago*.

BUTTER-CUPS. See *Ranunculus*.

CALTHA PALUSTRIS. *Marsh Marygold, Meadow-Boot*. Wet meadows, and by the sides of wet ditches and streams; adorning them in March and April, with its large bright yellow flowers. Cattle do not eat it, unless compelled by extreme hunger, and Boerhaave affirms that it is dangerous to them.

CAMMOCK. See *Ononis*.

CAMOMILE. See *Anthemis*.

CAMPANULA ROTUNDIFOLIA. *Round-leaved or common Bell-flower*. Common on heaths and other wastes, in dry hilly situations. Flowers blue, varying to white, appearing from June to September. The root-leaves, which alone are round, are seldom seen, being hid in the grass, and dropping off as the flower-stem advances. This plant, in the body of a pasture, indicates dryness, approaching to barrenness.

Campanula Rapunculus, or Rampions, is found in England, but rarely.

CAMPANULA GLOMERATA. *Small or clustered Bell-flower, or Little Canterbury Bells*, grows in hilly dry pastures, particularly in a calcareous soil, flowering from June to September. Corolla blue, varying to purple and white.

CAMPION. See *Cucubalus* and *Lychnis*.

CARAWAYS. See *Carum*.

CARDAMINE PRATENSIS. *Common Ladies Smock, Cuckow-flower*: said to be called *Canterbury Bells* in Norfolk; but surely this must be a mistake, the flowers not having the most distant resemblance to the bell shape. General in moist meadows, and by the sides of ditches and streams, flowering with the first appearance of the cuckow. Warm and antiscorbutic. Recommended in hysteric and epileptic cases. Sheep eat it, at least when first turned into a meadow or marsh; and it is probably wholesome for them.

CARDUS. *Thistle*. Most of the Thistles infest arable land; and being biennial, except the Way-Thistle, (for which see *Serratula*) might easily be extirpated, by not suffering them to seed. Some of this genus however are pasture weeds: as—

CARDUUS PALUSTRIS. *Marsh Thistle*, in Yorkshire *Red Thistle*. In marshes, wet meadows, boggy woods, and wet parts of heaths and commons. Five or six feet, and in woods ten or twelve feet high.

CARDUUS PRATENSIS. *Huds. Meadow Thistle*. In wet meadows.

CARDUUS ERIOPHORUS. *Woolly-headed Thistle*. The handsomest of all our Thistles. Easily known by its large woolly heads. In dry pastures, by road sides and in waste places.

CARDUUS ACAULIS. *Dwarf Carline Thistle*. One of the most pernicious weeds in dry pastures; spreading close to the ground a foot in diameter, suffering no plant to grow near it, and pricking the noses of the cattle. It flowers in July, and is said to be perennial.

There are other species of Thistle found in pastures, but they are rare and not noxious.

CARDUUS ARVENSIS. See *Serratula*.

———— **STELLATUS.** See *Centaurea*.

CAREX. *Sedge*. Species very numerous. Resemble Grasses, but are of a much harsher texture, the stem commonly three-cornered, and the leaves toothed like a saw along the edge. They grow mostly in wet swampy grounds, or by the sides of ditches and streams: some however affect hilly pastures and heaths, and may be distinguished from the Grasses, not only by their fructification, but by their blueness. In the fens they are mown for a coarse fodder. In meadows, draining and coal-ashes will destroy them.

CARLINA VULGARIS. *Common Carline-Thistle*. Biennial; in dry pastures. Indicates barrenness. Said to be a good remedy in hysterical cases. It is about a foot high, and flowers from June to September.

CARROT. See *Daucus*.

CARUM CARUI. *Common Caraway*. In rich meadows, but not common. Biennial. Flowering in May and June.

CATMINT. See *Nepeta*.

CENTAUREA NIGRA. *Black Centaury* or *Knap-weed*, variously pronounced *Knop-weed*, *Knob-weed*; also *Horse-knops*, from *Knob* or *Nob*, a head. In Scotland *Horse-Knot*. Other provincial names are *Cock-heads*, *Hard-heads*, *Hard-irons*, *Bulward* and *Matfellow*. It is a bad perennial weed, harsh and stubborn, not eaten either in grass or in hay, increasing much by the root, and not easily extirpated.

A larger sort, called *Great Knapweed* or *Knobweed*, in Yorkshire *Great Horse-knobs*, *Centaurea Scabiosa*, occurs in meadows, but more commonly in arable fields and their borders, and by road sides. It is perennial, and flowers in July and August.

CENTAUREA CALCITRAPA. *Star-thistle*. In dry barren pastures, and by way sides. Annual, very spreading, prickly. Flowers red, appearing in August. Very bitter, and said to be used by brewers, when Hops are dear.

CERASTIUM. *Mouse-ear*. Several species are found among Grasses, but they are small annual plants, resembling Chick-weed, of little value or detriment. *C. arvense* is found not only in arable fields, as the name implies, but in sandy pastures.

CHÆROPHYLLUM SYLVESTRE. *Wild Cicely*, *Cow-weed*, *Common Cow-Parsley*. Very common in pastures, orchards and under hedges, flowering in May. Not unlike Hemlock, confounded with it by the country people, under the name of *Homlockes* when green, and *Kecksies* or *Kexes* when dry; but it is a smaller plant than Hemlock, of a paler green, and the stalk is not spotted. Rabbits and cows are fond of it when young. Linneus says that it indicates a luxuriant soil, and that the flowers may be used to dye wool both green and yellow.

CHÆROPHYLLUM TEMULUM. *Rough Cow-Parsley*, is distinguished from the preceding by the roughness, deep purple colour and swelled joints of the stem, it also flowers a month or six weeks later, and is more confined to hedges. The stem being generally spotted with purple, this is more frequently mistaken for Hemlock than the other.

CHEESE-RENNING. See *Galium*.

CHICKWEED. See *Alfina*.

CHLORA PERFOLIATA. *Yellow Centaury*, or *Perfoliate Yellow-wort*. *Gentiana perfoliata*. An annual plant,

in pastures, on chalky and limestone soils; flowering from June through the autumn. The plant glaucous, with gold-coloured flowers. Haller affirms, that it is more bitter than purple Centaury, *Gentiana Centaureum*.

CHRYSANTHEMUM LEUCANTHEMUM. *Common Ox-eye*, *Great Daisy*, *Moon-flower*, *Maudlin-wort*. Very common in dry pastures, flowering from May to July. Flowers large, the disk yellow and the ray white. Perennial, somewhat creeping, and increasing much by seed.

CICHORIUM INTYBUS. *Wild Succory*, *Cichory* or *Chicory*. Frequent among grass on the borders of fields, flowering from July to September. In its wild state hard, dry and juiceless, but very succulent as improved for cultivation.

CINQUEFOIL. See *Potentilla*.

CISTUS HELIANTHEMUM. *Dwarf Cistus* or *Little Sun-flower*. Dry pastures, generally in calcareous soils. Perennial. Flowering from June to August. It is a trailing plant, with handsome yellow flowers.

CLARY. See *Salvia*.

CLINOPODIUM VULGARE. *Wild Basil*. In chalk and limestone pastures, but more frequently in the hedges. Perennial. June. Flowers purple. Smell slightly aromatic, not unpleasant.

CLOVER. See *Trifolium*.

COCK'S-COMB. See *Rhinanthus*.

COLCHICUM AUTUMNALE. *Common Meadow Saffron*, *Naked Ladies*. Orchards and meadows. Root bulbous, poisonous or at least highly acrimonious. An infusion in vinegar, made into a syrup with sugar or honey, is a useful pectoral and diuretic. It is less nauseous than Squill, though more sedative. No cattle eat this plant. The flowers, which resemble those of the purple Crocus, appear in autumn, and the leaves in spring.

COLT'S-FOOT. See *Tussilago*.

CONIUM MACULATUM. *Common Hemlock*. Rather by hedge and way sides, among rubbish, and on dung-hills, than in pastures. A biennial plant, known by its large spotted stalk, from four to six feet high, by the dark shining green colour of its large bottom leaves, and particularly by their disagreeable smell when bruised. In its dry state, it is the principal of the *Kecksies*.

This plant is poisonous when imprudently used; but one of our best medicines in small doses, in ulcers, tumours, &c. From fifteen to twenty grains of the powdered leaves may be taken twice or thrice a day in chronic rheumatisms.

CONYZA SQUARROSA. *Great Fleabane* or *Ploughman's Spikenard*. A biennial plant from two to three feet in height; found in dry hilly pastures, by hedge-sides and in woods; flowering from July to October.

CORN-SALAD. See *Valeriana*.

COW-PARSNEP. See *Heracleum*.

COW-WEED. See *Chærophyllum*.

COW-WHEAT. See *Melampyrum*.

COWSLIPS. See *Primula*.

CREPIS. Several species of this genus occur in pastures, chiefly such as are dry; they have yellow flowers, and are confounded with the Hawkweeds, &c. under the common name of *Golds* or *Goulds* by the country people. They have nearly the same qualities with *Dandelion*, and rather do good than harm.

CROWFOOT. See *Ranunculus*.

CUCKOW-FLOWER. See *Cardamine*.

CUCUBALUS BEHEN. *Bladder Campion*, *Spatling Poppy*, *White Corn Campion*, *White Bottle*. In dry pastures, but more common in corn fields. Perennial, smooth, flowers white, appearing in June, July and August. Known by its inflated calyx, commonly veined like a net with green or brownish purple.

CUDWEED. See *Gnaphalium*.

DAISY. See *Bellis*.

DANDELION. See *Leontodon*.

DAUCUS CAROTA. *Wild Carrot*, *Bird's nest*. *Bee's nest*. Common in pastures, on balks and headlands. Biennial. June to August. Seeds a powerful diuretic: an infusion of them gives relief in the stone and gravel.

DEVIL'S-BIT. See *Scabiosa*.

DIANTHUS ARMERIA. *Deptford Pink.* A pretty little plant among grass, but chiefly in bushy places and woods.

DIANTHUS PROLIFER. *Proliferous Pink.* In sandy pastures, but not common.

DIANTHUS DELTOIDES. *Maiden Pink.* Pastures and heaths; on a light soil, not uncommon.

DIGITALIS PURPUREA. *Purple Fox-glove.* Sandy and gravelly soils; in gravel-pits, in and about woods, and in waste places, seldom in the body of a pasture.

DOCK. See *Rumex.*

DROPWORT. See *Spiraea.*

ELECAMPANE. See *Inula.*

ERICA VULGARIS. *Common Heath.* General on dry pastures, called heaths from the prevalence of this shrub. Extirpated by paring and burning.

ERIGERON ACRE. *Blue Erigeron* or *Flea-bane.* In dry sandy and chalky pastures, and on walls, but not very common. July to september.

ERIOPHORUM VAGINATUM. *Mountain or single-spiked Cotton-grass.*—*E. angustifolium.* *Narrow-leaved Cotton-grass.*—*Hare's-tail Rush.* *Moss-crops.* Moors and boggy ground, which are often white with these plants in june and july; they flower in april and may. Early in spring, before the grasses are sufficiently grown, sheep crop the leaves.

EUPHRASIA OFFICINALIS. *Common Eye-bright.* A small annual plant, common on heaths and commons. In pastures indicating sterility. It flowers from july to september.

FERN. See *Pteris.*

FICARIA. See *Ranunculus.*

FLAG. See *Iris.*

FLEABANE. See *Inula.*

FOX-GLOVE. See *Digitalis.*

GALANTHUS NIVALIS. *Snow-drop.* *Fair Maids of February.* This, with several other bulbous plants, is often found in orchards, and pastures that may once have been orchards.

GALIAM. Several species of *Galium* or *Bedstraw* occur in pastures.

G. palustre. *White Ladies Bedstraw.* In moist meadows, and on the banks of rivers and ditches; flowering in july.

G. uliginosum. *Marsh Ladies Bedstraw.* On wet heaths, bogs, low meadows, and by river sides; flowering in july and august.

G. verum. *Yellow Ladies Bedstraw.* *Cheese-venning.* Common in pastures, and by the sides of fields and roads in a dry soil; flowering from june to september, flourishing in the most unremitting drought. Flowers yellow; those of the two former white. Supposed to curdle milk. The flowering stems dye a good yellow. The roots dye a brighter red than Madder.

G. erectum. *Upright Ladies Bedstraw.* Meadows and moist pastures. Flowers white.

G. Mollugo. *Great Ladies Bedstraw.* Common in hedges and among bushes, flowering from june to august. Flowers white.

G. Aparine. *Cleavers* or *Goose-grass,* keeps to hedges and cultivated grounds.

GARLICK. See *Allium.*

GENTIANA PNEUMONANTHE. *Marsh Gentian* or *Calathian Violet.* In wet meadows and marshes, and the boggy parts of heaths, chiefly in the north of England.

G. Centaurium. *Lesser Centaury.* Dry pastures. A small annual plant with purple flowers, appearing from june to august. Extremely bitter, and the basis of the Portland powder. A tincture of it is a good medicine to weak stomachs. A decoction of the whole plant destroys lice, and cures the itch.

G. Amarella and **campestris.** *Autumnal* and *Field Gentian.* Both small annual plants in dry pastures, with purple flowers.

GERANIUM CICUTARIUM. *Hemlock Crane's-bill.* In sandy pastures. Annual.

G. moschatum. *Musk Crane's-bill.* Dry pastures.

G. phæum. *Spotted Crane's-bill.* In high pastures.

G. sylvaticum. *Wood Crane's-bill.* High pastures, among bushes and in woods.

G. pratense. *Meadow Crane's-bill.* In moist meadows,

G. pyrenaicum, molle, rotundifolium, columbinum, dissectum. Mostly in dry pastures. Annual.

GNAPHALIUM or *Cudweed*; several sorts in dry pastures; **G. germanicum** most common. **G. uliginosum,** where water has stood in winter.

GOAT'S-BEARD. See *Tragopogon.*

HAREBELLS. See *Hyacinthus.*

HAWKWEED. See *Hieracium.*

HEATH. See *Erica.*

HEDYSARUM ONOBRACHIS. *Saint-foin.* On hilly pastures and open downs, particularly in a calcareous soil; flowering in june and july.

HEMLOCK. See *Conium.*

HERACLEUM SPHONDYLUM. *Common Cow-Parsnep; Meadow Parsnep, Madnep;* in Norfolk *Hogweed,* by which name Knot-grass (*Polygonum aviculare*) is known in some other counties. Pastures, orchards; hedges, woods, in moist and fertile soils. Biennial. Flowering from may to july: Swine and rabbits are fond of the leaves; kine, goats and sheep will also eat them. Kine are even said to be very fond of this plant when cut young.

HIERACIUM. *Hawkweed.* Several plants which have compound yellow flowers, but not of this genus, are confounded under the name of Hawkweed. One species, *H. Pilosella* or *Mouse-ear,* is very common in dry pastures, flowering from may to september: It has a perennial creeping root; the barren stalks or runners are procumbent; and the flowering stalks are from four to seven inches high, having one flower at top of a pale yellow or brimstone colour; the stalk and leaves have long hairs.

H. paludosum, *Marsh Hawkweed,* occurs in wet meadows, but is not common in England. See *Crepis* and *Hypochaeris.*

HIPPOCREPIS COMOSA. *Tufted Horse-shoe Vetch.* On chalk downs, flowering from april to july: It is a perennial, trailing, smooth, elegant, with abundance of yellow pea flowers, and remarkable pods, the parts of which are curved like a horse-shoe.

HYACINTHUS NON SCRIPTUS. *Common Hyacinth* or *Harebells.* Common in woods, coppices, and hedge-rows of pastures, adorning them with its spikes of pendant blue flowers in the spring: The fresh roots are poisonous.

HYOSERIS MINIMA. *Small Swine's Succory.* Pastures in a sandy soil. Annual, not very common.

HYPERICUM PERFORATUM. *Common* or *perforated St. John's-wort.* Woods, thickets, banks, and hedges, but not in the body of pastures, except such as are bushy. Perennial, two feet high, with handsome yellow flowers, appearing from july to september. Known by the small black glands sprinkled over the plant, and the numerous holes which appear on the leaves when held up to the light. The flowers are used by the common people to make an ointment, but no regard is paid to it by the faculty.

Other species are found in hedges: as—

H. Androsæmum, or *Tutsan St. John's-wort.* **H. hirsutum** or *hairy St. John's-wort.* **H. montanum,** or *Mountain St. John's-wort:* and **H. quadrangulare,** *Square-stalked St. John's-wort* or *St. Peter's-wort.*

Two smaller sorts are found in dry pastures and heaths, but chiefly among bushes.

H. humifusum, *Trailing St. John's-wort;* and **H. pulchrum,** *Upright St. John's-wort.*

HYPOCHÆRIS RADICATA. *Long-rooted Hypochaeris* or *Hawkweed.* Common in dry pastures, on banks and heaths, and very conspicuous with its yellow flowers in the early part of summer. Stems from one to two feet high; but in barren soils not more than five or six inches. The length of the root, which is the thickness of the little finger, distinguishes this plant from *Leontodon autumnale* and other plants which bear some resemblance to it in the flowers.

H. glabra and **maculata** are found in dry pastures, but not common.

JASIONE MONTANA. *Hairy Sheep's Scabious, Scabious Sheep's-bit.* *Rampions* with scabious-like heads. Common on dry sandy grounds, heaths and hilly pastures, flowering from june to august. Annual. Flowers blue

blue in a head. The whole plant is milky, and sometimes eaten by sheep.

INULA HELENIUM. *Elecampane.* One of the largest of our herbaceous plants, being from three to five feet high, with large yellow flowers. In moist meadows and hedges. The root is a good pectoral. A decoction of it cures sheep of the scab, hence its name *Scab-wort*; in some counties it is called *Horse-beal*, probably from its reputed virtues in curing the cutaneous diseases of horses.

INULA DYSENTERICA. *Common or middle Fleabane.* Moist meadows, watery places, by the sides of ditches and streams, flowering from July to October, often overrunning large tracts of land, and generally left untouched by animals. Stem from one to two feet high. Flowers yellow rayed. Linneus named it *dy-senterica*, from the Russian soldiers having been cured of the dysentery by it; the smoke of it is said to chase away fleas and other insects, hence our English name.

INULA ULIGINOSA. *Small dwarf or marsh Fleabane.* Common where water has stagnated in winter, by road sides, on the banks of ponds, &c. in a stiffish soil. This has the same qualities with the preceding, and is given to horses for the bots. Both sorts flower from August to October.

IRIS PSEUDACORUS. *Common yellow or water Iris, or Flower-de-luce, Yellow Flag, Water Flag, Skeggs or Lugs.* Marshy meadows and fens, by the sides of streams, pools and ditches; flowering in June and July.

IRIS FOETIDISSIMA. *Stinking Iris, Gladwin or Gladdon,* in hedges only.

JUNCUS. *Rush.* Seaves in Yorkshire. There are several sorts of Rushes in pastures. The most common are *Juncus conglomeratus* or *round-headed Rush*; *J. effusus* or *common soft Rush*; and *J. tenax* or *common hard Rush*. In wet meadows and marshes; always indicating a soil that holds wet. They are used, particularly the second, for making small baskets and toys, and the wicks for watch-lights. For the method of destroying them in pastures, see *Juncus effusus*.

Other sorts are common on boggy grounds, and *J. campestris* on dry pastures and heaths, but these are all smaller plants, and are not found on good ground.

KIDNEY-VETCH. See *Anthyllis*.

KNAPWEED. See *Centaurea*.

KNOT-GRASS. See *Polygonum*.

LADIES BEDSTRAW. See *Galium*.

—— FINGER. See *Anthyllis*.

—— MANTLE. See *Alchemilla*.

—— SMOCK. See *Cardamine*.

LAMB'S LETTUCE. See *Valeriana*.

LAMIUM ALBUM. *White Archangel or Dead-Nettle*; and *purpureum* or *purple Archangel or Dead-Nettle* are sometimes found in foul meadows, but more commonly in hedges, and by way sides.

LAPATHUM. See *Rumex*.

LATHYRUS NISSOLIA. *Crimson Grass-Vetch.* In mowing grass; the leaves so like those of Grass as to be overlooked, till it shows the beautiful crimson pea flowers. It grows also among bushes and in woods.

LATHYRUS PRATENSIS. *Common yellow or Meadow Vetchling, Tare everlasting.* Meadows and pastures, woods, thickets and hedges; flowering from June to August. Perennial, creeping. Flowers yellow, of the pea shape, several together. It seems worth cultivating with Grass seeds.

Other species are found in hedges and woods, but not very common.

LEONTODON TARAXACUM. *Common Dandelion.* Common in meadows every where; flowering from April to September, and later in mild weather. Early in the spring the leaves are no bad ingredient in salads. The French eat them blanched, and also the roots. Its diuretic effects have given it a vulgar name well known. The expressed juice has been given to the quantity of four ounces, three or four times a day, in obstructions of the bowels. Swine devour the plant greedily; Linneus says that sheep and kine are not fond of it, and that horses refuse it. The Gloucestershire dairy-men, according to Mr. Marshall, observe, that cows have an aversion to the bitter grasses, as they call

Dandelion and the Hawkweeds; but that sheep are particularly partial to them, eating the very flowers.

LEPIDIUM LATIFOLIUM. *Broad-leaved Pepperwort or Dittander. Poor man's Pepper.* Among grass, chiefly in salt marshes, but not very common. It flowers in July. Perennial. Acid, antiscorbutic, formerly used instead of Horse-radish. The young leaves sometimes eaten in salads.

LETTUCE, LAMB'S. See *Valeriana*.

LINUM CATHARTICUM. *Purging Flax.*

LOTUS CORNICULATA. *Common Bird's-foot Trefoil, small coddled Trefoil, Bird's-foot Clover or Clover, Cheesecake-grass, Butter-jags, Crow-toes.* Recommended for cultivation by Ellis, under the name of *Ladies Finger*; and by Anderson, under that of *Astragalus glycyphyllos* or *Milkwort*. See *Astragalus*.

Bird's-foot Trefoil is common in meadows, pastures, heaths, by road sides, in hedges, among bushes, and in woods; flowering from June to August. There is a very full description and history of it under its proper head.

LUCERN. See *Medicago*.

LYCHNIS FLOS CUCULI. *Red-flowered Meadow Lychnis, Meadow Pink, Wild Williams, Cuckow Flower, Ragged Robin, Crow-flower, feathered wild Campion, marsh Gilliflower, Cuckow Gilliflower, Meadow Campion, Ragged Robin.* Moist meadows, flowering in May and June. Perennial. Flowers pink or purplish red and jagged. None of our domestic quadrupeds seem fond of it.

LYCHNIS VESPERTINA. *L. dioica* of Linneus. *White-flowered Lychnis, Wild White Campion.* Fallow fields, by hedges, ditches and highways, among bushes, and not uncommonly in pastures. I have not seen the *Red Wild Campion* or *Lychnis diurna* in the body of pastures, but by moist shady ditches and hedges, and sometimes in woods. The White Campion prefers dry soils.

LYSIMACHIA VULGARIS. *Common Loose-strife.* In marshy meadows, and on the banks of streams; flowering from the end of June to September. Perennial, with yellow flowers in a large panicle.

LYSIMACHIA NUMMULARIA. *Creeping Loose-strife, Moneywort, Herb Twopence and Twopenny Grass,* from the round shape of the leaves. Moist meadows, on the sides of ditches, and under wet hedges; flowering in June and July. Perennial, with trailing stalks, and large yellow flowers. According to Linneus, eaten by kine and sheep, not much relished by goats, and refused by horses. An infusion of the plant in oil is said to destroy weevils.

MEADOW RUE. See *Thalictrum*.

—— SAFFRON. See *Colchicum*.

—— SAXIFRAGE. See *Peucedanum*.

—— SWEET. See *Spiraea*.

MEDICAGO SATIVA. *Purple Medick or Lucern.* Probably not a native of England.

MEDICAGO FALCATA. *Yellow Medick or Yellow Lucern.* Dry pastures and way sides. This has been recommended for cultivation. It varies much in the colour of its flowers, and even produces them blue and yellow on the same stalk.

MEDICAGO LUPULINA. *Hop or black Medick.* Cultivated under the names of *Trefoil, Black seed* and *Black Non-such*; our old writers call it *Melilot Trefoil*. Common on dry banks and hilly pastures, chiefly in a dry soil; flowering in June and July.

MEDICAGO POLYMORPHA ARABICA. *Heart Medick, Spotted Medick, Heart Trefoil, Heart Clover or Clover.* Common on banks and borders of fields, in dry sandy pastures, especially near the sea; flowering in May and June. Known by the dark-brown or blood-coloured spot on the leaves, shaped like the heart or head of an arrow.

It frequently appears among Lucern, Saint-foin, and Trefoil. On account of the roughness of the seeds, it should be cut when young.

The *Medicagos*, like the Trefoils, have ternate leaves, but differ much in the seeds.

MELAMPYRUM PRATENSE. *Meadow Cow-wheat.* Woods and woody pastures. Linneus observes that cattle are very fond of this plant, and that butter is good where it abounds.

MENTHA

MENTHA. *Mint.* Several species are wild in hedges, ditches, marshy and watery places, the banks of rivers, and wet pastures. *M. arvensis* or *Corn Mint*, as the name implies, grows in arable land, and is a very bad weed.

MERCURIALIS PERENNIS. *Dog's-Mercury.* Common under hedges, seldom in the body of a pasture, except where there are bushes to protect it; flowering from the end of march to the middle of may. Supposed to be poisonous. Linneus says it is noxious to sheep. With us it does not seem to be eaten by any quadruped.

English Mercury, which is sometimes eaten as Spinach, is a species of *Chenopodium*.

MILFOIL. See *Achillea*.

MILKWORT. See *Polygala*.

MINT. See *Mentha*.

MOUSE-EAR SCORPION-GRASS. See *Myosotis*.

MYOSOTIS SCORPIOIDES. *Mouse-ear Scorpion-grass.* One variety in dry pastures; and another in wet meadows or marshy grounds, commonly by the side of water. Linneus says, the latter is noxious to sheep; but I suspect that they never eat it.

NEPETA CATARIA. *Common Catmint* or *Nep.* In hedges, but not in the body of the pasture: chiefly in a calcareous soil. Not eaten by domestic animals.

NETTLE, DEAD. See *Lamium*.

NONESUCH. See *Medicago*.

NUT, EARTH OR PIG. See *Bunium*.

ONONIS SPINOSA. *Thorny Rest-barrow, Cammock, Petty Whin, Ground Furze*; in Suffolk *Lond-Whins* or *Land-Whins*; in some counties *Whin* is pronounced *Fin*: in Yorkshire *Rust-burn*, that is *Rest-bourn*. Barren pastures, both in a light and strong soil. It has a strong creeping root, which makes it difficult to be rooted out, but renders this plant very fit to be sown on sea and fen banks. It has stout thorns at the base of the branches, and handsome red pea-bloom flowers. Linneus's account is, that kine and goats eat it, sheep are fond of it, horses and swine refuse it: horses however will eat the younger shoots. A decoction of the roots has been recommended in the stone and jaundice.

We have another sort (*Ononis arvensis*) hairy and thornless, in like situations.

OPHIOGLOSSUM VULGATUM. *Common Adder's-tongue.* Moist meadows.

OPHRYS SPIRALIS. *Spiral Ophrys* or *Triple Ladies traces.* On heaths and commons.

OPHRYS OVATA. *Common Ophrys* or *Tway-blade.* Meadows and heaths, but more frequently in woods and moist thickets.

Ophrys muscifera or *Fly Ophrys*; *O. apifera* or *Bee Ophrys*; and *O. aranifera* or *Spider Ophrys* are found among grass, chiefly in chalky pastures.

ORCHIS BIFOLIA. *Butterfly Orchis.* Woods, but sometimes in pastures among bushes.

O. pyramidalis. *Pyramidal Orchis.* Calcareous pastures, Known by the shape of the spike. Flowers very numerous, deep flesh-colour or pale purple, sometimes white.

O. morio. *Female* or *meadow Orchis.* Common in meadows moderately dry, with the Cowslip. Flowers few, purple.

O. mascula. *Male* or *early spotted Orchis.* Common in meadows and woods. As tall again as the preceding, with spotted leaves and more numerous flowers.

O. ustulata. *Dwarf Orchis.* Chalk downs. Distinguished by its small dotted flowers.

O. militaris. *Man Orchis.* Calcareous pastures.—Very different from *Ophrys anthropophora* or *Man Ophrys*, which is found in like places.

The above have a double bulb to the root; the succeeding ones have palmate bulbs.

O. latifolia. *Broad-leaved* or *Marsh Orchis.* Wet meadows and marshes.

O. maculata. *Spotted Orchis.* Moist meadows and woods; sometimes in barren pastures, with the spike only half the size and fewer flowers.

O. conopsea. *Long-spurred Orchis.* An elegant species, distinguished by the length of its spurs. It has some resemblance to *O. pyramidalis*, but differs in the

root, the narrowness of the leaves, and length of the spike.

Salep is prepared from the roots of some species of Orchis: they all seem to have the same quality.

ORNITHOGALUM. *Star of Bethlehem.* Two or three species are found in orchards and pastures; but they are not common, and are doubtful natives, like many other bulbs.

ORNITHOPUS PERPUSILLUS. *Common Bird's-foot.* Dry heaths, commons and downs, on banks and by road sides; flowering from may to september. A very small plant.

OX-EYE DAISY. See *Chrysanthemum*.

PAGILS. See *Primula*.

PARSNIP. See *Pastinaca*.

PASQUE-FLOWER. See *Anemone*.

PASTINACA SYLVESTRIS. *Wild Parsnip.* In pastures and on the borders of corn fields; flowering in july. Biennial. Flowers yellow.

PEDICULARIS PALUSTRIS. *Marsh Lousewort.* Wet meadows. Said to make sheep scabby, and lousy.

P. sylvatica. *Common Lousewort*, or *red Rattle.* A much smaller plant in moist pastures and heaths.

PENNY GRASS. See *Rhinanthus*.

PETASITES. See *Tussilago*.

PEUCEDANUM SILAUS. *Meadow Saxifrage.* Moistish meadows. Flowering in july and august. An umbellate plant.

PICRIS ECHIOIDES. *Rough Picris* or *common Ox-tongue.* And *P. hieracioides*, *Yellow Succory* or *Hawkweed Ox-tongue.* Both among grass on the borders of corn fields. Flowers yellow.

PILEWORT. See *Ranunculus*.

PIMPINELLA SAXIFRAGA. *Burnet Saxifrage.* Dry pastures. A perennial umbellate plant, flowering in august.

PLANTAGO MAJOR. *Great Plantain.* *P. media*, *hoary Plantain*, and *P. lanceolata*, *ribwort Plantain.* Pastures and by way sides. The last is now cultivated under the name of Ribwort.

POLYGALA VULGARIS. *Common Milkwort.* Pastures, heaths and commons, flowering in june and july. Perennial. Flowers blue, varying to purple, flesh-coloured and white. Cows and sheep are said to eat it, and it is a notion that it increases milk. The powdered root is good in the pleurisy; and an infusion of the herb, which is bitter, is useful in a catarrhus cough, about a quarter of a pint fasting every morning.

POLYGONUM BISTORTA. *Bistort* or *Snakeweed.* Moistish meadows. Perennial. Root very astringent, and would probably tan leather. Not very common, but in some places occupies exclusively large patches of ground.

Several species of Polygonum or Persicaria, vulgarly called *Arsmart*, are common in ditches, ponds and marshes. *P. Persicaria* or *Willow-weed* grows also in pastures, on dunghills, &c.

POLYGONUM AVICULARE. *Knot-grass*, *Swine's-grass*, *Hogweed*, in the north *Bird's tongue.* Corn fields, way sides, and in pastures where dung has been laid, spreading very much. All quadrupeds eat it, and small birds are very fond of the seeds.

P. convolvulus. *Black Bindweed*, or *climbing Snakeweed.* Corn fields, gardens and hedges, but seldom among grass.

POPPY SPATLING. See *Cucubalus*.

POTENTILLA ANSERINA. *Silver-weed*, *Wild Tankey*, *Goose Tansey*, *Goose-grass*, *feathered Cinquefoil.* Way sides and low pastures, especially where water stands in winter. Perennial. June and july. Leaves white. Flowers yellow. Swine are fond of the roots, which taste somewhat like Parsneps. Sheep refuse the herb, but other cattle are said to eat it: with us it seems generally untouched. The powder of the dried leaves is given in the ague.

Potentilla reptans. *Common Cinquefoil* or *five-leaved grass.* Pastures and road sides. A decoction of the red bark of the root is a good gargle for loose teeth and spongy gums.

There are other species, but not common.

POTERIUM SANGUISORBA. *Common*, *small* or *upland Burnet.* Dry calcareous pastures. Recommended

- to be cultivated for sheep.—Great Burnet see under *Sanguisorba*.
- PRIMROSE. See *Primula*.
- PRIMULA VULGARIS. *Common Primrose*. In woods, hedges, thickets and heaths among bushes.
- P. elatior. *Ox-lips* or *great Cowslips*. Woods, hedges, and sometimes in pastures.
- P. officinalis. *Cowslips*, *Pagils* or *Paigles*. In Yorkshire *Cow striplings*. Common in meadows and pastures in loamy or clayey soils, flowering in april and may.
- PRUNELLA VULGARIS. *Common Self-heal*. Meadows and pastures. Flowers blue, varying to purple and white.
- PTERIS AQUILINA. *Female Fern*, *Common Brakes*. On commons and in woods.
- RAGWORT. See *Senecio*.
- RAMSON. See *Allium*.
- RANUNCULUS FICARIA. *Common Pilewort*, *lesser Celandine*. Common in meadows. Differs from the other species in having eight or nine petals. Root composed of oblong tubers. Flowers early in march or april.
- R. Flammula, and Lingua. *Small and great Spearwort* or *Crowfoot*. In boggy meadows, and by the sides of pools and streams.
- R. repens, bulbosus and acris. *Creeping, bulbous and upright Crowfoot*, or *Crowflower*; common in meadows, and confounded under the names of *Butter-cups*, *Butter-flowers*, *Gold-cups*, *King-cups*, *Gold-knobs*. Flowers of a fine shining yellow, vulgarly supposed to give a yellow colour to butter, but falsely, for cattle do not eat the flowering stems. But as they indicate good land, they may mediate indicate good butter.
- These plants, though very acrid, are thought by some to be a grateful and useful admixture in hay, correcting the flatulent nature of grass. Mr. Marshall informs us, that in the vale of Gloucester, the *creeping Crowfoot* is esteemed as valuable herbage, whilst the two others, being extremely acrid, are considered as very pernicious, especially among hay. This is worth enquiring into.
- Other species grow by water sides, in water and in marshes. *Ranunculus auricomus* is common in woods; and *arvensis* among corn. It is said that the latter is fatal to sheep, and that three ounces of the juice killed a dog in four minutes.—It is certainly a very suspicious genus.
- RATTLE, RED. See *Pedicularis*.
- YELLOW. See *Rhinanthus*.
- RESEDA LUTEOLA. *Wild Woad*, *Dyer's-weed* or *Yellow-weed*, *Wold*, *Wold* or *Weld*. Meadows, pastures, walls, and barren uncultivated spots. Annual, flowering in june and july. Cultivated in light soils for the dyers. Very different from the *Isatis* or true Woad used in dyeing blue, and as the base of other colours.
- Reseda lutea. *Base Rocket* or *Rocket Yellow-weed*. Pastures, chiefly in a calcareous soil, in corn fields, and sometimes on walls.
- REST-HARROW. See *Ononis*.
- RHINANTHUS CRISTA GALLI. *Yellow Rattle*, *Cock's-comb*, *Penny-grass*, *Penny-weed*, or *Henpenny*. Meadows and woods. Annual; flowering in june. This keeps its ground, for the seeds are ripe at the usual time of cutting hay. They are said to be very nutritive.
- RIB-GRASS or *Ribwort*. See *Plantago*.
- RUMEX. *Dock*. These are universally reprobated as some of the worst of weeds. Three sorts are common in pastures—*Rumex crispus* or *Curled Dock*; common among Clover. *R. acutus* or *Sharp-leaved Dock*, the roots of which are used in dyeing. *R. obtusifolius* or *Broad-leaved Dock*, in farm yards, among dung and rubbish, and by the sides of ditches, carried into pastures with dung, or spreading by root and seed from dunghills. These sorts are perennial, and flower from june to august.
- RUMEX ACETOSA. *Common Sorrel*: *Green-Sauce*: *Sour-docken* in Yorkshire. Abundant in pastures. Eaten by all quadrupeds. Cultivated in France for the table. Much eaten in Ireland. The dried root gives out a beautiful red colour when boiled.
- Rumex Acetosella. *Sheep's Sorrel*. Sandy pastures.
- Rumex paludosus or *Marsh Dock*; and *R. Hydrolapathum* or *Water Dock*, a medicine of considerable efficacy; grow in marshes and on the banks of rivers.
- RUSH. See *Juncus*.
- SAGE. See *Salvia*.
- SAINT-FOIN. See *Hedysarum*.
- SAINT-JOHN'S-WORT. See *Hypericum*.
- SALVIA PRATENSIS. *Meadow Sage* or *Clary*: and *Verbenaca*, *Wild Sage* or *Clary*. Both in dry pastures.
- SANGUISORBA OFFICINALIS. *Great or Meadow Burnet*. Moist pastures, especially in a calcareous soil; flowering from june to august. A coarse woody plant, from eighteen inches to above two feet in height. Not fit for feeding, like the small Burnet, which see under *Poterium*.
- SAPONARIA OFFICINALIS. *Common Scapwort* or *Bruise-wort*. Hedges and sometimes in meadows. Bitter. Will lather in water like soap. Used instead of *Sarsaparilla* in Germany and France. Perennial: flowering in july and august.
- SATYRIUM. Several species of *Satyrium* grow in meadows, but not common. They are of the *Orchis* tribe.
- SAW-WORT. See *Serratula*.
- SAXIFRAGA GRANULATA. *White Saxifrage* or *Sengreen*. Dry pastures: flowering in april and may. Root composed of a close bunch of little tubercles. Flowers white, large for the plant.
- SCABIOSA SUCCISA. *Devil's-bit*: so called from the root being as it were bit off. Flowers in globular heads; blueish purple, varying to flesh-coloured and white. Common in pastures; flowering from june to august.
- SCABIOSA ARVENSIS. *Field Scabions*. Both pastures and corn fields; flowering in july and august. Flowers blue, purple or white, a little woolly; the outer ones larger, with four unequal clefts; the inner ones regular. Slightly astringent, bitter and saponaceous.
- SCABIOSA COLUMBARIA. *Small Scabious*. Frequent in dry hilly pastures: flowering from june to september. Flowers blueish lilac.
- SCABIOUS, SHEEP'S. See *Fasione*.
- SCORPION-GRASS. See *Myosotis*.
- SELF-HEAL. See *Prunella*.
- SENECIO JACOBÆA. *Ragwort*, *Ragweed*, *Staggerwort*, *Stanerwort*, *St. James's-wort*, *Seggram* or *Seagrim*. Perennial; flowering in july. Common in pastures and by road sides.
- Senecio vulgaris. *Common Groundsel*. Abundant in cultivated ground, but seldom in pastures, being annual. According to Linneus swine and goats eat it; but horses and sheep refuse it. In this he is mistaken, for both horses and sheep eat it.
- SERRATULA ARVENSIS. *Carduus arvensis*. *Way Thistle*. Every where, in good land: in pastures, corn fields, by road sides, &c. Asses alone eat it, except sometimes the tops, when tender. Few of the Thistles are perennial except this.
- SILVER-WEED. See *Potentilla*.
- SORREL. See *Rumex*.
- SPIRÆA FILIPENDULA. *Dropwort*. So named from its tuberous roots. Common in high pastures in a calcareous soil: flowering in june and july. Hogs are fond of the roots.
- SPIRÆA ULMARIA. *Meadow-sweet*, *Queen of the meadows*. Moist meadows, and the banks of streams. Flowering at the same time. Swine, sheep and goats are said to eat it; kine and horses to refuse it.
- STELLARIA GRAMINEA. *Lesser Sticwort*. Pastures and hedge-banks; flowering in may. Annual. Flowers upright, white, closing in rain. The young shoots and leaves as good as spring Spinach. Swine, cows and horses eat it; and it is grateful to small birds and young chickens.
- The greater sort, *Stellaria holostea*, is common in woods and hedges.
- SUCCORY. See *Cichorium*.
- TANACETUM VULGARE. *Common Tansey*. High pastures, banks of rivers and swampy places; flowering in june.
- TARE. See *Vicia*.
- THALICTRUM FLAVUM. *Common Meadow-Rue*. Moist pastures and the banks of streams: flowering in june.
- Root.

Root a full yellow. Flowers numerous, yellowish white.

There is a smaller sort, *T. minus*, in high but moist pastures, in a calcareous soil; flowering in July and August.

THESIUM LINOPHYLLUM. *Bastard Toad-Flax.* Dry heaths and hills in a calcareous soil; found also in loose sand. It is a small plant, with flowers of no show, and is in a manner lost among the grass.

THISTLE. See *Carduus* and *Serratula*.

THYMUS SERPYLLUM. *Mother of Thyme, Wild Thyme, Common Thyme.* Heaths, commons, downs, and high dry pastures: flowering in July and August. It seems a mistake that sheep feed upon it, but pastures where this plant abounds are peculiarly adapted to sheep, being dry and sound. Bees are much attached to this and other aromatic plants.

TOAD-FLAX. See *Antirrhinum*.

———, *Bastard.* See *Thesium*.

TORMENTILLA ERECTA. *Tormentil or Septfoil.* Barren pastures, shady places and moors. It has four petals, and a calyx cut into eight parts; whereas *Potentilla* has five petals, and a ten-cleft calyx. The root is a strong astringent, and is given to cattle in the dysentery; it dyes red and tans leather.

TRAGOPOGON PRATENSE. *Yellow Goat's-beard or Go to bed at noon.* In meadows; flowering in June. Kine, sheep and horses eat it, swine are very fond of it.

TRAGOPOGON PORRIFOLIUM. *Purple Goat's-beard.* In some meadows, and in upland pastures in some countries not unfrequent; flowering in May. The roots of both are esculent; and the latter is cultivated under the name of *Salsify*.

TREFOIL. See *Medicago* and *Trifolium*.

———, *Bird's-foot.* See *Lotus*.

TRIFOLIUM MELILOTUS OFFICINALIS. *Melilot Trefoil or common Melilot.* In meadows and on ditch banks, but rather a corn than pasture weed.

TRIFOLIUM REPENS. *Creeping or White Trefoil or Clover, Dutch Clover.* Meadows and pastures in a good soil. Much cultivated.

TRIFOLIUM PRATENSE. *Purple Trefoil, Honeysuckle Trefoil, Clover-grass or Red Clover.* Meadows and pastures. The cultivated red or broad Clover and the *Marl-grass*, are nothing but varieties of this.

TRIFOLIUM OCHROLEUCUM or *Brimstone Trefoil*, and several smaller sorts, are common in dry pastures.

TRIFOLIUM FRAGIFERUM or *Strawberry Trefoil* is common in moist meadows.

TRIFOLIUM PROCUMBENS and *FILIFORME.* *Hop Trefoils.* Dry pastures. Not *T. agrarium* of Linneus.

TRIGLOCHIN PALUSTRE. *Arrow-headed Grass; Marsh Arrow-Grass.* Wet meadows. Cows are fond of it; other quadrupeds eat it.

Triglochin maritimum. *Sea Arrow-Grass.* In salt-marshes. All domestic quadrupeds relish it.

TROLLIUS EUROPÆUS. *Globe-flower, Gowlands Globe-flower, Locker-gowlands.* Mountainous meadows in Wales and the north of England. Moist woods in Yorkshire. Marshes in Durham.

TURRITIS GLABRA. *Smooth Tower-Mustard, or Tower-wort.* Pastures and waste places, in a gravelly soil.

Turritis hirsuta. *Hairy Tower-wort or Wall Cress.* Dry mountainous pastures.

TUSSILAGO FARFARA. *Common Colt's-foot.* Pastures and other places in moist stiff clayey soil, and on limestone rubbish; flowering in March and April. It indicates a subsoil that holds wet.

TUSSILAGO PETASITES. *Butter bur or Pestilent-wort.* Moist meadows, and banks of streams. These both flower in March, before the leaves appear.

VALERIANA DIOICA. *Marsh Valerian.* Wet meadows and by the sides of ditches and streams.

VALERIANA OFFICINALIS. *True Valerian.* A large variety in hedges and woods. The smaller, which is in so much repute as a medicine, is found on dry heaths and high pastures, particularly in a calcareous soil. The root is excellent in hysterical cases and even in epilepsies, and in habitual costiveness. Cats are well known to be very fond of it; and it is said that rat-catchers employ it to draw the rats together. Roots from a garden, or from woods and hedges are good for nothing.

VALERIANA LOCUSTA. *Lamb's Lettuce or Corn-salad.* Not only in corn-fields, but on banks, and sometimes in pastures. The young leaves are eaten in salads.

VERONICA OFFICINALIS. *Common or Male Speedwell or Fluellin.* Dry barren pastures, heaths and downs; flowering from May to August.

Veronica serpyllifolia. *Smooth Speedwell or Paul's Betony.* A little plant not uncommon in pastures.

Veronica Chamædiys. *Wild Germander or Germander Speedwell, Bird's-eye.* Pastures, but mostly in hedges and among bushes. A very elegant blue flower. The leaves are a better substitute for tea than *V. officinalis*. It flowers in May.

VETCH. See *Vicia*.

VICIA CRACCA. *Tufted Vetch.* In hedges, shady places, meadows and willow beds; flowering in July and August. Perennial. Flowers small, numerous, blueish purple, with two deeper purple spots at the extremity of the keel; on a long fruitstalk.

VICIA SATIVA. *Common Vetch, Fetch, or Tare.* Dry pastures; flowering from April to June. Annual. Commonly cultivated. Winter and Spring Tares only varieties.

VICIA SEPIUM. *Busb Vetch.* Woods, hedges and pastures; flowering in May and June. Perennial. Flowers three or four together, dirty purple, on very short stalks.

VICIA LATHYROIDES. *Strangle Vetch or Tare.* Dry pastures, gravel-pits and corn-fields; flowering in May. Annual. The tendrils are seldom or ever branched; the corolla is scarcely longer than the calyx, small and of a bluish purple, and the seeds are cubic.

WILD WILLIAMS. See *Lychnis*.

WILD WOAD. See *Reseda*.

YARROW. See *Achillea*.

The above list might easily have been increased, by the insertion of some plants occasionally found among Grass, or of others that are rare; but that is not the design of it. Some persons will probably think that many, which are rather hedge-plants, might have been omitted; but they form a part of the produce of the Pasture ground, and are apt to find their way into the Grass itself.

Of the 228 plants, or thereabouts recited above, the following are useful as food or medicine for quadrupeds. *Cardamine pratensis*, *Rumex Acetosa*, *Tragopogon*, and most of the leguminous plants, as *Lotus*, the Vetches in general, the *Medicagos*, and the *Trifoliums*, or Trefoils properly so called. *Milfoil*, *Succory*, and *Ribwort*, which are weeds in their wild state, are so much improved by cultivation as to become useful plants. Many in the list, perhaps most of them, are beneficial in some respect or other, though not immediately to cattle. Some of their uses are pointed out in the remarks.

The Pasture herbs chiefly injurious are *Allium vineale* and *ursinum*. *Anemone nemorosa*. *Bellis perennis* or Daisy, in occupying much room. *Caltha palustris*. The different species of Thistle. The various species of *Carex* or Sedge. *Centaurea nigra* or Knobweed, and *Calcitrapa* or Star-Thistle, *Chærophyllum* or Cow-weed. *Chrysanthemum Leucanthemum* or Ox-eye Daisy. *Colchicum* or Meadow Saffron. Heath. *Heracleum Sphondylium* or Cow-Parnep, which however might be a very useful plant if cultivated: *Inula dysenterica*. The Rushes. *Mercurialis perennis* or Dog's Mercury. *Pedicularis* or Red Rattle. *Pteris*, female Fern or Brakes. Several sorts of *Ranunculus*. *Rhinanthus Crista galli*, or Yellow Rattle; almost the only annual plant that keeps its ground in Pastures to any great extent; which it does by seeding early. It can only be kept down by pasturing the ground two years successively. Other annuals, such as *Purging Flax*, the *Eye-brights*, some of the *Hawkweeds*, and *Sheep's-Scabious*, being of little consequence. The Docks. *Senecio Jacobæa* or Ragwort. The other plants in the list may be considered as in great measure neutral, or as doing little harm or good as Pasture herbs.

With respect to the extirpation of the most noxious of these weeds, the Docking-iron, the Spud, and the Hand

Hand should be unremittingly employed on fit occasions.

The biennial Thistles may be cut off within the ground, and if not suffered to seed may easily be destroyed, unless they are reinstated from the nurseries in hedge-rows, way-sides, &c.

Carduus acaulis. Stemless or dwarf Carline Thistle ought to be diligently cut up with the spud: but it infests only dry upland Pastures.

Way-Thistle, or as some in anger call it, Curled Thistle, (*Serratula arvensis*) is a true perennial, and runs dreadfully at the root; thus increasing two ways, by root and seed. It is rather an arable weed, and is attempted in vain to be extirpated by ploughing three inches deep. But it is also too common on rich pastures, in the neighbourhood of arable lands, headlands and way-sides, where it is suffered to seed without controul.

In mowing grounds it is seldom suffered to seed, but I believe mowing contributes to spread it, though I know it is the opinion of some that this operation will in time destroy it, at least if it be cut down whilst in flower. This is contrary to my present experience, which I mean to pursue farther. The only radical cure for the evil in pastures, is to extricate the plants by the docking-iron and the hand after rain, when alone they will pull out, and even then seldom completely. The ground therefore must be looked over carefully a second time, to take out those Thistles which have sprung up from pieces of roots left in, on the first operation.

The Carices or Sedges, the Junci or Rushes, *Caltha* or Marsh Marygold, Iris or Flag, *Pedicularis* or Red Rattle, the whole tribe of water plants, and such as require a soil tenacious of wet, can only be effectually destroyed by judicious draining, and dressing with coal ashes, and other warm manures.

Fern or Brakes must be extirpated by paring and burning. The Docks, together with *Senecio Jacobaea* or Ragwort, and *Centaurea Jacea* or Knobweed, will yield only to the docking-iron and the hand, and should never be suffered to seed: notwithstanding it is a notion, as Mr. Marshall informs us, in some of the midland counties, that the best way to get rid of Docks on Grass land is to let them spend themselves by seeding. If the old plant be thus spent, it leaves an innumerable progeny to represent it. Mr. Marshall says that Knobweed and Ragwort may both be cured by repeatedly pasturing with sheep.

Improvement of Pasture Land.

1. By Draining and Watering; for both which see MEADOWS.

2. By Weeding and Top-dressing.

3. By laying the land so as to clear itself of surface water, levelling ant-hills and other inequalities, and running a heavy roller over it in the spring.

4. By putting on different stock at proper seasons, so that the herbage may be kept fine by being close bitten, and the surface regular by not being poached in wet times by heavy cattle.

Not a weed, says Mr. Marshall, ought to seed, nor a tuft of stale grass be suffered to stand in a Pasture ground; which should at least once during the summer be levelled with the scythe; thus at a small expense, converting weeds into nutriment, and waste ground into after-grass. See GRASS and MEADOWS.

PATAGONICA and PATAGONULA. See *Cordia*.

PATIENTIA. See *Rumex*.

PAVEL. See *Momordica*.

PAVETTA. (*A vernacular name of the East Indies.*)

Lin. gen. n. 132. Reich. n. 138. Schreb. n. 168. Gertn. t. 25. Juss. 203.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* bell-shaped, very small, obsoletely four-toothed, surrounding the germ.

COR. one-petalled, funnel-form: tube long, slender, cylindric: border five-parted; spreading, shorter by half than the tube: segments lanceolate.

STAM. Filaments four, very short, above the throat of the corolla. Anthers awl-shaped, spreading, the length of the border.

PIST. Germ inferior, turbinate. Style filiform, twice as long as the corolla. Stigma thickish, oblong, oblique.

PER. Berry roundish, one-celled.

SEEDS two, convex on one side, cartilaginous.

OBS. Berry two-celled. Seeds solitary, one often abortive, so that the fruit seems to be one-seeded. There are frequently two coadunate berries, crowned with a double calyx. Gærtner.

ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form, superior. Stigma curved. Berry two-seeded; (one often abortive.)

SPECIES.

1. *Pavetta indica*.

Lin. spec. 160. Juss. 153. Reich. 312. Willd. 610. suppl. 121. fl. zeyl. n. 56. amoen. 1. 388. Gertn. fruct. 1. 116. Burm. ind. 35. t. 13. f. 3. Pluk. phyt. t. 147. f. 1.—alba. Vahl symb. 3. 11.

Pavetta f. Malleamothe. Rheed. mal. 5. 19. t. 10.

Pavate. Raii hist. 1581.

Flammula fylvarum. Rumph. amb. 4. 107. t. 47.

Arbor malabariensis fructu lentisci. Baub. pin. 399.

Smooth: leaves lanceolate-elliptic, stipules smooth within, calyxes obsoletely four-toothed, flowers in bundles.

2. *Pavetta villosa*.

Lin. spec. Willd. 611. Vahl symb. 3. 12.

Branches and calyxes villose hoary, leaves lanceolate-elliptic, flowers in bundles.

3. *Pavetta longiflora*.

Lin. spec. Willd. 611. Vahl symb. 3. 12.

Ixora occidentalis. Forsk. arab. 105.

Branches smooth, leaves lanceolate-elliptic, stipules hairy within, calyxes four-cleft, flowers in bundles.

4. *Pavetta caffra*.

Lin. Juss. 153. Willd. 611. suppl. 121. Thunb. prodr. cap. 29.

Crinita capensis. Houtt. Juss. 5. 357. t. 40. f. 1.

Leaves obovate, flowers subumbellate, calyxes bristle-awned.

5. *Pavetta pentandra*.

Lin. spec. Willd. 611. Swartz descr. 233.

Psychotria Pavetta. Swartz prodr. 45.

Cestrum nervosum. Mill. dict.

Lonicera foliis lanceolato-ovatis. Plum. ic. t. 156. f. 2.

Ceraso affinis arbor baccifera, fructu cœruleo testiculato. Sloan. jam. 2. t. 202. f. 2.

Jasminum arborescens solani fol. baccis nigro-violaceis. Plum. ic. t. 156. f. 1. Tourn. inst. 598.

Leaves oblong-lanceolate acuminate, panicle trichotomous axillary, flowers five-stamened.

6. *Pavetta arenosa*.

Lour. cochinch. 73.

Branches brachiate, leaves tubercled opposite.

7. *Pavetta parasitica*.

Lour. cochinch. 73.

Stem parasitical, leaves in whorls, flowers in little axillary balls.

DESCRIPTIONS, &c.

1. Corymbs trichotomous, fastigiate, on a long filiform peduncle. Stigma oblong, bifid. Berry inferior, fleshy, subglobular or subturbinate, simple or twin, crowned with the minute whitish calyx, two-celled, by age becoming black: pulp thin, wholly fungose in the old fruit, adhering close to the seeds; of which there is one in each cell, subglobular, convex on one side, flattish on the other, with a longitudinal cleft, and within this having a very wide cavity, smooth, black: albumen cartilaginous.

Native of the East Indies.—Gærtner suspects that the natural number of flowers is two together, as in some species of *Lonicera*.

2. Branches opposite, four-cornered, jointed, densely villose, hoary; the last joints more compressed. Leaves on short petioles, opposite, two or three inches in length, acuminate, attenuated at the base, quite entire, the younger ones villose on both sides, hoary; the older almost smooth above, nerved, veinless. Stipule

oblong, blunt, almost the length of the petiole, opening on one side. Calyx hoary. Corolla smooth, four times as long as the calyx. Style thickened towards the top.

3. The stipulation; stigma and fruit are those of *Pavetta*. It may be doubted whether it is any thing more than a variety of the preceding. The branches and leaves are quite smooth; the calyx has a few small hairs scattered over it, not visible without a magnifier. Corolla an inch and half in diameter, in other respects like the former. It differs from the first species in having the stipules hairy on the inner side, the flowers twice as large, the calyxes four-cleft; not obscurely four-toothed.—These were both found in Arabia Felix by Förskahl*.

4. This is a smooth tree with round branches. Leaves opposite, petioled, veined. Head of flowers sessile, terminating the shorter branchlets. Receptacle hairy. Flowers superior. Calyx four-leaved; leaflets awl-shaped, spreading. Tube of the corolla scarcely longer than the calyx: border four-parted, regular; segments lanceolate. Berry two-seeded. Seeds oblong, convex on the outer, flat on the inner side. Flowers in the dried plant black.—Native of the Cape of Good Hope†.

5. This is a shrub, with a stem the height of a man, upright, branched, even. Branches stiff, round, smooth. Leaves petioled, opposite, acuminate, entire, nerved, smooth only a little wrinkled, thin. Petioles of a middling length, round, smooth. Stipules small, membranaceous, interpetiolar, two-toothed on each side. Corymb terminating, on a shorter common peduncle; the branches brachiate, trichotomous, spreading, round, smooth; pedicels one-flowered. Flowers white, very sweet-scented. Perianth with five awl-shaped teeth. Tube of the corolla near an inch long, seldom curved: throat naked. Filaments five, filiform, from the middle of the tube. Anthers linear, in the throat. Germ oblong. Style longer than the corolla. Stigmas two, pubescent. Seeds roundish-dicocous, the size of a pea, crowned, two-celled, black when ripe. Seeds solitary, hemispherical, flat within, grooved. It flowers in the spring; and is commonly called in Jamaica *Wild Coffee*. It is as it were a middle species between *Psychotria*, *Coffee*, and *Pavetta*, which are very nearly allied: but it seems to approach nearest to the last in its inflorescence, and the form of the flowers, although they have five stamens. *Sideroxylodes ferreum* of Jacquin, *amer.* 19. which is *Siderodendrum*, *Schreb. gen. n.* 169. is allied to this.—Native of the West Indies‡. See Mr. Miller's description in *Cestrum nervosum*.

6. This also is a shrub, unarmed, upright, four feet high, with many brachiate reclining branches. Leaves lanceolate, quite entire, shining, with many prominent tubercles on each side, which make them appear as if they had sand sprinkled on them; whence it is called in Chinese the *Sand plant*. Flowers white, terminating, fastigiate; with a berried five-toothed calyx. Corolla salver-shaped, with a long tube, and a five-cleft border. Filaments scarcely any. Anthers four, linear, standing out at the mouth of the tube. Berry small, ovate, inferior, containing one ovate-oblong seed.—Native of China, near Canton.

7. Stem perennial, woody, a foot high, very much branched. Leaves ovate, tomentose, quite entire. Flowers dusky-yellow, small, villose. Calyx oblong, four-cornered, truncated, villose; supported by an oblong reflex scale. Corolla salver-shaped, with a long tube, and a small four-cleft border; segments oblong, bent in. Filaments four, growing to the mouth of the tube, shorter than the border. Germ calycine, oblong. Style equal to the corolla. Berry small, ovate-oblong, with one ovate seed.—Frequent on trees in the gardens of CochinChina*.

To avoid confusion, Loureiro would place such of these plants as have a one-seeded berry in this genus; such as have a two-seeded berry in that of *Ixora*; and those which have a one-celled two-seeded berry in a new genus which he names *Polyozus*.

* Vahl. † Linn. suppl. ‡ Swartz. * Loureiro.

PAVETTA. See *Coffea* and *Ixora*.

PAVIA. See *Æsculus*.]

PAULLINIA. (So named by Linneus, from Simon Paullin, Professor of Botany at Copenhagen; author of *Botanicum quadripartitum*, 1640; and *Flora Danica*, 1648.)

Lin. gen. n. 497. *Reich. n.* 539. *Schreb. n.* 679.

Jacqu. amer. 110. *Gartn. t.* 79. *Juss.* 247.

Seriana. Plum. 35. *Cururu. Plum.* 35.

Class. 8. 3. *Octandria Trigynia*.

Nat. order of Tribilata. Sapindi, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, concave, spreading, permanent; the two outer opposite, one of the inner larger.

COR. Petals four, obovate, oblong, twice as large as the calyx, clawed: two more distant.

Nectaries two: one four-petalled inserted into the claws of the corolla; the other four glands at the base of the petals.

STAM. Filaments eight, simple, short, united at the base.

Anthers small.

PIST. Germ turbinate, three-sided, blunt. Styles three, filiform, short. Stigmas simple, spreading.

PER. Capsule large, three-sided, three-celled, three-valved.

SEEDS solitary, obovate.

Obs. *Seriana, Plum.* has a large, three-sided, three-celled, three-valved capsule. *Cururu, Plum.* has three capsules, joined in the middle but separable, bearing the seeds at top, winged below. *Sw.*

ESSENTIAL CHARACTER.

Cal. five-leaved. *Pet.* four. *Nect.* four-leaved unequal. *Caps.* three, compressed, membranaceous, connate.

SPECIES.

1. *Paullinia asiatica. Asiatic Paullinia.*

Lin. spec. 524. *Juss.* 379. *Reich. 2.* 216. *fl. zeyl.*

n. 143. *Jacqu. obs.* 3. 11. *t.* 62. *f.* 1. *Pluk.*

phyt. t. 95. *f.* 5.

Scopolia aculeata. Smith, ic. ined. 2. 34.

Crauzia aculeata. Diet. nostr.

Chamælaea trifolia aculeata. Burm. zeyl. 58. *t.* 24.

Kaka-toddali. Rheed. mal. 5. 81. *t.* 41.

Frutex baccifer indicus spinosus, &c. Raii hist. 1612.

Leaves ternate, petioles and stem prickly.

2. *Paullinia Seriana.*

Lin. spec. 524. *Juss.* 379. *Reich. 2.* 217. *hort. cliff.*

152. *Jacqu. obs.* 3. 11. *t.* 61. *f.* 2. *Gartn.*

fruct. 1. 381.

Seriana scandens triphylla & racemosa. Plum. gen. 34.

ic. 113. *f.* 2.

Leaves ternate, petioles naked, leaflets ovate-oblong.

3. *Paullinia nodosa.*

Lin. Juss. 379. *Reich. 2.* 217. *Jacqu. obs.* 3. 11.

t. 62. *f.* 3.

Leaves ternate, petioles naked, middle leaflet obovate.

4. *Paullinia Cururu.*

Lin. spec. 524. *Juss.* 380. *Reich. 2.* 217. *hort. cliff.*

151. *Jacqu. obs.* 3. 11. *t.* 61. *f.* 4.

Cururu scandens triphylla. Plum. gen. 34. *ic.* 111.

f. 2.

Leaves ternate, petioles margined.

5. *Paullinia mexicana. Mexican Paullinia.*

Lin. spec. 525. *Juss.* 380. *Reich. 2.* 217. *hort. cliff.*

152. *Jacqu. obs.* 3. 11. *t.* 61. *f.* 5.

Seriana scandens enneaphylla & racemosa. Plum. gen.

34. *ic.* 113. *f.* 1.

Quaulineati. Herm. mex. 289.

Leaves biternate, all the petioles margined, stem prickly.

6. *Paullinia carthaginensis. Carthaginian Paullinia.*

Lin. Juss. 380. *Reich. 2.* 218. *Jacqu. obs.* 3. 11.

t. 62. *f.* 6.

Leaves biternate, all the petioles margined, stem unarmed.

7. *Paullinia caribæa. Caribbean Paullinia.*

Lin. Juss. 380. *Reich. 2.* 218. *Jacqu. obs.* 3. 11.

t. 62. *f.* 7.

Leaves biternate, all the petiolets margined, branches prickly.

8. *Paullinia curassavica*. *Shining-leaved Paullinia*.
Lin. spec. 525. *fyst.* 380. *Reich.* 2. 218. *hort. cliff.*
 152. *Jacqu. obs.* 3. 12. t. 61. f. 8. *Brown.*
jam. 212. *Pluk. phyt. t.* 168. f. 6.
Cururu scandens enneaphylla, fructu racemoso rubro.
Plum. gen. 34. *ic.* 111. f. 1.
Leaves biternate, all the petiolets margined, branches
unarmed.
- [9. *Paullinia barbadensis*. *Barbadoes Paullinia*.
Lin. fyst. 380. *Reich.* 2. 218. *Jacqu. obs.* 2. 12.
 t. 62. f. 9.
Leaves biternate, middle petiole margined, the rest naked.
10. *Paullinia divaricata*.
Swartz prodr. 64.
Leaves biternate, leaflets ovate acute mostly entire, pe-
tioles naked, panicles divaricating, wings of the cap-
sules ovate.
11. *Paullinia polyphylla*. *Parsley-leaved Paullinia* or
Supple Jack.
Lin. spec. 525. *fyst.* 380. *Reich.* 2. 218. *hort. cliff.*
 152. *Jacqu. obs.* 3. 12. t. 61. f. 10. *Fabric.*
helmst. 235. *Pluk. phyt. t.* 168. f. 5.
Seriana frutescens polyphylla & racemosa. Plum. gen.
 34. *ic.* 112.
Leaves triternate, petiolets naked.
12. *Paullinia triternata*.
Lin. fyst. 380. *Reich.* 2. 219. *Jacqu. obs.* 3. 12.
 t. 62. f. 11. *amer.* 110. t. 180. f. 32. *piet.* 56.
 t. 260. f. 29.
Leaves triternate, petiolets margined.
13. *Paullinia japonica*. *Japonesse Paullinia*.
Lin. fyst. 380. *Thunb. jap.* 170.
Leaves quinate-pinnate petioletted margined, stem her-
baceous unarmed.
14. *Paullinia Vespertilio*.
Swartz prodr. 64.
Leaves pinnate, leaflets ovate acuminate gashed, petioles
naked, capsules pedicelled, with horizontal lanceolate
wings.]
15. *Paullinia pinnata*. *Winged-leaved Paullinia*.
Lin. spec. 525. *fyst.* 380. *Reich.* 2. 219. *hort. cliff.*
 152. *Jacqu. obs.* 3. 12. t. 62. f. 12. *Gartn.*
fruct. 1. 382. *Schilling de lepr. t.* 1.
Cururu scandens pentaphylla. Plum. gen. 34.
Clematis pentaphylla, pediculis alatis, fructu racemoso
tricocco & coccineo. Plum. amer. 76. t. 91.
Cururu-ape. Marcgr. bras. 22. *Pis. bras.* 114. *Raii*
hist. 1347.
Leaves pinnate, petioles margined, leaves shining.
16. *Paullinia tomentosa*. *Downy-leaved Paullinia*.
Lin. fyst. 380. *Reich.* 2. 219. *Jacqu. obs.* 1. 19.
 t. 10. *obs.* 3. t. 61. f. 13. *amer.* 37.
Leaves pinnate, petioles margined, leaflets tomentose.
- [17. *Paullinia diversifolia*. *Different-leaved Paullinia*.
Lin. fyst. 380. *Reich.* 2. 219. *Jacqu. obs.* 3. 12.
 t. 62. f. 14.
Leaves superdecompound, petioles margined, the lowest
pinnate, the rest ternate.

DESCRIPTIONS, &c.

These are climbing shrubs, throwing out long shoots annually like the Vine. Leaves ternate (1 to 4), biternate (5 to 10), triternate (11, 12), unequally pinnate (13 to 16), or superdecompound (17). Peduncles solitary, axillary, having two tendrils in the middle, and beyond many-flowered in racemes^v. The chief of what we know on this genus is derived from Jacquin and Plumier.

1. Stem round, covered with prickles. Leaves alternate, on a long stout petiole, on which also is sometimes a prickle; leaflets oval-lanceolate, entire, smooth, bright green above, paler and almost ash-coloured underneath. Peduncles very long and stout, prickly. Fruit commonly tricoccus, but sometimes quadricoccus and even pentacoccus, saffron-coloured with black spots, of an acrid taste with some sweetness. Seed kidney-form, gray or ash-coloured². Flowers white, smelling strongly³.

Native of the East Indies.—See CRANZIA and SCOPOLIA.

^v Jussieu.

² Burm.

³ Hort. malab.

2. The leaflets are often on short petioles and not so much sinuated as in Plumier's figure. The common petiole is sometimes three inches long^b.

Capsule ovate, three-winged: valves navicular, coriaceous, striate-veined, somewhat tawny; partitions growing to the axis and corresponding with the futures of the valves. Seeds three-cornered-globular, smooth, shining, black; with a fungose umbilical scar, cordate two-lobed, closely adnate, white, clothed at the base. The receptacle is a white fungose tubercle, growing to the axis of the fruit, a little above the base of each cell^c.—Native of South America.

3, 4. Natives of South America.

5. Native of Mexico.

6. This has the leaves more cut than the other species; and they are very thin, whereas in the rest they are more or less coriaceous and thick. It is entirely void of prickles^d.

Found by Plumier; and afterwards by Jacquin about Carthage in New Spain, in coppices.

7. The branches and common petioles are armed with numerous recurved prickles. Leaflets subovate with very few incisures.—Native of the Caribees^e.

8. Jacquin remarks that in Plumier's figure the petioles appear to be naked, they are all, however, except the common one margined, or winged at the edge, but so slightly, that it can hardly be expressed in a figure.—Native of Curassao.

According to Swartz, this is the *Paulinia* or *Souple Jack* of Browne, which he says is very common in the woods of Jamaica, with its slender, woody, flexile stalk, raising itself frequently to a very considerable height among the bushes: it is so tough and yielding, that it is commonly cut into junks, barked and used for riding and walking sticks. See *Paullinia polyphylla*. It was cultivated in 1739, by Mr. Miller^f.

9. This differs from the preceding principally in the form of the leaves, and in the slighter and less frequent incision of them^g.—Native of the West Indies. Introduced in 1786, by Mr. Alexander Anderson^h.

10. Native of Jamaicaⁱ.

11. Native of the West Indies. Cultivated in 1739 by Mr. Miller^k: but not mentioned in the Dictionary.

According to the Kew catalogue, this is the *Supple-Jack*: and if Browne, by *foliis ternato-ternatis* means triternate leaves, his *Paulinia* is this species, and not *curassavica*, the leaves of which are biternate. His synonyms are confused.

12. This climbs trees to the height of twenty feet. Branches round, smooth, grooved, long, flexible. Leaves shining, alternate, numerous: ribs naked, channelled; leaflets acute, sessile, unequally serrate-toothed above the middle; the lateral ones roundish, the outmost double the size, very much attenuated at the base; the proper petioles of each ternate leaf winged. Racemes axillary, four inches long, having about fifty flowers in them, naked for about two inches, and then divided into three parts, and putting out two tendrils, two inches long, smooth and flat. Common peduncles two lines long and alternate, putting forth small flowers on very short peduncles, usually four in number. Calyx dirty white; corolla white; leaves of the first nectary white with yellow tips, at first sight resembling stamens.—Native of the island of St. Domingo, in woods^l.

13. Stem herbaceous, angular, climbing, smooth, scarcely the thickness of a straw. Leaves alternate, smooth: lower leaflets ovate, subsessile, bifid or trifid, the incisures entire, an inch long; middle leaflets ternate with a margined petiolet, lateral pinnae ovate, entire or cut, the middle one trifid; end leaflet pinnate, with a jointed, margined petiolet; pinnae two-paired, oblong, gash-trifid or quinquefid, the last trifid and larger. Petioles like the stem, two inches long. Flowers opposite to the leaves, paniced. Peduncles the

^b Jacquin.

^c Gartner.

^d Jacquin.

^e Idem.

^f Hort. kew.

^g Jacquin.

^h Hort. kew. 3, 491.

ⁱ Swartz.

^k Hort. kew.

^l Jacquin. amer.

length

length of the leaves; pedicels very short.—Native of Japan^a.

14. Native of the West Indies^b.

15. Leaflets oblong-ovate, deeply and remotely serrate^c. Capsule obovate, coriaceous and almost woody, very finely striated, of a dusky ferruginous colour: partitions membranaceous, very thin, growing to the axis; corresponding, not with the futures, but with the middle of the valves. Receptacle fungose, above the base of the axis, as in *P. Seriana*. Seed ovate-oblong, smooth, shining, black. Umbilical scar fungose, white, very closely adnate, two-lobed, covering both sides of the seed beyond the middle^d.—Native of Brasil, Jamaica and Domingo, in dry sandy places.

The insertion of the seeds is the same in *Cururu* as in *Seriana*; but there is a remarkable difference between them in the situation of the partitions^e.

16. Common petioles margined, but not between the lower leaflets^f. Calyxes tomentose, glaucous-brown, permanent.—Native of South America.

17. Native of South America^g.]

PROPAGATION AND CULTURE.

Procure the seeds from the countries where they naturally grow. As soon as they arrive sow them in small pots filled with light earth, and plunge them into a moderate tan-bed. If the seeds arrive in autumn, plunge the pots in the bark-bed in the stove, and probably the plants may come up the following spring: but if they arrive in spring, plunge the pots into a moderate hot-bed under a frame, where they may be continued all the summer; in autumn remove them into the stove for the winter, watering them now and then sparingly. The following spring plunge the pots into a new hot-bed under a frame, which will bring up the plants in about six weeks, if the seeds are good. When the plants are fit to remove, plant each in a small pot filled with light earth, and plunge them into a hot-bed of tanner's bark, observing to shade them till they have taken new root; after which they should have free air admitted to them daily, in proportion to the warmth of the season. In the autumn they must be removed into the bark-stove, where they must constantly remain. As they require much room, and their flowers have little beauty, they are seldom propagated in Europe.

[PAULLINIA. See *Gouania*.

PAUL'S BETONY. See *Veronica*.

PAVONIA. See *Hibiscus*.

PEA. See *Pisum*.

— Everlasting. See *Lathyrus*.

— Heart. See *Cardiospermum*.

— Pigeon. See *Cytisus*.

— Sweet. See *Lathyrus*.

— Wing. See *Lotus*.]

PEACH TREE. See *Amygdalus*.

[PEARL-WORT. See *Sagina*.]

PEAR TREE. See *Pyrus*.

[PECTEN VENERIS. See *Scandix*.

PECTIS. (Πέξος, pexus, comptus, tonsus; from πέξω, *texo* or *πέχω*, *pecto*, *carpo*.)

Lin. gen. n. 963. *Reich. n.* 1047. *Schreb. n.* 1306.

Gartn. t. 171. *Juss.* 182.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of Compositæ Oppositifoliæ. Corymbifera, *Juss.*

GENERIC CHARACTER.

CAL. Common five-leaved, cylindric: leaflets lanceolate, blunt, almost equal.

COR. Compound rayed. Corollets hermaphrodite, about six, (about four, G.) in the disk. Females five in the ray: (about six, G.)

Proper of the Hermaphrodite funnel-form, five-cleft: of the Female, ligulate ovate, (quite entire, G.) shorter than the calyx.

STAM. in the Hermaphrodites: Filaments five, short. Anther cylindric tubular.

PIST. in the Hermaphrodites: Germ linear. Style filiform. Stigma bifid:—in the Females: Germ linear. Style filiform. Stigmas two, revolute.

PER. none. Calyx unchanged, spreading,

^a Thunberg. ^b Swartz. ^c Linn. ^d Gartner.

^e Idem. ^f Linn. ^g Jacq. obs.

SEEDS, in the Hermaphrodites solitary, linear. Down with two or three spreading awns: in the Females very like the other.

REC. naked.

ESSENTIAL CHARACTER.

Cal. five-leaved, cylindric. Florets in the ray five. Down awned. Recept. naked.

SPECIES.

1. *Pectis ciliaris*.

Lin. spec. 1250. *Juss.* 771. *Reich.* 3. 843. *amoen.* 5. 407. *Swartz obs.* 307.

Jacobæa foliis falcis ad margines villosis. Plum. spec. 10. *ic.* 151. *f.* 2.

Leaves linear ciliate.

2. *Pectis punctata*.

Lin. spec. 1250. *Juss.* 771. *Reich.* 3. 843. *Swartz obs.* 308. *Jacqu. amer.* 216. *t.* 128. *pl. 106.* *t.* 196.

Chondrilla foliis angustis & ad oras punctatis. Plum. spec. 10. *ic.* 86. *f.* 1.

Leaves linear quite entire dotted underneath.

3. *Pectis linifolia*.

Lin. spec. 1250. *Juss.* 771. *Reich.* 3. 843. *amoen.* 5. 407. *Gartn. fruct.* 2. 455.

Tagetes minor, caule subdiviso diffuso, foliis linearibus integris. Brown. jam. 319.

Hieracium fruticosum, &c. Sloan. jam. 1. 255. *t.* 149. *f.* 3.

Rapunculus jamaicensis, folio tenuissimo. Petiv.

Leaves linear quite entire even on both sides.

4. *Pectis humifusa*.

Swartz prodr. 114.

Jacobæa humifusa hyperici folio. Plum. cat. 10. *ic.* 84. *t.* 95. *f.* 2.

Leaves ovate dotted underneath, ciliate on both sides at the base, stems procumbent.

DESCRIPTIONS, &c.

These are annual plants, natives of the West Indies. Leaves opposite entire, often linear and dotted.

1. Root branched, with filiform radicles. Stem herbaceous, half a foot high, branched, dichotomous, diffused, round, smooth. Branchlets scattered, diffused, round, spreading, red. Leaves sessile, half embracing at the base, linear, acuminate; tooth-ciliate at the base, perforated at the edge, membranaceous-ferrate when examined with a glass, nerveless, smooth. Pores pellucid. Peduncles terminating, or in the division of the branchlets, erect, solitary, filiform, one-flowered. Flowers small, yellow. Common calyx five-grooved, five-cornered, five-toothed: leaflets erect, concave, acute, converging. In the disk five-toothed corollets: those of the ray lanceolate, acute, spreading. Seeds striated, black; those of the disk with five, those of the ray with two bristles. Down none, but a membranaceous jagged rim. The leaves, when bruised, have a sweet smell, like Savoury.—Native of Hispaniola: flowering there in June.

2. Stem herbaceous, a foot high and more, angular, branched, smooth. Branches opposite, erect, axillary. Leaves erect, acute, long, almost entire, somewhat convex at the edge, having a few red ciliary hairs at the base; dotted with pellucid pores. Peduncles terminating, erect, solitary, one-flowered. Common calyx four-leaved or five-leaved: leaflets converging, linear, erect. Corollets of the disk four or five, with a four or five-cleft border. Style bifid at top. Stigmas blunt. Corollets in the ray four or five, three-toothed at top: style bifid to the middle. Stigmas reflex. Seeds linear, striated; with a three-bristled subulate down.—Native of Hispaniola, on sandy coasts^h.

Jacquin describes it as a tender upright plant, from two to three feet in height, with smooth striated dichotomous branches. Leaves attenuated to both ends, acuminate, quite entire, smooth above, dotted at the back, subsessile, an inch and half long. Peduncles almost the length of the leaves, at the divisions of the stalks, and sometimes axillary. Flowers small, dirty yellow, inodorous.—Every where about Carthage in

^h Swartz.

New Spain, on the borders of woods; flowering in september and october.

3. Common calyx of five, six or seven narrow equal scales, joined together into a cylindric tube, containing so many female ligulate florets, disposed very orderly round the margin; and a few hermaphrodites in the centre. The plant is spreading and slender, and seldom rises above eighteen or twenty inches in height. Receptacle narrow, hollow-dotted. Seeds uniform, a little thicker upwards, compressed, smooth, blackish. Down awned, with smooth, bristly rays, in the seeds of the disk two; in those of the ray three, spreading, subfrutescent, shorter by a third part than the seed*.— Native of the West Indies, common in all the sugar islands.

4. Native of Guadaloupe and Santa Cruz^y.

PECTIS. See *Bellium*.

PEDALIUM. (Παδάλιον, gubernaculum, clavis navis; the rudder of a ship.)

Lin. gen. n. 794. Reich. n. 858. Schreb. n. 1067.

Dav. v. Royen. Rottb. in coll. hafn. 2. 255.

Gertn. t. 58. Juss. 140.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Luridæ*. *Bignoniæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, small, permanent: the upper segment very short; the lowest longer.

COR. one-petalled, subringent: tube three-cornered, with the belly flat: border five-cleft, wide, oblique: segments rounded; upper ones smaller, lowest wider.

STAM. Filaments four, glandular-hairy at the base, shorter than the tube: two shorter than the other two. Anthers cordate, twin, terminated by a gland. Rudiment of a fifth filament between the shorter stamens, with a very small anther. Rottb.

PIST. Germ conical. Style the length of the stamens. Stigma bifid: the upper segment reflex, the lower revolute. Rottb.

PER. Drupe juiceless, ovate-pyramidal, four-cornered, the corners thorny towards the base.

SEED. Nut covered with bony fibres variously interwoven, four-winged, two-celled. Nucleuses two, oblong, covered with an aril; one lower. There is a void cell, below the fertile ones. G.

ESSENTIAL CHARACTER.

Cal. five-parted. Cor. subringent, with a five-cleft border. Nut suberous, four-cornered, thorny at the corners, two-celled. Seeds two.

SPECIES.

1. *Pedaliium Murex*. Prickly-fruited *Pedaliium*.

Lin. spec. 892. Juss. 580. Reich. 3. 203. Gertn. fruct. 1. 276.

Murex. Lin. zeyl. n. 440. Burm. ind. 139. t. 45. f. 2.

Hyoscyamus maritimus, fructu tribuli aculeato monospermus f. dispermos. Herm. zeyl. 42.

Kaku-taly. Rheed. mal. 10. t. 72.

Kaku-mullu. Rheed. mal. 10. 143. sec. Burm.

DESCRIPTION, &c.

Stem simple. Leaves opposite, obovate, blunt, toothed, truncated, naked, with the petioles glandular on each side. Flowers axillary, solitary, small. Fruit nodding^z. According to Jussieu, it is a trichotomous herb, with opposite leaves. (Burman describes them as alternate, but perhaps his is a different species.) Flowers axillary, subsolitary. It has nearly the same fruit with *Trapa*; and the habit of *Martynia*. Of the same genus with this, or of a genus nearly allied to it is *Plania Euphrasie affinis*. Pluk. t. 373. f. 2. referred by Linneus to *Torenia*. Leaves alternate; fruit four-cornered, not thorny^a. Thus more fully described by Gærtner—Drupe armed at the base of the angles with four spines, spreading out horizontally and pungent; produced at bottom into an inversely conical peduncle, and lodged in the calyx, which is permanent, of a dusky ruflet colour. Rind suberous-fungous, thin: shell bony, four-winged, three-celled; the two upper cells fertile, the lower one barren, spurious. Seeds in each cell two, ovate-oblong, attenuated upwards,

^a Browne.

^x Gærtner.

^y Swartz.

^z Linn. spec.

^a Gen.

smooth, compressed a little, brown, covered with a dry-membraneous two-valved aril: valves unequal, incumbent, and covering the side of the seed outwardly, but opening on the belly with a cleft. They are fastened on each side to the partition, and hang down.

This plant, whilst it is in flower, smells very strong of Musk^b.

Native of the East Indies. Introduced in 1778, by Sir Joseph Banks, Bart. It flowers in august and september; and is an annual plant^c.]

PEDICULARIS. (From its supposed quality of making sheep that feed on it lousy.)

Lin. gen. n. 746. Reich. n. 804. Schreb. n. 1003.

Tournef. t. 77. Juss. 101. Gertn. t. 53.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*. *Pediculares*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, roundish, ventricose; with a five-cleft equal mouth; permanent.

COR. one-petalled, ringent: tube oblong, gibbous: upper lip galeate, erect, compressed, emarginate, narrower: lower spreading, flat, half-three-cleft, blunt: middle segment narrower.

STAM. Filaments four, the length of the upper lip, under which they lie concealed: two shorter. Anthers incumbent, roundish, compressed.

PIST. Germ roundish. Style filiform, in the same situation with the stamens, but longer. Stigma blunt, bent in.

PER. Capsule roundish, mucronate, oblique, two-celled, opening at top: partition contrary.

SEEDS several, ovate, angular. Receptacle subglobular, in the base of the capsule.

Obs. Capsule oblique at top in most species. Sceptum Carolinum Rudb. has a regular capsule, and a closed mouth.

There are species that have the mouth of the calyx bifid.

ESSENTIAL CHARACTER.

Cal. five-cleft. Caps. two-celled, mucronate, oblique. Seeds coated.

SPECIES.

1. *Pedicularis palustris*. Marsh Louse-wort or Red Rattle.

Lin. spec. 845. Juss. 551. Reich. 3. 115. fl. succ. n. 551. mat. med. 155. Hudf. angl. 270. Wither. arr. ed. 3. 548. Engl. bot. 399. Lightf. scot. 326. Relb. cant. n. 459. Sibth. oxon. n. 548. Hall. belv. n. 320. Pollich pal. n. 587. Gunn. norv. n. 87. Scop. carn. n. 762. Neck. gallob. 265. Rivin. mon. t. 92. f. 1. Villars dauph. 2. 421. Krock. files. n. 978.

P. palustris rubra elatior. Raii hist. 770. syn. *284. Petiv. brit. t. 36. f. 3.

Pedicularis. Ger. 913.

Stem branched, calyxes crested callous-dotted, lip of the corollas oblique.

2. *Pedicularis sylvatica*. Common or heath Louse-wort or Red Rattle.

Lin. spec. 845. Juss. 551. Reich. 3. 115. fl. lapp. n. 241. succ. n. 552. hort. cliff. 326. Hudf. angl. 271. Wither. arr. ed. 3. 548. Engl. bot. 400. Lightf. scot. 327. Relb. cant. n. 460. Sibth. oxon. n. 549. Hall. belv. n. 321. Neck. gallob. 266. Pollich pal. n. 588. Fl. dan. t. 225. Villars dauph. 2. 422. Krock. files. n. 979.

P. pratensis purpurea. Baub. pin. 163.

P. quibusdam Crista galli flore rubro. Baub. hist. 3. 476.

P. prat. rubra vulgaris. Park. theat. 713. 1. Raii hist. 700. syn. *284. Petiv. brit. t. 36. f. 4.

Pedicularis. Ger. emac. 1071. 2.

P. minor. Rivin. mon. t. 92. 2. Dill. giff. app. 40.

Fistularia. Dod. pempt. 556.

Alectorolophus. Clus. hist. 2. 211. 1.

Stem branched, calyxes oblong angular even, lip of the corollas cordate.

3. *Pedicularis rostrata*. Beaked Lousewort.

Lin. spec. 845. Juss. 551. Reich. 3. 116. mant. 415. Hall. belv. n. 322. t. 8. f. 1. Scop. carn. n. 764.

^b Rotboell.

^c Hort. kew.

- Kram. austr.* 183. n. 3. *Jacqu. austr.* 3. t. 205.
Villars dauph. 2. 426. *Allion. pedem.* n. 223.
Krock. files. n. 980.
P. caulibus reflexis, spica laxa purpurea. Segu. ver.
3. 125.
P. alpina, filicis folio, minor. Baub. pin. 163.
Alectorolophus alpina 3. minor. *Clus. hist.* 2. 210.
Stem declining somewhat branched, helmet of the corollas
acuminate-beaked, calyxes crested subhirsute.
4. *Pedicularis Sceptum Carolinum. Sceptred Louse-wort.*
Lin. spec. 845. *syft.* 551. *Reich.* 3. 116. *fl. suec.*
n. 553. *mant.* 415. *Gunn. norv. n.* 33. *Fl. dan.*
t. 26. *Gmel. fib.* 3. 206. n. 17. *Kniph. cent.* 9.
n. 75.
Sceptum Carolinum. Rudb. it. i. t. i. Linn. lapp.
n. 243. t. 4. f. 4, 5. *hort. cliff.* 326.
Alectorolophus lapponica lutea, digitalis flore. Petiv.
hort. n. 52. in *Raii hist.* 3. app. 241.
Stem simple, flowers by threes in whorls, corollas closed,
calyxes crested, capsules regular.
5. *Pedicularis verticillata. Whorled Louse-wort.*
Lin. spec. 846. *syft.* 551. *Reich.* 3. 115. *mant.* 415.
Gärtn. fruct. 1. 247. *Hall. belv. n.* 318. t. 9.
f. 1. *Scop. carn. n.* 766. *Kram. austr.* 183.
n. 4. *Crantz. austr.* 312. *Jacqu. austr.* 3. t. 206.
Gmel. fib. 3. 206. n. 18. *Villars dauph.* 2. 422.
Krock. files. n. 981.
Stem simple, leaves in fours.
6. *Pedicularis refupinata. Topsy-turvey Louse-wort.*
Lin. spec. 846. *syft.* 551. *Reich.* 3. 117. *Gmel.*
fib. 3. 204. t. 44.
Stem simple, leaves lanceolate ferrate crenulate, flowers
refupine.
7. *Pedicularis recutita. Jagged-leaved Louse-wort.*
Lin. spec. 846. *syft.* 551. *Reich.* 3. 117. *mant.* 415.
Hall. belv. n. 316. t. 8. f. 2. *Jacqu. austr.* 3.
t. 258. *Krock. files.* n. 985.
P. obsoleta. Crantz. austr. 316.
Stem simple, leaves pinnatifid ferrate, spike leafy, calyxes
coloured, corollas blunt.
8. *Pedicularis tristis. Dull-coloured Louse-wort.*
Lin. spec. 846. *syft.* 552. *Reich.* 3. 117. *mant.* 415.
Gmel. fib. 3. 212. n. 23.
Stem simple, helmet of the corollas villose at the edge.
9. *Pedicularis flammea. Upright Louse-wort.*
Lin. spec. 846. *syft.* 552. *Reich.* 3. 118. *fl. lapp.*
n. 244. t. 4. f. 2. *suec. n.* 556. *mant.* 415. *Hall.*
belv. n. 315. t. 8. f. 3. *Gmel. fib.* 3. 212. *Krock.*
files. n. 983.
P. alpina folio Ceterach. Baub. pin. 163. *Tournef.*
inst. 173. *Scheuch. it.* 5. 426.
Filipendula montana altera. Raii hist. 771.
Stem simple, leaves pinnate imbricate backwards.
10. *Pedicularis hirsuta. Hairy Louse-wort.*
Lin. spec. 847. *syft.* 552. *Reich.* 3. 118. *mant.* 415.
fl. lapp. n. 245. t. 4. f. 3. *suec. n.* 555. *Pallas*
it. 3. 34. *Villars dauph.* 2. 423. *Allion. pedem.*
n. 227. t. 12. f. 1?
Stem simple, leaves tooth-pinnate linear, calyxes hirsute.
11. *Pedicularis rosea. Rose-coloured Louse-wort.*
Lin. syft. 552. *Jacqu. misc.* 2. 57. *icon. rar.* t. 40.
Allion. pedem. n. 227. t. 12. f. 1. *sec. Jacqu.*
Stem simple, leaves pinnate, pinnae oblong pinnatifid, ca-
lyxes hirsute.
12. *Pedicularis incarnata. Flesh-coloured Louse-wort.*
Lin. spec. 847. *syft.* 552. *Reich.* 3. 118. *Hall. belv.*
n. 319. *Jacqu. austr.* 2. t. 140. *Pallas it.* 2.
404. *Allion. pedem. n.* 228. t. 3. f. 2. & t. 4. f. 2.
Villars dauph. 2. 424. *Krock. files.* n. 984.
Stem simple, leaves pinnate serrate, calyxes rounded smooth,
helmet of the corollas hooked acute.
13. *Pedicularis lapponica. Lapland Louse-wort.*
Lin. spec. 847. *syft.* 112. *Reich.* 3. 119. *fl. lapp.*
n. 242. t. 4. f. 1. *suec. n.* 554. *hort. cliff.* 326.
mant. 415. *Fl. dan. t.* 2. *Pallas it.* 3. 34.
Stem simple, leaves pinnatifid ferrate, calyxes bifid blunt.
14. *Pedicularis comosa. Spiked Louse-wort.*
Lin. spec. 847. *syft.* 552. *Reich.* 3. 119. *mant.* 415.
Gouan illustr. 37. *Pallas it.* 1. 148. *Allion. pedem.*
n. 229. t. 4. f. 1. *Villars dauph.* 2. 431.
Stem simple, spike leafy, helmet of the corollas acute emar-
ginate, calyxes five-toothed.
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15. *Pedicularis foliosa. Leafy-spiked Louse-wort.*
Lin. syft. 552. *Reich.* 3. 119. *mant.* 86. *Hall.*
belv. n. 317. t. 9. f. 2. *Gouan illustr.* 37. *Jacqu.*
vind. 250. *austr.* 2. t. 139. *Villars dauph.* 2.
433.
P. comosa. Scop. carn. n. 765.
P. alpina, filicis folio major. Baub. pin. 163.
P. major alpina. Dalech. hist. 1138.
P. alp. flore luteo radice nigra. Baub. hist. 3. 439.
Crista galli montana, floribus pallidis in spicam con-
gestis. Raii hist. 770. — & *P. major. Dalech.*
Baub. hist. 3. 438. *ejusdem.*
Stem simple, spike leafy, helmet of the corollas very blunt
entire, calyxes five-toothed.
16. *Pedicularis canadensis. Canadian Louse-wort.*
Lyn. syft. 552. *Reich.* 3. 120. *mant.* 86.
Stem simple, spike somewhat leafy, helmet of the corollas
bristly-two-toothed, calyxes truncated downwards.
17. *Pedicularis tuberosa. Tuberous Louse-wort.*
Lin. spec. 847. *syft.* 552. *Reich.* 3. 120. *mant.* 415.
Hall. belv. n. 323. t. 10. *Scop. carn. n.* 763.
Gmel. fib. 3. 208. *Villars dauph.* 2. 430. *Krock.*
files. n. 286.
Pedicularis alpina lutea. C. B. Segu. ver. 3. 126.
Filipendula montana flore pediculariæ. Baub. pin.
163.
Alectorolophus montana flore luteo. Barr. ic. 466.
Bocc. mus. 315. t. 8.
Stem simple, calyxes crested, helmet of the corollas hooked-
beaked.
18. *Pedicularis gyroflexa.*
Villars dauph. 2. 426. t. 9. *Hall. belv. n.* 324.
t. 11.
P. tuberosa. Linn. Allion. pedem. n. 231. *Scop. carn.*
n. 763.
Leaves bipinnate, leaflets somewhat toothed curled and
blunt, flowers turned to the left hooked-beaked.
19. *Pedicularis groenlandica.*
Retz. prodr. scand. ed. 2. 145. *obs.* 4. 27. n. 87. t. 1.
Fl. dan. t. 1166.
Stem simple, leaves pinnate serrate, calyxes oblong, smooth,
helmet of the corollas awl-shaped bowed longer.

DESCRIPTIONS, &c.

The alpine species of *Pedicularis*, that is, all, except the two first and the sixteenth, have successively occupied several of the first botanists in the present age: Linneus in Lapland, Haller in Switzerland, Gmelin in Siberia, Seguiet and Allioni in Italy, and Villars in Dauphiné. Linneus has described six natives of Lapland; Haller ten of Switzerland, but he said that he had thirty species from different countries; Gmelin twelve; Allioni eleven; and Villars ten, besides several remarkable varieties. These plants have their leaves very much cut, and that in a very regular manner. Their flowers are red, white or yellow, and the mixture or shades of these three colours sometimes give the corolla the colour of fire. They grow in general at a considerable elevation, namely, more than a thousand toises above the level of the sea. Villars has taken much pains with these plants, and has corrected some mistakes into which Haller and Linneus have fallen. He observes with great modesty, that if the cedars have bent, what are we to expect of the reeds? And that he could not pass by a favourable opportunity of celebrating their memories, by showing that their mistakes were almost unavoidable, and have even been useful to us. May I not, says he, in paying homage to truth and the memory of the two first botanists of our time, hope for much indulgence from those learned men who have it in their power to correct my errors, and to complete the work which I have only begun?—Tragus affirms, and others take it from him, that these plants in pastures breed lice in animals that feed on them. The truth seems to be, that the Marsh Lousewort indicates a very bad pasture; and the want of proper food may occasion the cattle to be in bad condition, and to breed vermin^d.

^d Villars dauph.

1. Root annual. Stem about a foot high, upright, angular, purplish, hollow, branched. Branches spreading. Leaves bipinnatifid; or pinnate with about ten pairs of long pinnae, which are semipinnate with short indented pinnules: Leaves and flowers distant. Flowers axillary, solitary, on short peduncles, forming a loose spike. Calyx two-lipped, compressed and opening sideways, reddish, a little hairy, bulging at the base; segments cloven and jagged, two of them crested or bordered with leafy appendages. Corolla purple, varying to white: helmet with a little tooth on each side, not notched at the end; lower lip fringed with fine soft hairs^c. Capsule oblong, smooth, acuminate, involved in the calyx. Seeds numerous in each cell, ovate, bluntish, somewhat rugged, grooved^f.

Native of many parts of Europe, particularly the northern parts, in marshes and wet meadows; flowering in June and July.—It is an unwelcome guest in meadows, being disagreeable to cattle, and thought by some to be destructive to sheep: it is somewhat caustic, and seems to be seldom eaten.

2. Root annual. Stem very short. Branches from the root, long, spreading close to the ground. Leaves simply pinnate, with roundish acutely serrate pinnae. Floral leaves deeply divided: segments toothed. Leaves and flowers crowded. Flowers in a cluster at the top of the plant, and sparingly on the branches. Calyx green within, purplish without, nearly half as long as the corolla, one of the clefts much deeper; segments toothed, that opposite to the deepest cleft narrowest. Corolla purple, much more slender than the calyx: tube compressed: upper lip with a little tooth on each side; lower lip with three divisions, the middle segment a little smaller. The two taller filaments hairy towards the top^g.—Native of many parts of Europe and Siberia, in wet pastures and heaths, also in woods; flowering in June.

The expressed juice, or a decoction of this plant, has been used with advantage as an injection for sinuous ulcers. It is said that if the healthiest flock of sheep were to be fed with it, they would become scabby and scurfy in a short time, the wool would get loose, and they would be overrun with vermin^h. This also applies to the first sort; but I doubt whether it be true of either. See what was said above.

The calyx is commonly said to be five-cleft, with one segment very small and often simple; the other four crested. To Villars it appeared to be four-cleft, like that of the preceding, from which it is distinguished by being a much smaller plant, frequently only two or three inches in height, whereas the other is sometimes eighteen inches, and in warm climates two and even three feet high: procumbent; and the flowers longer.

3. Root black, thick, having large fibres swelling out a little in the middle. Stem inclined, five or six inches high, having sometimes a lateral branch from the lower part, with one or two flowers on it; and also, but very seldom, another shorter near the base of the spike; which is rounded, and has few flowers, of a purple or deep red colour. Leaves pinnate, and their divisions toothed. Calyx a little villose: segments toothed. Upper lip of the corolla compressed and beakedⁱ.

Villars remarks, that this species not being always branched, to distinguish it from his *gyroflexa*, we must observe that the flowers of this are peduncled, in very small number, of a deep red, with the upper lip very much lengthened out and curved; the stem also is thinner.—Allioni informs us, that he has seen the flowers change like Linneus's *Peloria*.

Native of Switzerland, Austria, Carniola, Dauphiné, Piedmont, Silesia.

4. This is distinguished from the other species by the gape of the corolla being closed, the pericarp roundish, acuminate but regular, whereas in the others it is bent in with an oblique point; the size is half that of a man; the flowers four, five or sometimes three only at each joint, remote, in whorls, the corolla of a golden yellow colour, except that the lower lip is

tinged with purple or blood red at top. Rudbeck named it *Sceptrum Carolinum* in honour of Charles XII. King of Sweden, from its manner of growth like a sceptre.—Discovered by Rudbeck in Lapland, where it was also found by Linneus, in such abundance in one place on the highway as to stop a horse going full speed. It grows also in Dalekarlia, Ostrobothnia between Kemi and Uloa, near Upsala, in Westrogothia, but more rarely^k: Norway, in several places: Prussia and Russia: in bogs, wet woods, &c.

5. Root more simple or less branched than in the other sorts. Stems several, simple, with smooth, bipinnate leaves on them, opposite by threes or fours. Flowers red: the upper lip remote, oblong, almost straight, blunt; the lower divided into three parts. Calyx rayed, often white, membranaceous, a little coloured and puffed out after flowering. It is very small, and has beautiful red flowers. It seems to be biennial^l. Capsule oblong, with an attenuated beak, compressed a little, membranaceous, thin, opening longitudinally by the upper edge, which is a little more convex: partition very narrow, contrary to the valves. Receptacle small, subglobular, fastened to the partition near the base. Seeds few, about ten in each cell, ovate, angular, acuminate at both ends, with a membranaceous, narrow whitish scar on one side, striated in little dots, dusky: navel beaked, curved inwards, formed of the integument, not callous^m. Gartner says he does not understand what Linneus means by *semina tunicata*.

Native of Switzerland, Austria, Carniola, the South of France, Silesia, Siberia.

6. Stem a foot high, even, quite simple. Leaves undivided, deeply serrate with crenulate serratures, alternate. Flowers from the upper axils solitary, sessile. Calyx even, blunt, bifid, entire. Corolla of a very deep purple, turned upside down: helmet hooked, compressed: standard wide, rounded. It varies with flesh-coloured and with milk-white flowers.—Native of Siberiaⁿ.

7. Root perennial, woody. Stem upright, even, not more than a foot high, with few, alternate leaves, on short petioles, under the spike sessile. Root-leaves on long petioles, having about sixteen pairs of pinnae, the extreme ones confluent. Spike short, with lanceolate, acuminate, hirsute, entire, bay-coloured leaves or bractes. Calyx five-cleft, villose, as are also the bractes. Corolla purple or bay-rose-colour. Helmet sickle-shaped, hooked, cut off at top. Pistil and stamens stand out far beyond the helmet^o.

Native of Switzerland, Austria and Silesia. Introduced in 1787, by William Pitcairn, M. D.

8. This is a very hairy plant. Stem quite simple, a span high. Leaves alternate, pinnatifid, serrulate. Flowers heaped into a spike or head. Corolla blunt, yellow; with the helmet a little curved inwards, villose at the edge^p. Gmelin says that the flowers are collected into a very close spike, that the corolla is of a very pale yellow, and that the beak is blunt.—Native of Siberia.

9. This at first sight resembles *Sceptrum Carolinum* in miniature, but it is twenty times less. It differs from the other species in having the leaves very like those of *Filipendula*, with the segments imbricate; the root tuberous and fusiform, like Skirrets, with a few scales at the base; the corolla tawny, with the top of the upper lip purple, the lower lip shorter by half than the upper.—Stem scarcely a finger's length, round, upright, dark purple. Root-leaves very many, spreading, on filiform petioles, bluntly lanceolate, almost divided to the midrib; the divisions ovate, the edge of one lying over the next, crenate and each notch crenulate. Stem-leaves fewer, some immediately under the spike, like the root-leaves. Spike terminating the stem, and covering a third part of it, upright, compressed, oblong. Calyx striated, thin, four-toothed, oblong. Corolla narrow, the lower lip very small, the upper narrow, almost upright, blunt. Pericarp acuminate, with the tip curved inwards^q. The calyxes

^c Withering, Lightf. ^f Pollich. ^g Withering, Lightf.
^h Withering. ⁱ Villars.

^k Linn. lapp. & succ.
^l Linn. spec.

^m Villars.
ⁿ Krockner.
^o Linn. lapp.

^p Gartner.
^q Linn. spec.

are by no means ferrate; and the corolla is very dark purple, especially at the end¹. Haller says that the upper petal or helmet is ferruginous; the lower or beard pale yellow.

Native of Lapland, Switzerland, Silesia, Siberia.—Introduced in 1775, by Drs. Pitcairn and Fothergill².

10. Root perennial. Stem half a finger's length, thick, with oblong clustered scales at the base. Root-leaves almost linear scales. Stem-leaves a little longer than the scales, crenate at the end, the upper ones linear-lanceolate, tooth-pinnate beyond the middle, the rest flat, broad, arising from a wide petiole, and embracing: the toothlets very narrow and very minutely crenated. Spike terminating, very short, but thick and quadrangular: flowers six to twelve, sessile: calyxes large, ovate, four-cleft beyond the middle, acute, ashi-coloured; the lower lip shorter, the upper upright blunt; pale flesh-colour, with a deeper heart-shaped spot on the lower lip. It differs from the rest in its wide embracing petioles, villose calyxes, the colour of the corolla, and the notches of the leaves³.

Villars can scarcely think that the little Lapland plant is the same with that of Dauphiné and Piedmont. He describes it to be only two or three inches high, with the stem and leaves smooth. Leaves bipinnate, very fine and flat: on the stem only one or two, pinnate. Flowers from five to seven, in a distinct spike. Calyx in five simple divisions, very villose. Upper lip of the corolla blunt, a little curved: the whole bright red. It is allied to *P. incarnata*, but is only one sixth of the size. Monf. Villars found a plant at the Grande Chartreuse, connecting these two, in the size, and the form of the leaves, but the calyx less villose than either.—Native of Lapland, Dauphiné, Piedmont, Siberia.

11. Root branched, yellowish white. Stems one, two or three, rising amid abundance of root-leaves, not much shorter than the stems, and having the appearance of lanceolate bipinnate fronds. Pinnas very narrow, linear, pinnatifid-toothletted, sessile, flat, decreasing in size both ways, naked, deep green above, watery green underneath; the rachis first green, then red, and finally dark purple. On the stem one, or at most two leaves, like the others only much less. Stem upright, somewhat angular, changing colour like the rachis, smooth and shining, towards the spike, especially when young, white-villose. Spike terminating, short, compact; each flower rises on a short red pedicel from the axil of a leafy bracte, almost exceeding the calyx, green, pinnatifid-toothed; but in the upper bractes the teeth decrease to two and even one. Calyx from an ovate base tubularly cylindrical, five-toothed: teeth equal, simple, acute, red, as are also the nerves of the tube: the rest of the calyx is green, but the villose hairs that cover it are white and transparent. Corolla elegant, red; with a tube longer than the calyx, fading away from red to white: helmet deep red, very blunt, straight, compressed, half closed, bifid below the tip: lower lip three-lobed; lobes rounded, the middle one somewhat shorter, all entire. Anthers in front pressed close to each other, with the lateral edges white-villose, the villose hairs prominent beyond the helmet. Style rose-coloured at top, with a bluntish yellowish stigma.—Native of Carinthia; flowering in July⁴.

12. Stem from a foot to eighteen inches in height, upright, not branched, terminating in a very long spike. Midrib of the leaves wide; pinnas semipinnate, sharply toothed. Spike when young close, afterwards loose, with small bractes. Calyx half-five-cleft, with unequal segments, the lower longest, bearded with much cottony down. Helmet narrow, beaked. Corolla purple. Lower lip almost equally three-lobed, the middle lobe somewhat smaller⁵.

This plant seldom has more than one stem from a root. Leaves large, bipinnate, thick and solid, smooth or very little villose; they are better furnished, and the divisions are thicker and much less deeply cut than in *P. cernosa* and *foliosa*. Flowers many, red, in a long,

loose spike. Calyx villose, and its divisions simple. Upper lip of the corolla falcated to form a pendant hook like a truncated beak, at the end of which appears the stigma: There is one variety, which is smaller and smooth: and another, with the leaves less cut and almost simple; the stem lower, and the flowers fewer, the colour of fire inclining more or less to yellow⁶.

There is no doubt of this being the plant of Allioni and Haller; but Villars hesitates respecting Linneus, who describes the calyx as smooth.

Native of Switzerland, Austria, Dauphiné, Silesia, Siberia.

13. Root perennial. Stem a span high, upright, almost straight, round, smooth. Root-leaves scarcely any. Stem-leaves seven or eight, lanceolate, acute, narrowed at the base into the petiole, alternate, divided to the middle into from fourteen to twenty pinnas, each having from two to five toothlets on each side, smooth. Spike terminating, loose, four-cornered, composed of from six to sixteen flowers, declining from the perpendicular, each furnished with its bracte; the lower bractes longer than the flowers, the upper ones scarcely so long as the calyx. Calyx smooth, tubular, with a bifid blunt mouth. Corolla yellow, with the upper lip compressed, produced at the tip, reflexed downwards, and prominent, like an eagle's beak⁷.

In Flora Suecica it is described as a palm in height; all the leaves of the same size, and not the root-leaves larger; pinnatifid, ferrate; calyxes sometimes quite entire, sometimes with two or four teeth. It differs from *P. tuberosa* in being smaller, in having more leaves on the stalk, smaller flowers, the root-leaves the same with those of the stem, the pinnas not subdivided but merely ferrate, the calyxes not ferrate, but, excepting three or four teeth, quite entire at the edge, and the stems smooth not hirsute.

Native of the mountains of Lapland and Dalecarlia; Denmark and Siberia.

14. Calyx five-toothed, tubular, quite entire, a little hairy. Corolla yellow, with the upper lip sharp but emarginate, the two teeth sharp and nodding⁸.

By its port, size and disposition of the flowers it holds the place between *P. tuberosa* and *foliosa*. Lateral roots whitish, tuberous, thicker at the end, as represented in John Bauhin's figure (3. 438.); the middle root is bigger and blackish. Stems commonly two, a foot high. Root-leaves tripinnate, the last divisions terminating in a white thread or spine a quarter or a third of a line in length. Stem-leaves two or three, smaller, and with the leaflets fewer and more separated. Spike terminating, three or four inches long, with white or yellow flowers, separated by bractes, which lengthen on their axis, and appear little beyond the flower though they are longer: helmet bent back like a fickle, compressed, ending in a narrow but truncated point: they are inclined or roll round to the left, as in *P. rostrata* and *gyroflexa*⁹.

Native of the mountains of Italy, Dauphiné and Siberia.—Introduced in 1775, by the Doctors Pitcairn and Fothergill¹⁰.

15. Leaves bipinnatifid. Calyxes with the angles and edge hairy. Corolla pale yellow: helmet not beaked, very blunt, hooked. Stem frequently a foot high¹¹.

This is loftier and stronger than most of the other species. Root simple, biennial. Stem from a foot to eighteen inches in height, strong and thick, losing the root-leaves, as soon as it rises to flower. Leaves very large, tripinnate, with the divisions very narrow, distinct and sharp, without sensible points. Stem-leaves two or three, smaller and at the upper part only. The flowers form a considerable spike, are of a yellow colour, and separated by large bipinnate leaves¹².

Gouan remarks, that this is very different from the other species, even when it is not in flower. For the root-leaves are pinnate, with the pinnas deeply pinnatifid, and the lobules sharply toothed: the stem-leaves on the other hand, especially the upper ones

¹ Lin. suec. & syst.

² Hort. kew.

³ Linn. lapp.

⁴ Jacqu. misc.

⁵ Haller.

⁶ Villars.

⁷ Linn. lapp.

⁸ Lin. spec.

⁹ Villars.

¹⁰ Hort. kew.

¹¹ Linn.

¹² Villars.

are decursively pinnate, the pinnae being confluent as in Tansey, Achillea, &c. Petioles, at least the young ones hoary and very hirsute. Helmet of the corolla blunt and villose as in *Phlomis Leonurus*. Haller's figure is good as to the calyx, spike and root-leaves; but the stem-leaves are very ill represented: but Gouan refers to *f. 1.* as Haller himself does.

Native of Switzerland, Austria and the South of France.—Introduced in 1786, by Edmund Davall, Esq.^f

16. Root perennial. Stem upright, a span high, pubescent towards the top. Leaves alternate, pinnatifid, gashed, crenate, blunt, smooth. Spike terminating, sessile, ovate, with leaflets a little longer than the calyx. Calyxes pubescent, truncated obliquely downwards. Corollas white: helmet somewhat sickle-shaped, scarcely beaked, but in a manner cut off at the tip, with a tooth scarcely apparent at the upper edge, and a bristly tooth on each side at the lower edge, much more lengthened out than that in *P. sylvestrica* and *tuberosa*. Lower lip trifid, blunt.—Found by Kalm in North America^g.

17. Leaves like those of *Achillea Millefolium* or Milfoil. Leaves and calyxes lanuginous. Corollas yellow^h.

Villars describes a plant under this name of *P. tuberosa*, which is so nearly allied to *P. comosa*, that it may possibly be no more than a variety of it.—Root thick and a little tuberous, black, fibrous and thick. Stem simple, villose, and very thick. Height from eight inches to a foot. Leaves villose, almost tripinnate, the divisions distinct, resembling a small fern: each last division ends in a very short, recurved, whitish thread. The stem has only a leaf or two. The flowers form a very thick spike, closer at top than at bottom: they are yellow or whitish. The leaves among the flowers and the divisions of the calyx are both simple. (According to Allioni (*spec. 50. t. 11. f. 1.* they are divided.) The upper lip of the corolla is sickle-shaped, and pointed at the end.—See the next species.

Haller describes his n. 323. thus—Root composed of numerous round bulbs or tubers, almost woody, collected into one head. Root-leaves very numerous, long, pinnate, with twenty pairs of pinnae, semipinnate, pinnules having one or two teeth. Stems not branched, a long span or a foot in height, hirsute, almost leafless, or having at most one or two pairs of leaves. Flowers in a close spike, separated by leaves, scarcely standing out beyond the calyx. Fruit conical, compressed, imperfectly two-celled, with the partition shorter than the horn. Colour of the flowers very pale yellow. Helmet acutely beaked.

According to Linneus, it is a native of the Swiss, Italian and Siberian mountains. But Villars doubts the existence of it, and refers the *tuberosa* of Linneus, Allioni and Scopoli to his *gyroflexa*.

18. Root perennial, composed of a dark black trunk, often carious, three or four lines in diameter, from which spring thick lateral fibres, horizontal, quite simple, pretty long, not at all swelling out, any more than the trunk of the root. Stems one, two, sometimes several, rise bending to the height of six or eight inches, seldom a foot; they are villose, firm, and have one or two bipinnate leaves at their base, and as many, but smaller, on the upper part; they are terminated by a spike of a beautiful red colour, truncated and villose, composed of pinnatifid bractes of several villose calyxes, the divisions of which are toothed or pinnatifid. Helmet of the corolla turned to the left, pointed: the lower lip has three rounded divisions, concealed one under the others. Root-leaves long, bipinnate; leaflets toothed; divisions blunt, villose, frequently recurved upwards, hard and as it were dried, having often a white mealy border; they are all petioled, well furnished, and a little imbricate. Capsule oval, pointed, a little villose, containing whitish seeds.

There is a variety, with finer and more distinct leaves, a yellow flower, and the pistil longer than the corolla, which according to Bellardi is the *tuberosa* of Linneus.

^f Hort. kew. ^g Linn. mant. ^h Linn. syst.

It seems that Scheuchzer, adopting Tournefort's synonym of *P. alpina asphodeli radice, purpurascens flore*, which is certainly not this plant, has described this species under John Bauhin's name of *P. bulbosa* (3. 438.), though the latter has figured and described *P. comosa* under this name, and that never has a red flower. This mistake of Scheuchzer, occasioned perhaps by the vague observations of Clusius, who mentions one species with a purple, and another with a yellow flower, has given rise to several others. 1. Haller and Morison have found it difficult to reconcile these differences of colour in a genus where they are sufficiently constant; and the former complains that Tournefort and Magnol have assigned a red colour to the flowers of these plants. 2. Haller at first described and gave the synonym of *P. bulbosa*, J. B. which is *P. comosa*, Linn.; but his figure, which is the same in both editions, cannot agree with it, on account of the toothed calyx; and approaches nearer to *P. gyroflexa*, which Haller has under n. 324. 3. Linneus (*spec. ed. 1. 610.*) having given a *P. tuberosa*, with the divisions of the calyx toothed like a cock's comb, and that doubtless after the figure of Haller, without consulting the descriptions; an apocryphal species has been produced, which has occasioned a disagreement even among the best informed botanists. Scopoli and Allioni have given the name of *P. tuberosa* to our *P. gyroflexa*: the latter, and others have sent it under this name to Justieu; whilst Gmelin, Chaix and Segui, consulting John Bauhin, and the descriptions of Haller, have given the name of *P. tuberosa* to the *comosa* of Linneus, which deserves that name better on account of its rootsⁱ.

Native of the South of France, Switzerland, Carniola, Piedmont.

19. Native of Greenland. First given by Retzius under the name of *P. incarnata*, from which it differs in the leaves, spike, calyx, and helmet of the corolla^k.

Miller mentions four kinds of Loufewort, without any names, but he insists chiefly on the Yellow Rattle, which is *Rhinanthus Crista galli*.

PEDICULARIS. See *Bartsia*, *Euphrasia*, *Gerardia*, *Hebenstreitia*, *Rhinanthus*, *Salsola*.

PEE CAIONI. See *Verbesina*.

—CUPAMENI. See *Tragia*.

—INOTA INODIEN. See *Physalis*.

—KANDEL. See *Rhizophora*.

—MOTTENGA. See *Schoenus*.

—TANDALE COTTI. See *Crotalaria*.

—TIANGA PULPANI. See *Ruellia*.]

PEGANUM. (Πηγανον of Theophrastus and Dioscorides. From πηγανον congelo.)

Lin. gen. n. 601. Reich. n. 656. Schreb. n. 821: Gartn. t. 95. Juss. 297. Harmala. Tournef. t. 133.

Class. II. 1. Dodecandria Monogynia.

Nat. order of *Multiflorae*. Rutaceae, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets linear, often toothed, erect, the length of the corolla, acute, permanent.

COR. Petals five, oblong-ovate, from upright-spreading.

STAM. Filaments fifteen, awl-shaped, shorter by half than the corolla, dilated at the base into a nectary under the germ. Anthers oblong, erect.

PIST. Germ roundish-three-cornered, raised on a receptacle from the base of the flower. Style filiform, round, the length of the anthers. Stigma oblong, three-sided.

PER. Capsule roundish-three-cornered, three-celled, three-valved, with contrary partitions.

SEEDS very many, ovate, acuminate.

OBS. Peganum differs from Ruta, as Celastrus from Euonymus; for what is taken from the number of the pistil, is added to the stamens, and vice versa.

ESSENTIAL CHARACTER.

Cal. five-leaved or none. Cor. five-petalled. Caps. three-celled, three-valved, many-seeded.

ⁱ Villars.

^k Retz. obs.

P E L

SPECIES.

1. *Peganum Harmala*.
Lin. spec. 638. *syft.* 445. *Reich.* 2. 421. *hort. upf.* 144. *cliff.* 206. *Gartn. fruct.* 2. 87. *Gron. orient.* 165. *Gmel. fib.* 4. 177. n. 96. *Fabric. helm.* 228. *Willich obs.* n. 50. *Giseke ic. fasc.* 1. n. 11. *Blackw. t.* 310.
Ruta sylvestris, flore magnò albo. *Baub. pin.* 336.
Harmala. *Dod. pempt.* 121.—multifida. *Allion. pedem.* n. 1652.
Rura quæ dici solet Harmala. *Baub. hist.* 3. 200.
Leaves multifid.
- [2. *Peganum dauricum*.
Lin. spec. 638. *syft.* 445. *Reich.* 2. 421.
Ruta foliis simplicibus alternis. *Gmel. fib.* 4. 176. t. 68. f. 2.
Harmala montana daurica, &c. flore albo. *Amm. ruth.* 91.
β. *H. mont.* &c. floribus luteis. *Amm. ruth.* 92.
Leaves undivided.]

DESCRIPTIONS, &c.

1. Root as large as a man's little finger, by age becoming woody. The stalks decay every autumn, and new ones arise in the spring: they grow about a foot long, and divide into several small branches. Leaves thick, oblong, cut into several narrow segments, dark green, gummy and of a bitterish taste. The flowers are produced at the ends of the branches, fitting close between the leaves. Corolla white. [Capsule slightly umbilicated at top, three-grooved: partitions fastened to the middle of the valves, answering to the grooves on the outside. Seeds oblong, awl-shaped or angular, attenuated towards the navel, brown-bay, netted with very minute excavations, fastened in a horizontal position to the central thickened edge of the partitions].

Native of Spain, in the county of Nice, Syria, Cappadocia, Galatia, Siberia.—It was cultivated here in 1570, as appears from Lovel, *adv.* 390.^m] It flowers in july, and in warm summers the seeds will ripen here in the autumn.

[Willich remarks, that the calyx should rather be considered as a floral leaf; for it has the same structure with the leaves, and is perfect and expanded long before the opening of the flower: and that the stigma is curved in, twisted and straight, all on the same plant.

2. Native of Siberia.

Retzius and Vahl have each another species.]

PROPAGATION AND CULTURE.

They are propagated by seeds, sown thinly on a bed of light earth, the beginning of april: when the plants come up, keep them clean from weeds: at the end of october or beginning of november, when the stalks decay, cover the bed with tanner's bark, ashes or saw-dust, to keep out the frost, for the roots are somewhat tender when young. In march following transplant them into a warm situation and dry soil, where they will continue several years.

[PEKEA. See *Rhizobolus*.

PELA. See *Psidium*.

PELARGONIUM. (Πελαργος, Ciconia. *Arist.* So called from the length of the beak to the fruit.)

L'Herit. geran. *Ait. hort. kew.* 2. 417.

Gerania africana. *Linn.*

Class. 16. 3. Monadelphia Heptandria.

Nat. order of *Gruinales*. *Gerania*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted: segments ovate, acute, concave, permanent; upper segment, ending in a capillary nectariferous tube, decurrent along the peduncle.

COR. *Petals* five, obcordate or ovate, spreading, large, irregular.

STAM. *Filaments* ten, awl-shaped, united at the base, spreading at top, unequal in length, all shorter than the corolla, three of them (seldom five) castrated. *Anthers* seven, oblong, versatile.

PIST. *Germ* five-cornered, beaked. *Style* awl-shaped, longer than the stamens, permanent. *Stigmas* five, reflex.

¹ Gartner.

² Hort. kew.

P E L

PER. *Capsule* five-grained, beaked, the cells opening inwards, the beak spiral, bearded on the inside.

SEEDS solitary, ovate-oblong.

ESSENTIAL CHARACTER.

CAL. five-parted, the upper segment ending in a capillary nectariferous tube running along the peduncle: COR. five-petalled, irregular. *Filam.* ten, unequal, three of which (seldom five) are castrated. *Fruit* five-grained, beaked: beak spiral, bearded within.

SPECIES.

§ 1. *Stemless*, root rapaceous, umbels compound.

1. *Pelargonium hirsutum*. *Various-leaved Crane's-bill*.
Ait. hort. kew. 2. 417.
Geranium hirsutum. *Burm. geran.* n. 68. t. 2. *Cavan. diff.* 4. 247. t. 101. f. 2. *Raii suppl.* 513. n. 31.
G. lobatum β. *hirsutum*. *Lin. spec.* 950. *Reich.* 3. 316.
Leaves obovate or lanceolate quite entire or pinnatifida rough-haired ciliate.
2. *Pelargonium pinnatum*. *Pinnated Crane's-bill*.
Ait. hort. kew. 2. 417. *L'Herit. n.* 14.
Geranium pinnatum. *Lin. spec. ed.* 1. 677. *Burm. ger. n.* 66.
G. prolificum γ. *pinnatum*. *Lin. spec. ed.* 2. 950. *Reich.* 3. 315.
G. astragalifolium. *Cavan. diff.* 4. 257. t. 104. f. 2. *Jacqu. ic. vol. t.* 3. 511. *collect.* 3. 184.
G. africanum, *astragali folio*. *Comm. præl.* 53. t. 3.
Umbel subcompound, leaves pinnate, leaflets roundish-ovate undivided hirsute on both sides.
3. *Pelargonium rapaceum*. *Caraway-leaved Crane's-bill*.
Ait. hort. kew. 2. 418. *L'Herit. n.* 17. *Jacqu. collect.* 3. 190.
Geranium rapaceum. *Lin. syst. ed.* 10. 1141. *Jacqu. ic.* 3. 510.
G. prolificum α. *Lin. spec.* 949. *Reich.* 3. 315.
G. africanum myrrhidis folio, flore albicante, rad. rapacea. *Comm. hort.* 2. 125. t. 63.
Leaves decomposedly laciniate villose.

§ 2. *Almost stemless*, root tuberous.

4. *Pelargonium lobatum*. *Vine-leaved Crane's-bill*.
Ait. hort. kew. 2. 418. *L'Herit. n.* 22.]
Geranium lobatum α. *Lin. spec.* 950. *Reich.* 3. 316.
Mill. dict. n. 39. *Comm. hort.* 2. 125. t. 62.
Stemless, umbel compound, leaves ternate or quinate lobed tomentose.
5. *Pelargonium triste*. *Night-smelling Crane's-bill*.
Ait. hort. kew. 2. 418. *L'Herit. n.* 23.
Geranium triste. *Lin. spec.* 950. *syft.* 615. *Reich.* 2. 317. *hort. cliff.* 344. *upf.* 197. *Mill. dict. n.* 35. *Knorr. del. hort.* 1. t. S. 19. *Kniph. cent.* 7. n. 29. *Riv. pent.* 106. *Corn. canad.* 109. t. 110. *Breyn. cent.* 126. t. 58. *Raii hist.* 1057. n. 11, 12, 13.—*foliis pinnatifidis*. *Burm. ger.* 57.
G. indicum noctu odoratum flore maculato. *Ger. emac.* 948. n. 5.
Subcaulescent, umbel simple, leaves multifid-laciniate villose, segments lanceolate.
- [6. *Pelargonium flavum*. *Carrot-leaved Crane's-bill*.
Ait. hort. kew. 2. 418. *L'Herit. n.* 24.
P. daucoides. *Jacqu. ic. rar.* 522. *collect. suppl.* 143.
Geranium flavum. *Lin. mant.* 257. *syft.* 614. *Reich.* 3. 313. *Burm. prodr.* 19.
G. daucifolium. *Murr. in comm. gott.* 1780. p. 13. t. 4.
G. afr. fol. staphylini. *Riv. pent. t.* 107.
Subcaulescent, umbels simple, leaves decomposedly laciniate hirsute, segments linear.

§ 3. *Herbaceous or suffruticose*.

7. *Pelargonium tabulare*. *Rough-stalked Crane's-bill*.
Ait. hort. kew. 2. 419. *L'Herit. n.* 25. t. 9.
Geranium tabulare. *Lin. spec.* 947. *syft.* 614. *Reich.* 3. 312.
G. elongatum. *Cavan. diff.* 4. 233. t. 101. f. 3.
Peduncles few-flowered, leaves roundish-cordate five-lobed blunt, stems decumbent hairy.
8. *Pelargonium alchemilloides*. *Lady's-mantle-leaved Crane's-bill*.
Ait. hort. kew. 2. 419. *L'Herit. n.* 26.]

- Geranium alchimilloides.* Lin. spec. 948. syst. 614. Reich. 3. 313. vir. cliff. 67. hort. cliff. 345. upf. 197. Burm. ger. 55. Mill. dict. n. 33. Kniph. cent. 9. n. 40. Herm. lugdb. 282. t. 283. Stiff. bot. t. 107. Riv. pent. 104.
Peduncles four-flowered or thereabouts, leaves orbiculate palmate-gashed very hairy, stem herbaceous decumbent, stigmas sessile.
9. *Pelargonium odoratissimum.* Sweet-scented Crane's-bill.
Ait. hort. kew. 2. 419. L'Herit. n. 28.
Geranium odoratissimum. Lin. spec. 948. Reich. 2. 313. hort. cliff. 345. Burm. ger. 45. Mill. dict. n. 34. Kniph. cent. 5. n. 34. Dill. elth. 157. t. 131. f. 158.
Peduncles five-flowered or thereabouts, leaves roundish-cordate very soft.
10. *Pelargonium grossularioides.* Gooseberry-leaved Crane's-bill.
Ait. hort. kew. 2. 420. L'Herit. n. 30.
Geranium grossularioides. Lin. spec. 948. syst. 614. Reich. 3. 314. mant. 432. Burm. ger. 53. Mill. dict. n. 42. Herm. lugdb. 287. t. 289. Riv. pent. 110.
Peduncles subbiflorous filiform, leaves cordate roundish gashed toothed, stems very smooth.
- [11. *Pelargonium anceps.* Angular-stalked Crane's-bill.
Ait. hort. kew. 2. 420. L'Herit. n. 31.
Umbels many-flowered, flowers in a sort of head, leaves cordate-roundish obsolete lobed, stem three-sided-ancipital.
12. *Pelargonium althæoides.* Althæa-leaved Crane's-bill.
Ait. hort. kew. 2. 420. L'Herit. n. 39. t. 10.]
G. althæoides. Lin. spec. 949. syst. 615. Reich. 2. 314. mant. 433. hort. cliff. 345. Burm. ger. 54. Mill. dict. n. 48. Boerb. lugdb. 1. 263.
Peduncles many-flowered, leaves cordate-ovate sinuate toothed, the uppermost pinnatifid, petals equal to the calyx.
- [13. *Pelargonium fenecioides.* Small white-flowered Crane's-bill.
Ait. hort. kew. 2. 420. L'Herit. n. 42. t. 11.
Peduncles three-flowered, involucre and calyxes blunt, leaves bipinnatifid-laciniate, stem herbaceous.
14. *Pelargonium coriandrifolium.* Coriander-leaved Crane's-bill.
Ait. hort. kew. 2. 421. L'Herit. n. 43. Jacqu. ic. rar. 528. collect. suppl. 142.]
Geranium coriandrifolium. Lin. spec. 949. Reich. 3. 315. mant. 433. Cavan. diff. 263. n. 390. t. 116. f. 1. Mill. dict. n. 40. Riv. pent. t. 108. Herm. lugdb. 279. t. 280.
- β. *P. caucalisfolium.* Jacqu. ic. 529. collect. suppl. 145.
Peduncles subtriflorous, corollas subtetrapetalous, leaves bipinnate linear, stem herbaceous smoothish.
15. *Pelargonium myrrhifolium.* Myrrh-leaved Crane's-bill.
Ait. hort. kew. 2. 421. L'Herit. n. 44.
G. myrrhifolium. Lin. spec. 949. syst. 615. Reich. 3. 315. mant. 433. Berg. cap. 178. Mill. dict. n. 36. Herm. lugdb. 279. t. 281. Riv. pent. 102?
Peduncle subtriflorous, corollas subtetrapetalous, leaves bipinnatifid, the lower ones cordate lobed, stem somewhat strigose.
- §. 4. Shrubby, with a fleshy or thick stem.
- [16. *Pelargonium tenuifolium.* Fine-leaved Crane's-bill.
Ait. hort. kew. 2. 421. L'Herit. n. 48. t. 12.
Umbels many-flowered, leaves decomposedly pinnate multifid linear hirsute, stem fleshy, flowering-branches slender.
17. *Pelargonium carnosum.* Fleshy-stalked Crane's-bill.
Ait. hort. kew. 2. 421. L'Herit. n. 49.]
G. carnosum. Lin. spec. 946. Reich. 3. 310. amoen. 4. 281. Burm. ger. 51. Mill. dict. n. 29. Dill. elth. 153. t. 127. f. 154.
Umbels many-flowered, leaves pinnatifid laciniate, petals linear, joints fleshy-gibbose.
- [18. *Pelargonium ceratophyllum.* Horn-leaved Crane's-bill.
Ait. hort. kew. 2. 422. L'Herit. n. 50. t. 13. Curt. magaz. 315.

- Umbels many-flowered, leaves remotely pinnate fleshy round, segments channelled obsolete trifid.*
19. *Pelargonium crithmifolium.* Sampire-leaved Crane's-bill.
Smith ic. rar. 13.
Umbels many-flowered panicled, leaves bipinnate fleshy dilated and jagged at the tips, petals obtuse, the upper ones crisped at the base.
20. *Pelargonium gibbosum.* Gouty Crane's-bill.
Ait. hort. kew. 2. 422. L'Herit. n. 51.]
Geranium gibbosum. Lin. spec. 946. syst. 613. Reich. 3. 311. hort. upf. 345. Mill. dict. n. 30. Kniph. cent. 8. n. 46.
G. foliis aquilegiæ. Riv. pent. 100. Herm. lugdb. 284. t. 285. Stiff. bot. t. 111. Burm. afr. t. 37. f. 2. p. 96.
Umbels many-flowered, leaves pinnate pinnatifid-confluent at the tip, joints fleshy gibbose.
21. *Pelargonium fulgidum.* Celandine-leaved Crane's-bill.
Ait. hort. kew. 2. 422. L'Herit. n. 53.
Geranium fulgidum. Lin. spec. 945. Reich. 3. 307. vir. cliff. 67. hort. cliff. 498. Burm. ger. 52. Mill. dict. n. 31. Dill. elth. 156. t. 130. f. 157. Till. pis. 68. t. 26.
Umbel twin, leaves three-parted, pinnatifid-gashed, middle segment very large.
- [22. *Pelargonium quercifolium.* Great Oak-leaved Crane's-bill.
Ait. hort. kew. 2. 422. L'Herit. n. 54. t. 14.
Geranium quercifolium. Linn. suppl. 306. syst. 619. Cavan. diff. 4. 246. t. 119. f. 1.
G. terebinthinaceum. Murr. in comm. gott. 7. (1785.) 88. t. 4.
β. *P. quercif. pinnatifidum.* L'Herit. t. 15.
Small Oak-leaved Crane's-bill.
Umbels submultiflorous, leaves cordate pinnatifid crenate, sinuses rounded, filaments ascending at the tip.
23. *Pelargonium Radula.* Multifid-leaved Crane's-bill.
Ait. hort. kew. 2. 423. L'Herit. n. 55. t. 16.
Geranium Radula. Cavan. diff. 4. 262. t. 101. f. 1. Curt. magaz. t. 95.
G. revolutum. Jacqu. ic. 1. t. 133. collect. 1. 84.
Umbels few-flowered, leaves pinnatifid-laciniate rugged revolute, segments linear.
24. *Pelargonium graveolens.* Strong scented Crane's-bill.
Ait. hort. kew. 2. 423. L'Herit. n. 56. t. 17.
Geranium terebinthinaceum. Cavan. diff. 4. 250. t. 114. f. 1.
Umbels many-flowered subcapitate leaves palmate seven-lobed, segments oblong blunt revolute at the edge.
25. *Pelargonium papilionaceum.* Butterfly Crane's-bill.
Ait. hort. kew. 2. 423. L'Herit. n. 58.]
Geranium papilionaceum. Lin. spec. 945. syst. 613. Reich. 3. 308. hort. cliff. 345. upf. 197. Burm. ger. 49. Mill. dict. n. 27. Kniph. cent. 7. n. 27. Dill. elth. 124. t. 128. f. 155. Mart. cent. t. 15.
Umbels many-flowered, leaves roundish-cordate angular. corollas papilionaceous, wings and keel minute.
26. *Pelargonium inquinans.* Scarlet-flowered Crane's-bill.
Ait. hort. kew. 2. 425. L'Herit. n. 59.
Geranium inquinans. Lin. spec. 945. syst. 613. Reich. 3. 307. hort. upf. 195. cliff. 345. Burm. ger. n. 46. Mill. dict. n. 24. Mill. illustr. Kniph. cent. 3. n. 42. Knorr. del. 1. t. S. 19. a. Dill. elth. 151. t. 125. f. 151. Mart. cent. t. 3.
Umbels many-flowered, leaves orbiculate-reniform scarcely divided crenate tomentose and clammy.
- [27. *Pelargonium hybridum.* Bastard Crane's-bill.
Ait. hort. kew. 2. 424. L'Herit. n. 60.
Geranium hybridum. Lin. mant. 97. syst. 613. Reich. 3. 308. Dill. elth. 152. t. 125. f. 152.
Umbels many-flowered, leaves obovate crenate smooth fleshy, petals linear.
28. *Pelargonium zonale.* Common Horse-shoe Crane's-bill.
Ait. hort. kew. 2. 424. L'Herit. n. 61.]
Geranium zonale. Lin. spec. 947. syst. 613. Reich. 3. 311. hort. upf. 196. Burm. ger. n. 43. Mill. dict. n. 23. Comm. præl. 51. t. 1.
Umbels many-flowered, leaves cordate-orbiculate scarcely lobed toothed zoned.
- [29. *Pelargonium heterogamum.* Red-flowered Crane's-bill.
Ait. hort. kew. 2. 424. L'Herit. n. 62. t. 18.
Umbels

- Umbels many-flowered, leaves suborbiculate, gash-lobed toothed, stem erect shrubby.*
30. *Pelargonium monstrum*. Cluster-leaved Crane's-bill.
Ait. hort. kew. 2. 425. L'Herit. n. 63.
Leaves orbiculate-reniform obsolete lobed complicated curled.
31. *Pelargonium bicolor*. Two-coloured Crane's-bill.
Ait. hort. kew. 2. 425. L'Herit. n. 64. Curt. magaz. 201.
Geranium bicolor. Lin. syst. 614. Jacqu. hort. 3. 23. t. 39. Cavan. diff. 4. 248. t. 111. f. 1.
Umbels many-flowered, leaves ternatifid lobed toothed waved villose.
32. *Pelargonium vitifolium*. Balm-scented Crane's-bill.
Ait. hort. kew. 2. 425. L'Herit. n. 65.]
Geranium vitifolium. Lin. spec. 947. Reich. 3. 311. hort. upf. 196. Burm. ger. n. 40. Mill. dict. n. 26. Dill. elth. 152. t. 126. f. 153.
8. *G. vitifolium quinquelobum*. L'Herit. t. 19.
Flowers in heads, leaves cordate three-lobed somewhat rugged, stems upright.
33. *Pelargonium capitatum*. Rose-scented Crane's-bill.
Ait. hort. kew. 2. 425. L'Herit. n. 66.
Geranium capitatum. Lin. spec. 947. syst. 614. Reich. 3. 312. hort. upf. 196. cliff. 345. Burm. ger. 41. Mill. dict. n. 25. Kniph. cent. 9. n. 41. Herm. lugdb. 277. t. 278. Riv. pent. 99.
Flowers in heads, leaves cordate lobed waved soft, stems diffused.
- [34. *Pelargonium glutinosum*. Clammy Crane's-bill.
Ait. hort. kew. 2. 426. L'Herit. n. 67. t. 20. Curt. magaz. 143.
Geranium glutinosum. Jacqu. ic. 1. t. 131. collect. 1. 85.
G. viscosum. Cavan. diff. 4. 246. t. 108. f. 2. Scop. insubr. 2. 27. t. 14.
Umbels few-flowered, leaves cordate hastate-quinquangular clammy.]
35. *Pelargonium cucullatum*. Hooded Crane's-bill.
Ait. hort. kew. 2. 426. L'Herit. n. 68.
Geranium cucullatum. Lin. spec. 946. syst. 613. Reich. 3. 310. mant. 432. hort. cliff. 345. upf. 196. Burm. ger. 42. Berg. cap. 174. Mill. dict. n. 21. Herm. lugdb. 274. t. 275. Seba mus. 1. t. 26. f. 2. Riv. pent. 98. Kniph. cent. 7. t. 27.
Umbels submultiflorous, leaves kidney-form cowled toothed.
36. *Pelargonium angulosum*. Marsh-mallow-leaved Crane's-bill.
Ait. hort. kew. 2. 426. L'Herit. n. 69.
Geranium angulosum. Mill. dict. n. 22. Dill. elth. 155. t. 129. f. 156. Mart. dec. 3. t. 28.
G. acerifolium. Cavan. diff. 4. 243. t. 112. f. 2.
Umbels many-flowered, leaves rounded cowled angular toothed.
- [37. *Pelargonium acerifolium*. Maple-leaved Crane's-bill.
Ait. hort. kew. 2. 427. L'Herit. n. 70. t. 21.
Umbels few-flowered or thereabouts, leaves palmate-five-lobed serrate wedge-shaped at bottom undivided.
38. *Pelargonium cordatum*. Heart-leaved Crane's-bill.
Ait. hort. kew. 2. 427. L'Herit. n. 71. t. 22.
P. cordifolium. Curt. magaz. 165.
Geranium cordifolium. Cavan. diff. 4. 240. t. 117. f. 3.
a. Leaves undivided very soft flat.
β. Curled heart-leaved Crane's-bill.
Leaves lacinated curled.
Umbels many-flowered, leaves cordate acute toothed, lower petals linear acute.
39. *Pelargonium echinatum*. Prickly-stalked Crane's-bill.
Curt. magaz. 309.
Stem fleshy, stipules spinescent, leaves cordate-roundish from three to five-lobed, flowers umbelled, umbels seven or eight-flowered.
40. *Pelargonium tetragonum*. Square-stalked Crane's-bill.
Ait. hort. kew. 2. 427. L'Herit. n. 72. t. 23. Curt. magaz. 136.
Geranium tetragonum. Linn. suppl. 305. syst. 619. Jacqu. ic. 1. t. 132. collect. 1. 92. Scop. insubr. 1. 12. t. 5. (trigonum). Cavan. diff. 4. 231. t. 99. f. 2.
Peduncles two-flowered, branches four-cornered fleshy, corollas four-petalled.

41. *Pelargonium peltatum*. Peltated Crane's bill.
Ait. hort. kew. 2. 427. L'Herit. n. 73.]
Geranium peltatum. Lin. spec. 947. syst. 613. Reich. 3. 311. hort. cliff. 345. Burm. ger. 48. Mill. dict. n. 32. fig. t. 140. Kniph. cent. 6. n. 43. Comm. prael. 52. t. 2. Curt. magaz. 20. Raii hist. 3. 514. n. 38.
Umbels few-flowered, leaves five-lobed quite entire fleshy peltated, branches angular.
- [42. *Pelargonium lateripes*. Ivy-leaved Crane's-bill.
Ait. hort. kew. 2. 428. L'Herit. n. 74. t. 24.
Umbels many-flowered, leaves cordate five-lobed somewhat toothed fleshy, branches round.
43. *Pelargonium cortusæfolium*. Cortusa-leaved Crane's-bill.
Ait. hort. kew. 2. 428. L'Herit. n. 75. t. 25. Jacqu. ic. 539. collect. suppl. 134.
Umbels many-flowered, leaves cordate gash-lobed waved bluntly toothed, stipules awl-shaped.
44. *Pelargonium crassicaule*. Thick-stalked Crane's-bill.
Ait. hort. kew. 2. 428. L'Herit. n. 77. t. 26.
Umbels many-flowered, leaves kidney-form obacuminate, stem fleshy branched even.
45. *Pelargonium cotyledonis*. Hollyhock-leaved Crane's-bill.
Ait. hort. kew. 2. 428. L'Herit. n. 81. t. 27.
Geranium cotyledonis. Linn. mant. 569. syst. 614. Reich. 3. 313.
Umbels compound, leaves cordate peltate wrinkled, stem fleshy.
§. 5. Shrubby, with a woody stem.
46. *Pelargonium ovale*. Oval-leaved Crane's-bill.
Ait. hort. kew. 2. 429. L'Herit. n. 83. t. 28.
P. Oenotheræ. Jacqu. ic. rar. 525.
Geranium ovale. Burm. cap. 19.
G. ovatum. Cavan. diff. 4. 238. t. 103. f. 3. Jacqu. collect. 2. 355.
Umbels few-flowered, pedicels elongated, leaves elliptic toothed, stems hirsute.
47. *Pelargonium betulinum*. Birch-leaved Crane's-bill.
Ait. hort. kew. 2. 429. L'Herit. n. 84. Curt. magaz. 148.]
Geranium betulinum. Lin. spec. 946. syst. 613. Reich. 3. 309. Burm. ger. n. 38. Berg. cap. 175. Mill. dict. n. 43. Burm. afr. 86, 87. t. 33. f. 1, 2. Raii suppl. 513. 22. Pluk. mant. t. 415. f. 3.
Umbels few-flowered, leaves ovate unequally serrate levigated.
- [48. *Pelargonium glaucum*. Spear-leaved Crane's-bill.
Ait. hort. kew. 2. 429. L'Herit. n. 89. t. 29.
Geranium glaucum. Linn. suppl. 306. syst. 614.
G. lanceolatum. Cavan. diff. 4. 235. t. 102. f. 2. Curt. magaz. 56.
Peduncles two-flowered, leaves lanceolate quite entire acuminate glaucous.
49. *Pelargonium tricuspidatum*. Three-pointed Crane's-bill.
Ait. hort. kew. 2. 430. L'Herit. n. 90. t. 30. Jacqu. collect. suppl. 139.
Peduncles two-flowered, leaves three-pointed, middle lobe more produced subserrate, midrib muricated underneath.
50. *Pelargonium acetosum*. Sorrel Crane's bill.
Ait. hort. kew. 2. 430. L'Herit. n. 97. Curt. magaz. 103.]
Geranium acetosum. Lin. spec. 947. Reich. 3. 308. hort. cliff. 345. Burm. ger. 47. Mill. dict. n. 28. Kniph. cent. 11. n. 28. Comm. prael. 54. t. 4.
Umbels few-flowered, leaves obovate crenate smooth fleshy, petals linear.
- [51. *Pelargonium scabrum*. Rough-leaved Crane's-bill.
Ait. hort. kew. 2. 430. L'Herit. n. 99. t. 31.
Geranium scabrum. Lin. spec. 946. Reich. 3. 309. amoen. 4. 281. Burm. ger. 39. Jacqu. ic. vol. 3. collect. 2. 327.
Umbels few-flowered, leaves wedge-shaped semitrifid rugged, lobes lanceolate loosely serrate.
52. *Pelargonium crispum*. Curled-leaved Crane's-bill.
Ait. hort. kew. 2. 430. L'Herit. n. 100. t. 32, 33.
Geranium crispum. Lin. mant. 257. syst. 613. Reich. 3. 309. Berg. cap. 176.
G. hermanniæfolium. Linn. suppl. 305.
Peduncles subbiflorous, leaves distich cordate three-lobed curled muricated.

53. *Pelargonium adulterinum*. Hoary - trifid - leaved Crane's-bill.
Ait. hort. kew. 2. 431. L'Herit. n. 103. t. 34.
Peduncles subbiflorous, leaves cordate three-lobed waved villose soft.
54. *Pelargonium exstipulatum*. Soft-leaved Trifid Crane's-bill.
Ait. hort. kew. 2. 431. L'Herit. n. 107. t. 35.
Geranium exstipulatum. Cavan. diff. 4. 253. diff. 5. 271. t. 123. f. 1.
Umbels few-flowered, leaves cordate three-parted-lobed toothed hoary, stipules scarcely any.
55. *Pelargonium ternatum*. Ternate Crane's-bill.
Lin. suppl. 306. Cavan. diff. 4. 255. t. 107. f. 2.
Curt. magaz. 413. Jacqu. ic. rar. 544. collect. suppl. 135.
Stem shrubby hispid, leaves opposite ternate, leaflets wedge-shaped gash-trifid serrate scabrous.
56. *Pelargonium tricolor*. Three-coloured Crane's-bill.
Curt. magaz. 240.
P. violareum. Jacqu. ic. rar. 527. collect. suppl. 129.
The two upper petals rugged at the base with prominent shining dots.
57. *Pelargonium carneum*. Flesh-coloured Crane's-bill.
Jacqu. ic. rar. 3. 512. collect. 4. 189.
Stemless; root rapaceous simple; leaves bipinnate, pinnales gashed smoothish; five filaments fertile.
58. *Pelargonium barbatum*. Bearded Crane's-bill.
Jacqu. ic. rar. 3. 513. collect. 4. 196.
Stemless; root rapaceous simple; leaves pinnate; pinnales pinnatifid, lanceolate-linear, acute, bearded at the tip; five filaments fertile.
59. *Pelargonium melananthum*. Dark-flowered Crane's-bill.
Jacqu. ic. rar. 514. collect. 4. 188.
Stemless; root rapaceous simple; leaves pinnate somewhat hispid, pinnales lobe-gashed blunt; five filaments fertile.
60. *Pelargonium triphyllum*. Three-leaved Crane's-bill.
Jacqu. ic. rar. 515. collect. 4. 199.
Stemless; root rapaceous simple; leaves ternate crenate smooth; five filaments fertile.
61. *Pelargonium heterophyllum*. Various-leaved Crane's-bill.
Jacqu. ic. rar. 516. collect. 4. 197.
Stemless; root rapaceous simple; leaves ternate and entire smooth ciliate, leaflets often lobed; five filaments fertile.
62. *Pelargonium nervifolium*. Nerve-leaved Crane's-bill.
Jacqu. ic. rar. 517. collect. 4. 198.
Stemless; root rapaceous simple; leaves ternate three-lobed and entire many-nerved smooth prickly-ciliate at the edge; five filaments fertile.
63. *Pelargonium longifolium*. Long-leaved Crane's-bill.
Jacqu. ic. rar. 518. collect. 4. 192. Cavan. diff. 235. t. 102. f. 1. Burm. ger. n. 67. t. 2.
Stemless; root rapaceous simple; leaves lanceolate acute smooth, the older ones often pinnate; four filaments fertile.
64. *Pelargonium ciliatum*. Ciliated Crane's-bill.
Jacqu. ic. rar. 519. collect. 4. 195.
Stemless; root rapaceous subsimple; leaves lanceolate acute at both ends, ciliate, smooth underneath, hairy above, often appendicled; five filaments fertile.
65. *Pelargonium depressum*. Flat-umbelled Crane's-bill.
Jacqu. ic. rar. 520. collect. 4. 193.
Stemless; root rapaceous simple; leaves narrow lanceolate acute smooth; umbels finally depressed smooth; four filaments fertile.
66. *Pelargonium longiflorum*. Long-flowered Crane's-bill.
Jacqu. ic. rar. 521. collect. 4. 194.
Stemless; root rapaceous simple; leaves lanceolate acute smoothish; petals very long; four filaments fertile.
67. *Pelargonium chamædryfolium*. Germander-leaved Crane's-bill.
Jacqu. ic. rar. 523. collect. suppl. 130.
Peduncles one or two-flowered, stems herbaceous decumbent, leaves oblong blunt serrate villose, five filaments fertile.

68. *Pelargonium trichostemon*. Hairy-stamened Crane's-bill.
Jacqu. ic. rar. 524. collect. suppl. 131.
Peduncles few-flowered, leaves roundish-ovate bluntly serrate velvety, stem biennial almost erect, filaments hirsute, five fertile.
69. *Pelargonium coronopifolium*. Buck's-horn Plantain-leaved Crane's-bill.
Jacqu. ic. rar. 526. collect. suppl. 132.
Peduncles two-flowered, leaves lanceolate-linear tooth-serrate, smooth above, somewhat rough-haired underneath.
70. *Pelargonium bullatum*. Bladder-leaved Crane's-bill.
Jacqu. ic. rar. 530. collect. suppl. 124.
Peduncles two-flowered, corollas four petalled, stem biennial, leaves ternate, pinnatifidly lobed, somewhat hispid on both sides, five filaments fertile.
71. *Pelargonium betonicum*. Betony-leaved Crane's-bill.
Jacqu. ic. rar. 531. collect. suppl. 127. Cavan. diff. 264. n. 391. t. 118. f. 1?
Geran. afr. fol. betonicae. Riv. pent. t. 101.
Peduncles few-flowered, corollas four-petalled seldom five-petalled, stem biennial, leaves pinnatifidly lobed somewhat rough-haired, five filaments fertile.
72. *Pelargonium lacerum*. Jagged-leaved Crane's-bill.
Jacqu. ic. rar. 532. collect. suppl. 122.
Peduncles five-flowered, corollas five-petalled, stem biennial hairy, leaves pinnate-lobed gashed, five filaments fertile.
73. *Pelargonium longicaule*. Long-stalked Crane's-bill.
Jacqu. ic. rar. 533. collect. suppl. 125.
Peduncles from one to five-flowered, corollas four-petalled seldom five-petalled, stem biennial hirsute, leaves pinnate-lobed, seven filaments fertile.
74. *Pelargonium multicaule*. Many-stalked Crane's-bill.
Jacqu. ic. rar. 534. collect. suppl. 126.
Peduncles five-flowered or thereabouts, corollas four-petalled, stem biennial smooth, leaves pinnate-lobed smooth, seven filaments fertile.
75. *Pelargonium anemonæfolium*. Anemone-leaved Crane's-bill.
Jacqu. ic. rar. 535. collect. suppl. 123.
Geranium afr. fol. anemones. Riv. pent. 102.
Peduncles four or five-flowered, corollas five-petalled, stem biennial, leaves pinnate-lobed somewhat rough-haired underneath, smooth above, seven filaments fertile.
76. *Pelargonium hirtum*. Rough-haired Crane's-bill.
Jacqu. ic. rar. 536. collect. suppl. 144.
Geranium hirtum. Burm. ger. 48. n. 64. t. 1. Cavan. diff. 258. n. 379. t. 117. f. 1.
Umbels five-flowered or thereabouts, leaves tripinnate hirsute, pinnales linear, stem fleshy.
77. *Pelargonium tomentosum*. Downy Crane's-bill.
Jacqu. ic. rar. 537. collect. suppl. 140.
Umbels many-flowered simple and compound, leaves cordate mostly five lobed serrate tomentose very soft, stem fleshy.
78. *Pelargonium ribifolium*. Currant-leaved Crane's-bill.
Jacqu. ic. rar. 538. collect. suppl. 141.
Umbels many-flowered depressed somewhat halved, leaves cordate three-lobed serrate somewhat hirsute, lobes lobed gashed, stem fleshy.
79. *Pelargonium fuscum*.
Jacqu. ic. rar. 540. collect. 4. 186.
Umbels four-flowered, leaves cordate-roundish mostly five-lobed acutely serrate smoothish, stipules ovate, stem shrubby erect, when young rugged.
80. *Pelargonium patulum*.
Jacqu. ic. rar. 541. collect. 4. 187.
Peduncles two-flowered, leaves somewhat kidney-shaped lobe-gashed acutely crenate smooth above, stem shrubby, six filaments fertile.
81. *Pelargonium balsameum*.
Jacqu. ic. rar. 543. collect. suppl. 136.
Umbels few-flowered, leaves five-parted somewhat rough-haired, lobes lanceolate acute gashed somewhat rigid, stem shrubby.
82. *Pelargonium hermanniæfolium*.
Jacqu. ic. rar. 545. collect. suppl. 137.
Geranium herm. Lin. syst. 613. mant. 569. Berg. cap. 177.
Peduncles two-flowered, leaves cuneate-roundish gashed rough-haired rigid distich, stem shrubby.

DESCRIPTIONS, &c.

These plants are natives of Africa, most of them from that inexhaustible store of curious, elegant and rare vegetables, particularly such as are shrubby, or inclined to shrubbiness, the Cape of Good Hope.

The distinctions between this genus and those of *Erodium* and *Geranium*, into which the natural genus or family of *Geranium* is now divided, may be seen under the essential characters of the respective genera; and the reasons for the modern division, together with the circumstances of agreement in the several branches of this natural family, are given under *Geranium*.

Erodium having by an oversight been omitted in its proper place is introduced at the end of letter E; with *Erotem* and *Ervum*.

1. Root turbinate, perpendicular, at the upper part thickened and imbricate as it were with red stipules. Stem none, except peduncles or scapes, on which there is one leaf near the origin of the umbels. Root-leaves numerous, some ovate almost entire, others lacinate and as it were pinnate, and all petioled. Stipules oblong, fastened to the base of the petiole, bifid. Flowers umbelled; scape radical, two inches high, and divided into three or more pedicels; involucre many-leaved, acute, hairy; rays from ten to twelve, very short. Calycine segments acute, reflex. Corolla small, papilionaceous, pale in dried specimens, but according to Burman, dark purple. Capsules five, short, tomentose: the beak scarcely half an inch in length^a.

Introduced in 1788, by Mr. Francis Masson. It flowers in march^a.

2. Root thick, yellowish, descending, having few fibres. Stem scarcely any, except the scapes, which have sometimes leaves sometimes none. Leaves long, often with an odd leaflet: leaflets about sixteen, subsessile, ovate-acute, ash-coloured. Scape longer than the leaves: involucre many-parted, with ovate-acute parts: rays half an inch long, commonly six. Calyx deeply five-parted, the upper segment wider. Corolla papilionaceous, reddish white with deeper-coloured veins^b.

Introduced in 1788, by Masson. It flowers in april^a.

3. Root fleshy, two inches thick and more, consisting of several irregular tubers, and frequently half a foot in width, white within, purple on the outside, covered with a brownish bark, and perennial. Root-leaves stipuled at the base, very many, hairy all over and ciliate, from six inches to a foot and more in length, scarcely two inches wide, petioled, bipinnate; the lower alternate, the upper opposite; pinnules lanceolate-linear, trifid, bifid and simple, acute. Umbel compound: common scape round, short, hirsute: partial scapes several, somewhat hirsute and upright, commonly longer than the leaves: universal involucre consisting of many lanceolate, acute, hairy, ciliate, short leaflets; and a few others, like the root-leaves, but much shorter: leaflets of the partial involucre lanceolate, acute, hirsute also and ciliate. Rays of the umbels or peduncles compressed, villose, an inch long. Flowers without scent. Calyx silky and ciliate, green. Petals at first whitish, but afterwards rose-coloured; the two upper ones having blood-red spots at their base. Filaments pale; anthers deep purple. Germ villose, ending in a silky style: stigma purple^c.

Introduced in 1788 by Masson. It flowers here in april^a.]

4. This has tuberous roots, from which come out three or four broad leaves, divided into several lobes, like a vine-leaf, spreading flat on the ground, crenated, on short foot-stalks. Peduncles immediately from the root, about a foot high, naked, terminated by a bunch of dark-purple flowers, having long tubes, sessile, and having a very agreeable odour in the evening.

[Cultivated in 1739, in the botanic garden at Chelsea. It flowers in july and august^d.]

5. Root thick, roundish, tuberous, with several hairy leaves springing from it, which are finely divided, almost like those of the Garden Carrot; they spread near

the ground, and among them come out the stalks, about a foot high, having two or three leaves of the same sort, but smaller and sitting close: from the stalks arise two or three naked peduncles, terminated by a bunch of yellowish flowers, marked with dark-purple spots, which smell very sweet after the sun has left them.

[It was introduced before 1632, by Mr. John Tradescant, senior^e. Johnson saw it in flower about the end of july 1632, being the first time that it flowered with the owner^f.

6. This is a rough-haired plant. The leaves are multifid, like those of Carrot. The two upper petals are ascending; the middle ones concave, converging, inclosing the fifth petal^g.

Root tuberous: tubers oblong, gibbous, almost half an inch thick; skin of a deep brown colour; they become slender at bottom, and put out there many fibres. Stems several. Leaves spreading much or horizontal, often a span long, petioled, pale green, smelling sweet when handled, covered with very spreading, long distant hairs on both sides, interruptedly and alternately tripinnate; leaflets pinnatifid, with acute segments, often toothed, reflex; the lateral pinnas turned up: the bottom leaves are fewer, smaller, smoother, with wider segments; but the greater number are larger, more hairy, and have narrower segments. Petiole round, gibbous at the base, embracing, hairy, leaflets on a fourth part of it. At the base of the petioles and peduncles is a single, triangular, shrivelling stipule. Peduncle obliquely ascending, gibbous at the base, covered with longer thicker hairs than the other parts, sustaining nine or ten flowers. Pedicels umbelled, divaricating, jointed not far from the base, compressed a little, swelling towards the top, two inches long, pubescent, supported by a many-leaved involucre; the leaflets lanceolate, shrivelling. Calycine segments linear, pubescent, reflex. Corolla straw-white; petals wedge-shaped, slightly emarginate, at first flat, afterwards reflex; the two upper ones wider with an oblong purple spot; the three lower narrower with two purple diverging streaks^h.

Cultivated in the Apothecaries garden at Chelsea in 1724. It flowers from july to septemberⁱ.

7. Stems prostrate, strigose or hispid, annual at the upper part. Leaves like those of Alchemilla, naked but rough-haired at the edge, with the umbilicus contracted and purple. Peduncles very long, even. Flowers purple. It resembles *G. zonale*, but the greatest part of the stem perishes above the root^j.

Cavanilles describes it under the name of *Geranium elongatum*. Stem hardish, hispid, round, branched, prostrate. Leaves opposite, and next the flowers simple, an inch and half in diameter, roundish-five-lobed, tooth-crenate, rugged, sometimes glaucous, with a blackish or rufescent zone: petioles half a foot long and more, sometimes tinged with red. Stipules lanceolate, reflex. Common peduncle opposite to a leaf, upright, the length of the leaves; involucre commonly four-leaved; the leaflets acute: rays one, two or three, half an inch long, drooping when in fruit. Calyx oblong, divided deeply into five ciliate segments, ending in a very acute point: the upper segment wider, erect; the rest from spreading reflex, and afterwards pressed close to the fruit: streaks ten, not very conspicuous. Corolla papilionaceous, yellow, twice as long as the calyx, with the upper petals wider, reflex, emarginate; the rest linear. Anthers crimson. Germ small, five-cornered: style tomentose, green: stigmas reflex. Capsules very acute at the base: awn an inch and half long, bearded white. Seeds rufescent.—It varies with a biennial stem, unspotted leaves, more deeply lobed, and the common peduncles more than a foot long^k.

Introduced in 1775, by Masson. It flowers during the greater part of the summer^l.]

8. This sends out several herbaceous stalks about a foot and half in length. Flowers pale bluish-colour, several together upon very long peduncles. There is a succession of them during all the summer months, and the

^a Cavanilles. ^b Hort. kew. ^c Cavanilles. ^d Hort. kew.
^e Jacquin. ^f Hort. kew. ^g Idem.

^h Hort. kew. ⁱ Ger. emac. ^j Linn. mant.
^k Murray. ^l Hort. kew. ^m Linn. ⁿ Cavanilles.
^o Hort. kew.

seeds ripen about a month after the flowers are fallen. There is a variety of it, with a dark circle in the middle of the leaves.

[Cultivated in 1693, by Mr. Jacob Bobart^e.]

9. This has a very short fleshy stalk, dividing near the ground into several heads, each having many leaves, on separate foot-stalks from the heads; they are soft and downy, and have a strong scent like Ani-feed. From these heads come out several slender stalks, near a foot in length, prostrate, with rounder leaves than those near the root, but of the same texture and odour. The flowers are produced from the side of these stalks, three, four or five standing together upon slender peduncles, they are white, and being small make little appearance.

[It was cultivated in 1724, in the botanic garden belonging to the Apothecaries Company at Chelsea, and flowers during most part of the summer^f.]

10. Stem prostrate, four-cornered, smooth; as is also the whole plant. Leaves marked with lines. Peduncles capillary, with two or three small flowers, of a pale flesh-colour. Anthers four^g.]

This is a biennial plant, sending out a great number of very slender trailing stalks, extending a foot and half in length. Leaves small. Flowers on short slender peduncles, coming out at every joint from the side of the stalks; they are very small, and of a reddish colour, single or sometimes two or three together. They continue in succession all the summer; and the seeds ripen in about five weeks after the flowers decay.

[Cultivated in 1731, by Mr. Miller^h.]

11. Introduced by Mr. Francis Masson in 1788. It flowers here in mayⁱ.

12. Plant depressed, wholly subtomtose. Petals the length of the calyx, dark purple on the outside with a white edge, red within: the two upper ones with blood-red dotted streaks at the base^k.

Branches long, simple, filiform, wrinkled, purple. Leaves petioled, short, opposite, hirsute, odorous. Peduncles axillary, longer than the petioles, erect, supporting five or six, small, irregular flowers. Calyxes hirsute. Beaks very short^l.

Cultivated in the botanic garden at Chelsea in 1724^m.

13. This is an annual plant; introduced in 1775 by Mr. Fr. Masson. It flowers in June and Julyⁿ.]

14. This is an annual [or rather biennial] plant, with branching stalks near a foot high. The lower leaves stand upon long foot-stalks, but those on the upper part sit close to the stalks. The flowers stand upon naked peduncles, which proceed from the side of the stalks, on the side opposite to the leaves: they grow three or four together upon short separate pedicels: the corolla is papilionaceous; the two upper petals, which are large, forming a kind of standard, the three lower ones narrow and bent downwards; they are of a pale flesh-colour, appear in July; and the seeds ripen in September; soon after which the plants decay.

[Linneus remarks, that the disk of the leaf becomes brownish, as in the next species; and that the anthers are five or seven.

It was cultivated in the Chelsea garden in 1724, and flowers from March to September^o.

15. Stem herbaceous, spreading a little, subpubescent. Leaves ternate, gashed, subserrate, marked with lines, having almost upright hairs scattered over them, and a broad brown spot in the disk; the middle leaflet wider and semipinnatifid. Two segments of the calyx have three nerves, two have one nerve, and one has two nerves. Petals four (the lowest being wanting) pale flesh-colour; the upper ones with purple veins. Anthers five, the alternate ones being barren^p.]

Root knobbed, tuberous, like *P. triste*, from which come out several pretty large leaves, composed of many lobes, set along the midrib; they are narrow at the base, but are very much enlarged at their ends, which are rounded, and cut all along their side and top into many acute points. The peduncles arise immedi-

ately from the root, and sometimes have one or two small leaves towards the bottom, where they often divide into two naked peduncles, each terminated by a bunch of pale reddish flowers, which smell sweet at night.

[Cultivated by Mr. Miller in 1731. It flowers from May to August, and is somewhat shrubby^q.]

16. Introduced in 1768, by Mr. William Malcolm. It flowers most part of the summer^r.

17. This has a thick fleshy knotted stalk, rising about two feet high, sending out a few slender fleshy branches, thinly set with leaves, which on the lower part of the stalk are petioled, but above are sessile. The flowers are produced in small clusters at the ends of the branches: the petals are narrow and white, making no great appearance; they continue in succession most part of the summer.

[Cultivated in Chelsea garden in 1724^s.]

18. Native of the South-west coast of Africa. Introduced in 1786, by Mr. Anthony Hove. It flowers in May^t; and continues to do so during most of the summer months: the seeds ripen here^u.

19. Root perennial. Stem a foot or two in height, nearly erect, simple, swelled, round, glaucous, smooth, leafy, flowering at the top. Leaves scattered, much spreading, glaucous, smooth: leaflets alternate, wedge-shaped, irregularly cut, and ending in sharp teeth: foot-stalks round. Stipules in pairs, small, acute, membranous, brown. Panicles one or more at the top of the stem, alternately superdecumbent, ending in numerous umbels of from three to five flowers. Peduncles and pedicels round, a little fleshy, slightly downy. Bractes solitary or in pairs at each division of the panicle, small, ovate, acute, concave, membranous, brown. Involucres about five at the base of each umbel, shaped like the bractes, but less acute, ciliated on the margin, reflexed. Flowers very numerous, inodorous, rather elegant than splendid. Calyx-leaves bluntish, membranous at the edge, slightly downy at the tip, bent back in the middle; the uppermost a little broader, ending in a honey-bearing tube of its own length, and about one fifth of the length of the pedicel with which it is connected. Petals all of an equal length, white; the two upper ones crisped on each side at their base, and spotted with purple. Five filaments half as long as the other five, and destitute of anthers; the five fertile ones being scarcely so long as the petals, declining, the uppermost rather shorter than the rest. Anthers large, incumbent, scarlet. Germ roundish, small, with five furrows, clothed with thick down. Style straight, scarcely so long as the fertile stamens, very woolly towards the base, perfectly smooth above. Stigmas bluntish, red.

This species is allied to the preceding, but appears to be distinct, on account of the dilated, pointed, and not obtuse, divisions of the leaves; more especially from the crisping and waving of the upper petals, and all of them being obtuse; not to mention its panicked (not solitary) umbels.

It flowered in April 1792, at the Marchioness of Rockingham's; to whom the seeds, brought by Captain Riou of the Guardian, were given by the Rev. Mr. Spragg^x.]

20. This has a round fleshy stalk with swelling knots at the joints, rising about three feet high, and sending out several irregular smooth branches. Leaves thinly disposed, smooth, fleshy, gray, ending obtusely, and standing on short foot-stalks. Flowers four or five on a peduncle. Petals dark-purple, broader than in *carnosum*, and having a very agreeable scent in the evening.

[Cultivated in the Chelsea garden in 1712. It flowers most part of the summer^y.]

21. This has a fleshy stalk, which seldom rises a foot high, and puts out very few branches. Leaves smooth, light green. Peduncles short, having at the top two or three flowers, with unequal petals of a deep scarlet colour. The leaves fall off, and the stalks being destitute of them for three or four months in sum-

^e Hort. kew.

^f Idem.

^g Linn. mant.

^h Hort. kew.

ⁱ Idem.

^k Linn. mant.

^l Burm.

^m Hort. kew.

ⁿ Idem.

^o Idem.

^p Linn. mant.

^q Hort. kew.

^r Idem.

^s Idem.

^t Idem.

^u Curtis.

^x Smith.

^y Hort. kew.

mer, appear as if they were dead, but in autumn they put out fresh leaves again.

[Cultivated in 1732, in the garden of James Sherard, M. D. at Eltham. It flowers during most part of the summer^z.

22. Stem shrubby, twisted, branched, more than four feet high. Leaves opposite, often shorter than the petioles, oblong, with deep rounded sinuses; lobes oblique, wider above, roundish, crenate. Stipules short, wide, half embracing, shrivelling. Peduncles axillary, solitary, longer than the petioles: involucre one-leaved, divided into six or seven ovate concave segments, rays commonly six, half an inch long. Calyx oblong-ovate, with the segments reflex. Anthers saffron-coloured, somewhat oblong^a. There are two varieties, larger and smaller. Introduced in 1774 by Masson. It flowers from march to august^b.

23. Stem shrubby, covered with an ash-coloured bark, branched, two feet high. Leaves numerous, alternate, nearly equal to the petioles, very deeply five-cleft; the segments pinnate and bipinnate, linear. Stipules wide, acuminate and shrivelling. Peduncles axillary, solitary, with one, two or three flowers: involucre generally five-cleft, shrivelling. Calyx ovate-oblong, pubescent, cut deeply into five ovate segments. Corolla papilionaceous, rose-coloured with red lines; the claws white; the two upper petals reflex and wider. Anthers deep-flesh-coloured. Germ very small, ovate-pentagon; stigmas villose, purple, revolute. Capsules villose, acute at the base: awn or tail bearded, twisted, near four lines in length. The whole plant has a strong smell of turpentine. The leaves in young plants are often three inches long; but in old ones only one third of the size and more numerous^c.

It takes the name *Radula*, from the rough rasp-like surface of its leaves. There are two varieties of this, as of the preceding, a larger and a smaller: and as it is readily raised from seeds, it affords many feminal varieties. The case is the same in other sorts; inso-much that we may hereafter find it difficult to reduce these plants to their proper species^d.

It was introduced by Masson in 1774; and flowers from march to july^e.

24. Stem arborescent, a fathom in height, branched; the tender branches pubescent. Leaves alternate, but sometimes opposite, smooth underneath and whitish, above deep-green. Stipules wide, emarginate or acuminate, shrivelling. Peduncles solitary, opposite to the leaves, longer than the petiole: involucre five-leaved; rays about five. Calyx deeply cut into five segments, somewhat bent back. Corolla papilionaceous, pale purple, with deeper lines on the upper petals, which are wider and reflex. Seven of the filaments have anthers. The plant has a strong smell, which varies, and resembles turpentine, or lemon or roses^f.

It was introduced by Masson in 1774, and flowers from march to july^g.]

25. This rises with an upright shrubby stalk seven or eight feet high, sending out several side branches, with large, angular, rough leaves, on short foot-stalks. The flowers are produced in large panicles (umbels) at the end of the branches: the two upper petals, which are pretty large, turn upwards, and are finely variegated; but the three under ones are very small, and being bent back, are screened from sight, unless the flower be viewed near.

[It was cultivated in the botanic garden at Chelsea in 1724: and flowers from april to july^h.]

26. This rises with a soft shrubby stem to the height of eight or ten feet, sending out several branches, which are generally erect. Leaves of a thick substance, and a lucid green, on pretty long foot-stalks, covered with soft hairs on their under side. Flowers in loose bunches (umbels), on long, stiff, axillary peduncles. Corolla bright scarlet. The flowers make a fine appearance, and there is a succession of them during all the summer months.

^a Hort. kew.

^c Cavanilles.

^f Cavanilles.

^a Cavanilles.

^d Curtis.

^z Hort. kew.

^b Hort. kew.

^c Hort. kew.

^h Idem.

[The leaves, when bruised, stain the fingers of a ferruginous colour; hence Linneus's trivial name.

It was cultivated in 1714, by Bishop Compton; and flowers from may to septemberⁱ.

27. In the flowers this perfectly resembles the preceding; but the herb is smaller; the leaves are not tomentose, but are very like those of *P. acetosum*, but they are neither wedge-shaped at the base nor kidney-form, they are also less four^k.

Cultivated in 1732, by James Sherard, M. D. It flowers with the other^l.]

28. This rises with a shrubby stalk four or five feet high, and divides into a great number of irregular branches, so as to form a large bush, frequently eight or ten feet in height. Leaves indented on the edge in several obtuse segments, cut into short teeth: there is a purplish curved zone in form of a horse-shoe, from one side of the base to the other, corresponding with the border: when gently rubbed, the leaves have a scent like scalded apples. The flowers are produced in pretty close bunches, on axillary peduncles, five or six inches in length, coming out towards the ends of the branches: they are of a reddish purple colour, and continue in succession great part of the summer. There is a variety with fine variegated leaves [and the flowers vary much in colour from purple, through the different shades of red to high scarlet.—Cultivated in 1710, by the Dutchess of Beaufort.

29. Cultivated in 1786, by Messrs. Lee and Kennedy.

30. Cultivated in 1784, by Mrs. Norman^m.

31. Stem shrubby, twisted, covered with an ash-coloured bark; branches round, villose, subherbaceous, a foot long. Leaves opposite, on long petioles, glaucous, rugged; lobes curled, toothed. Stipules almost embracing, acuminate. Common peduncle often opposite to a leaf or lateral, sometimes axillary, longer than the leaf: involucre one-leaved, many-parted, shrivelling; rays about thirteen, scarcely an inch long. Calyx deeply five-parted: segments ovate, villose, reflex; streaks obliterated. Corolla almost regular, papilionaceous-wheel-shaped; the upper petals a little wider, all quite entire, with a white border, and beautifully variegated with dark-purple spots. Three filaments barren; the other seven longer, fertile, with reddish-yellow anthers. Germ five-cornered, villose: style woolly at the base, and the rest of it flesh-colouredⁿ. Jacquin observes, that the whole has a very strong smell: and Curtis, that it obviously differs from all the other species, in the particular shape of its leaves, and the colour of the flowers, which are usually of a rich and very dark purple edged with white.—Introduced in 1778, by John Earl of Bute. It flowers from june to august^o.]

32. This rises with an upright shrubby stalk to the height of seven or eight feet, sending out many pretty strong branches. Leaves somewhat like those of the Vine; the lower on long petioles, the upper on short ones; when rubbed, they have a scent of balm. The flowers grow in compact clusters, on the top of long, naked, axillary peduncles, rising much higher than the branches; being small and of a pale blue colour, they make no great figure; but there is a succession of them most part of the summer.

[It was cultivated in 1724, in Chelsea garden^p. L'Heritier has figured a variety of it.]

33. This rises with a shrubby stalk four or five feet high, dividing into several weak irregular branches. Leaves divided into three unequal lobes, which are hairy, and waved on their edges; they are placed alternately, and their foot-stalks are hairy. The flowers grow in close roundish heads, forming a sort of corymb; they are of a purplish blue colour, and continue in succession great part of the summer. The leaves, when rubbed, have an odour like dried roses.

[Introduced in 1690, by Mr. Bentick^q.

34. Stem shrubby, covered with a gray bark, three feet high and more; branches declining and decum-

ⁱ Hort. kew.

^m Idem.

^k Linn. mant.

ⁿ Cavanilles.

^p Idem.

^l Hort. kew.

^o Hort. kew.

^q Idem.

bent, green, clammy, as is the whole plant. Leaves alternate, the uppermost sometimes opposite, often shorter than the petioles; large, acute, sinuate. Stipules wide-acuminate, shrivelling. Common peduncles axillary, lateral; or opposite to a leaf, erect, solitary, longer than the leaves: involucre five-leaved, the leaflets ovate-acute, shrivelling: rays from three to eight, half an inch long. Calyx ovate, villose, deeply five-parted; the segments reflex. Corolla much larger than the calyx, papilionaceous, pale purple, variegated with red streaks; the two upper petals wider, reflex. Seven of the filaments long, purple, villose, with oblong anthers; the other three very small and barren. Germ small, five-cornered, villose: style pyramidal, villose, white: stigmas purple. Capsule tomentose, sharp at the base: awn an inch long, bearded white, spiral^a.

The middle of the leaf is generally stained with purple^a. It was introduced about the year 1777, by Messrs. Kennedy and Lee, and flowers in may and june^b, even to september. Several varieties have been produced from seed^c.]

35. This rises with a shrubby stalk eight or ten feet high, sending out several irregular branches. Leaves roundish, with the sides erect, so as to form a hollow or hood, whence Linneus calls them cowled; they are heart-shaped at the base, or kidney-shaped, according to Linneus, and from the footstalk run many nerves arising from a point, but diverging towards the sides; the borders are sharply indented; those on the lower part of the branches have long foot-stalks, and are placed without order on every side, but those on the upper part have shorter foot-stalks, and stand opposite. The flowers are produced in large panicles or (umbels) on the tops of the branches. The calyx is deeply cut, and closely covered with soft hairs. The petals are large, entire, and of a purple blue colour. It flowers from june to september; and the seeds have short hairy beaks.

[The whole plant is pubescent, higher than most of the other, stiffer and more upright. Leaves alternate, contracted at the base, without any apparent lobes, waved, crenate. Tube of the calyx shorter than the border. Petals flesh-coloured with red veins; in the two upper ones the veins are very dark purple^a.

Introduced in 1690, by Mr. Bentick^d.]

36. This bears much resemblance to the preceding, and has been confounded with it, but the leaves are of a thicker substance, divided into many acute angles, having purple edges, which are acutely indented. The stalks and leaves are very hairy. The branches are not so irregular as those of the former, nor are the bunches of flowers near so large.

[It was cultivated in the Chelsea garden in 1724; and flowers in july and august.

37. Cultivated in 1784, by Mr. Archibald Thompson. It flowers in april and may^e.

38. Stem shrubby, branched; when young red, when very young green and villose, when old covered with an ash-coloured bark. Leaves alternate, almost equal to the petioles, tomentose, whitish underneath. Stipules subovate. Flowers at the ends of the stem and branches in numerous umbels. Calyx ovate-oblong, very tomentose; the segments acute, striated, the upper one wider. Corolla papilionaceous, large, pale purple, the two upper petals wider, longer, marked with deeper-coloured lines, red from the claws to the middle; the three lower whitish, linear. The seven fertile filaments much longer than the other three. Anthers ovate-oblong, yellow^a.

Introduced in 1774, by Mr. Masson. It flowers from march to july^b. There are several varieties of it.

39. Stalk green, surface smooth and somewhat glossy, beset with spines which bend back and terminate in brownish weakish points; these appear to have been primarily the stipules, which become thus fleshy and rigid. Leaves on long footstalks, veiny, soft and downy, especially on the under side, which is of a

much lighter colour than the upper. The flowering stem proceeds from the summit of the stalk, and is a foot or more in height: as it advances it throws out its branches or peduncles, ultimately about five in number, each of which has a leaf at its base, similar to the other leaves of the plant, but smaller, and terminates in an umbel of seven or eight flowers. When the corolla is expanded, the hindmost leaf of the calyx continues upright, the others are reflex, as is usual in this genus; they are all beset with fine long hairs. The three lowermost petals are pure white, with a little gibbosity at the base of each: the two uppermost are marked with three irregular spots, of a rich purple colour, inclining to carmine, the two lower spots narrowest and of the deepest colour. Six filaments have anthers, and four have none. Stigma red, divided into five parts, and a little longer than the fertile filaments. In its habit this plant somewhat resembles the preceding. It flowers from may to september, and in favourable seasons produces seeds here. It varies with petals of a rich purple colour, in which the spots are similar, but not so conspicuous.—It flowered in 1797, with Mr. Colvill, nurseryman, in the King's-road, Chelsea^c.

40. Stems angular, angles four, sometimes three, succulent as is the whole plant, procumbent when they shoot out into length, at first hairy, afterwards very smooth, much branched, and three feet high. Leaves alternate, almost equal to the petioles, orbiculate, five-lobed; the younger villose, tooth-crenate, violet-coloured underneath, and above having a dark red zone; the older crenate, fleshy, dark green, with a few villose hairs, and frequently with a zone. Stipules short, semicircular, spreading, shrivelling. Peduncles axillary, erect, rugged; with four subovate stipules at the forks. Calyx tubular, long; segments acute, spreading, the uppermost wider. Corolla very handsome, papilionaceous; the two upper petals an inch and half in diameter, semitubular at the base, upright, reflex at the tip, purple on the outside, white within, having two oblong feathered spots; of a deep purple colour; the two others lateral, sickle-shaped, parallel, with narrow claws; between these come out the stamens and pistil, which are long, perpendicular to the upper petals, and thence from bowed upright. Seven of the filaments very long, deep red, with dark-purple, ovate-anthers; the other three shorter and barren. Germ five-cornered, pubescent: style pyramidal, at first green, then purple. Capsules oblong, villose, sharp at the base: awn an inch long, bearded, spiral. Seeds smooth, resembling a grain of wheat^d.

A vein of singularity, says Mr. Curtis, runs through the whole of this plant; its stalks are unequally and obtusely quadrangular, sometimes more evidently triangular; its leaves few, and remarkably small; its flowers, on the contrary, are uncommonly large, and what is more extraordinary have only four petals; previous to their expansion the body of filaments is bent so as to form a kind of bow. There is a variety with beautifully coloured leaves.

Introduced in 1774, by Mr. Francis Masson. It flowers from june to august^e.]

41. This has many weak shrubby stalks which require support, and extend to the length of two or three feet. Leaves on slender foot-stalks, fastened into the disk, they are smooth, of a lucid green, with a circular purple mark in the middle, have an acid flavour, and are placed alternate on the branches. The flowers are on pretty long axillary peduncles, each sustaining four or five purple flowers, coming out in succession during most of the summer months: and the seeds frequently ripen here. [It was cultivated in 1701, by the Dutchess of Beaufort^f.

42. Cultivated in 1787, by Mess. Grimwood and Barret, at Kensington. It flowers most part of the summer^g.

43. Native of the south-west coast of Africa. Introduced in 1786 by Mr. Anthony Hove. It flowers in july^h.

^a Cavanilles. ^b Curtis. ^c Hort. kew. ^d Curtis.
^e Linn. mant. ^f Hort. kew. ^g Idem. ^h Cavanilles.
ⁱ Hort. kew.

^c Curtis. ^d Cavanilles. ^e Hort. kew.
^f Ray suppl. ^g Hort. kew. ^h Idem.

Stem shrubby, woody, branched, almost upright, round, the thickness of a finger; three feet high and more, brown. Leaves alternate, except on the branches near the peduncles, which are opposite; they are acute, more or less five-lobed or seven-lobed, flat, glaucous underneath, above glaucous-green frequently with a dusky zone, on a long petiole, sometimes extending to six inches. Stipules ovate, acute, quite entire, glaucous with the tip of a blood-red. Common peduncles axillary, alternate, erect, firm, round, four or five inches long, ending in an umbel that has commonly four flowers. Leaflets of the involucre four or five, lanceolate, acute, quite entire, erect. Pedicels two inches long, round, grooved at top, jointed, and somewhat roughened. Flowers handsome. Leaflets of the calyx lanceolate, mucronate, ciliate; the uppermost twice as broad as the others and erect. The two upper petals large, widely wedge-shaped, purple with several branched streaks of a darker purple arising from the base, and above these a transverse band of the same colour: the three lower linear-lanceolate, blunt, flesh-coloured, spreading very much, twice as long as the calyx. Filaments purple, with flesh-coloured anthers. Germ roundish, hirsute. Stigma purpleⁱ.

Jacquin gives *Geranium tabulare* of Burman and Cavanilles, with Herm. afr. p. 11. and Raii suppl. 514. 37. as synonyms of this. See n. 7.

44. Native of the south-west coast of Africa. Introduced in 1786, by Mr. Anthony Hove. It flowers in July^k.

45. Native of the island of St. Helena. Introduced in 1765, by Mr. John Bush. It flowers from May to July^l.

46. Stem shrubby, short. Root-leaves numerous, on very long petioles, tomentose: stem-leaves alternate, on short petioles. Stipules lanceolate-acuminate. Peduncles terminating, very long, three-flowered or thereabouts. Involucre of four acute converging leaflets: rays an inch and half long. Calyx ovate, tomentose; the upper segment wider. Corolla papilionaceous, twice as large as the calyx, red; the upper petals longer, wider, reflex. The pitcher of filaments ten-toothed; the teeth alternately shorter and barren: anthers dusky, oblong. Germ five-cornered; stigmas red. Capsules acute at the base; with the awn or tail an inch in length^m.

Introduced in 1774, by Masson. It flowers from May to Julyⁿ.]

47. Stem shrubby, four or five feet high, sending out several branches. Peduncles long, coming out from the side of the branches. Corolla large, red, with the two upper petals bigger than the three others.

[The flowers vary considerably both in size and colour: its foliage is different from that of the other species, and as its name imports, like that of the Birch-tree^o. It flowers most part of the summer, and was introduced in 1786, by Masson^p. Hence Mr. Miller's *betulinum* is supposed not to be this species.

48. The whole plant is very smooth, glaucous and in a manner whitish. Stem shrubby, with round, rod-like, declining branches, two feet high. Leaves opposite, often shorter than the petioles, which are round and erect. Stipules lanceolate-acuminate, fleshy, deciduous. Peduncles alternately axillary, very long, one or two-flowered. Segments of the calyx acuminate, the uppermost and two lower ones wider. Corolla papilionaceous, white: the upper petals wider, reflex; claws purple. Anthers pale saffron: sometimes there are only six^q.

It flowers from June to August; and was introduced in 1775 by Messrs. Kennedy and Lee^r: from dried specimens in the possession of Sir Joseph Banks^s.

49. Root branched. Stem shrubby, two feet high and more, very much branched, smooth, round, the thickness of a reed or the little finger, almost upright,

when old dusky, when young more or less blood-red. Leaves alternate, except a few of the upper ones which are opposite, petioled, three-lobed or three-parted, very seldom ternate, stiffish, veined, smooth above, muricated underneath at the midrib and principal veins, three inches long, taking in the petioles: lobes lanceolate, acute, very minutely serrated, gashed; but sometimes quite entire. The upper leaves are usually entire, lanceolate, quite smooth underneath, neither serrate nor gashed, or else one-toothed on one or both sides; but they vary so much, that the specific difference can only be taken from the lower leaves. Petioles round, the length of the leaves, smooth, seldom rough. Stipules lanceolate, acuminate, smooth, erect, first green, then red. Peduncles opposite to a leaf, smooth, slender, spreading, almost as long as the leaves, commonly one-flowered, but sometimes two-flowered. Involucre two-leaved, leaflets ovate-awned, erect, green. Pedicels half an inch long, grooved almost to the base, smooth, reddish. Leaflets of the calyx lanceolate, acuminate, four of them green with white edges; the uppermost wider, concave, erect, red. Petals wedge-shaped, rounded, whitish flesh-colour, above the claws having an oblong red spot, which in the two upper ones is wider and branched. Anthers rose-coloured. Stigma red^t.

Introduced in 1780, by Messrs. Kennedy and Lee. It flowers from May to August^u.]

50. Stem shrubby, six or seven feet high, sending out several side branches. Leaves of a grey colour, and having an acid taste like Sorrel. Peduncles axillary, long, sustaining three or four flowers, with narrow, unequal petals, of a pale blush-colour, with some stripes of a light red. The flowers continue in succession most part of the summer.

A variety with scarlet flowers has been raised from seed.

[It was cultivated in Chelsea garden in 1724^x.

51. Stem shrubby, round, three or four feet high, the thickness of a finger, upright, of a reddish bay colour, branching from the axils, very rough, as is the whole plant, but becoming smooth with age. Leaves on long petioles, very widely wedge-shaped, three-nerved, acute, stiffish, alternate except the upper ones next the flowers, which are opposite, the longer ones seven or eight inches in length reckoning the petioles; the lobes gashed or thinly toothed, but sometimes quite entire. Stipules small, ovate-acuminate, on each side next the petioles. Common peduncles terminating and axillary, short, sustaining commonly from four to six flowers. Calyx green: segments lanceolate, acuminate, spreading very much, shorter than the petals, very unequal in breadth. Petals blunt, of a purple rose-colour; the two upper ones twice as wide as the others, with a dark blood-red spot at the base. Anthers oblong, blood-red; as are also the stigmas. Seeds rough, with a rough beak, an inch in length^y.

Introduced in 1775, by Messrs. Kennedy and Lee. It flowers from August to November^z.

52. This is a stiff shrub. Leaves small, five-lobed, having the smell of Balmi. Flowers violet. Peduncles commonly two-flowered^a. Stipules cordate, almost imbricate on the branchlets. Involucels lanceolate^b.

Introduced in 1774, by Mr. Francis Masson. It flowers from July to November.

53. Introduced in 1785, by Mr. Archibald Thompson. It flowers in April and May^c.

54. The whole plant is very smooth and somewhat glaucous. Stem shrubby, a foot high, with round, upright branches. Leaves alternate, shorter than the petioles, mostly divided into three lobes, each of which are three-lobed at the tip, and crenate; the young ones are somewhat cowed, but afterwards become spreading. Stipules very small, in some specimens scarcely visible. Common peduncle axillary, and as it were terminating, longer than the leaves: involucre five-cleft, with the segments short and revolute;

ⁱ Jacquin. ^k Hort. kew. ^l Idem. ^m Cavanilles.
ⁿ Hort. kew. ^o Curtis. ^p Hort. kew. ^q Cavanilles.
^r Hort. kew. ^s Curtis.

^t Jacquin. ^u Hort. kew. ^x Idem. ^y Jacquin.
^z Hort. kew. ^a Linn. mant. ^b Linn. suppl.
^c Hort. kew.

pedicels from three to five, scarcely half an inch in length. Calyx deeply cut into five acuminate reflex segments, the upper one erect. Corolla papilionaceous; pale flesh-colour, the three lower petals hanging down, without spots, and white on the outside; the two others upright, bent back at top, having spots of a darker colour. The leaves have a very sweet smell, not unlike Sweet Marjoram; when young, and in the open air whitish with a very fine nap, but in the stove smooth and green^d.

Found by Mr. William Paterfon, and introduced at Kew in 1779, by the Countess of Strathmore. It flowers from may to august^e.

55. Stem suffruticose, dichotomous, round, purple, villose, erect, two feet high and more: branches simple, short, resembling the stem. Leaves rigid, strigose-rugged, an inch long; serratures purplish: petioles villose, the length of the leaves. Stipules two or more, ovate-acute, concave, a line in length. Flowers lateral and terminating, umbelled: involucre lanceolate, purple, subciliate. Calyx ciliate-hairy. Corolla whitish-flesh-colour; petals oblong, entire, equal, with a double purple streak at the base^f.—It differs very materially from the other species in the unusual roughness of the stalks, as well as in its whole habit^g.

56. The plants of this newly-introduced species scarcely exceed a foot in height here, growing up with a shrubby stem, and spreading widely into numerous flowering branches, so much disposed to produce flowers in a constant succession, that during most of the summer the plant is loaded with a profusion of them. For the most part they go off without seed; and when any is produced, there is generally one perfect, and four abortive. The fertile stamens vary in number; four are most usually apparent, three superior, one and often two inferior. The whole plant is covered with short white hairs, which give to the foliage a somewhat silvery hue. The two uppermost petals are of a beautiful red, having their bases nearly black; the three lowermost are white. Instances occur in which one or more of the white petals have a stripe of red; and the dark colour at the base of the upper petals is, in a certain degree, soluble in water; for on the plants being watered, the white petals here and there become stained by the colouring matter, which in a diluted state is purplish: as the flowers decay, this apparently black part, distinguished by the roughness of its surface, arising from prominent lucid points, is sometimes perforated with numerous small holes.

Introduced by Masson at Kew in 1792. Raised also from Cape seeds by Mr. Williams nursery-man at Hammersmith^h.

The above species, with very few exceptions, are natives of the Cape of Good Hope. These that follow are described by Jacquin in the last volume of his *Collectanea*, and figured in the third volume of his *Icones Plantarum rariorum*.

57. Root rapaceous, oblong, brown, two inches long, perennial. Root-leaves many, decumbent in a ring, with a few smaller that are upright, about five inches in length, oblong, of a dusky green colour, almost smooth, appearing ciliate at the edge when examined by a magnifier, having something of a turpentine smell, bipinnate. Petiole two or three inches long, above and at the edges somewhat hispid with white hairs, smooth underneath, winged at the base with a lanceolate-linear acute and somewhat hirsute stipule on both sides: pinnae opposite, often three on each side, with an odd one at the end: pinnules decurrent, cut into two or three oblong lobes. Scape round, upright, half a foot high, purple, thinly hairy. Umbel simple. Leaflets of the involucre about fifteen, linear-lanceolate, acute, short, hirsute, ciliate, green. Peduncles two inches long, thickish, about seven in number, somewhat hairy, red. Calycine leaflets linear-lanceolate, acuminate, villose, ciliate, green, spreading, about half the length of the petals; which are somewhat wedge-shaped, blunt, spreading but not bent back; the two upper ones three times as wide as the others, emarginate, and having branched red veins;

all pale the first day, but afterwards flesh-coloured, expanded in the day time, but contracted and shut at night. Anthers scarlet. Germ silky. Stigma purple. It flowers in march and april.

58. Root rapaceous, roundish, brown, perennial. Root-leaves several; half a foot long and more, on long petioles, smooth, bright green, winged at the base on each side with a lanceolate-linear acute red smooth stipule. Pinnae of the leaves quite entire, decurrent, with two or three hairs at the tip, some simple, others forked with two or three lines. Scapes very short, sometimes scarcely an inch high, upright, somewhat hirsute. Umbel compound, with about three rays. villose, scarcely longer than the involucre, red. Calycine leaflets linear-lanceolate, acute, almost equal. Leaflets of the universal involucre several, hirsute, lanceolate-linear, acute, unequal; one or two of them often resembling the root-leaves, but much shorter and somewhat hirsute. Leaflets of the involucre, several, lanceolate, acute, hirsute, almost equal. Peduncles villose, ciliate, four of them spreading and reflex, the fifth erect. Petals linear-wedge-shaped, blunt, half turned back, very pale rose-colour; the two upper ones approximating, twice as broad as the rest, sometimes emarginate, and marked below with two red lines; the three lower ones have only one line. Anthers oblong, vermilion. Germ green, silky. Style purple, villose. Stigma purple. It flowers in april.

59. Root rapaceous, oblong, two inches in length, perennial. Root-leaves several, spreading, thickish, with white decumbent hairs on both sides, ciliate, four or five inches long, dusky green. Petiole roundish, villose, about two inches in length, winged at the base on each side with a lanceolate acute villose stipule. Pinnae commonly opposite, the lowest often slightly petioled, the rest sessile and decurrent; with oblong blunt lobes. Scape an inch high, thickish, upright, round, hirsute. Umbel composed of about three rays, four or five inches long, hirsute, purple. Leaflets of the universal involucre few, very unequal, hirsute, one or two lanceolate, acute, the others more or less resembling the root-leaves, but shorter. Leaflets of the involucre about ten, lanceolate, acute, hirsute, spreading, almost equal. Peduncles very many, villose, half an inch long. Calycine leaflets lanceolate, acute, hirsute, ciliate, with hairs, especially along the dorsal nerve glandularly headed. Petals wedge-linear, blunt, upright and white to the middle, reflex and very dark purple above. Anthers oblong, of a red bay colour. Germ and style hirsute. Stigma purple. It has but little smell when bruised, and flowers in april and may.

60. Root rapaceous, the length and thickness of a finger, brown, perennial. Root-leaves several, sometimes but seldom one or two smaller and lobed: leaflets ovate, bluntish, on very short petioles, very obscurely ciliate at the edges when examined with a magnifier, the middle one an inch and half long, but the side ones small. Common petiole two or three inches long, hirsute, winged at the base on each side with a linear acute hirsute stipule. Scape two inches high, round, hirsute, erect. Umbel composed of two or three rays coming out in succession, half a foot long, hirsute. Leaflets of the involucre few, lanceolate, hirsute, unequal: of the involucels several, lanceolate, acute, hirsute, ciliate, reflex, small. Peduncles about ten, an inch long, hirsute. Calycine leaflets reflex, lanceolate, acute, hirsute, ciliate, almost equal. Petals wedge-shaped, blunt, upright at bottom and thence spreading very wide, rose-coloured, a little longer than the calyx; the two upper ones almost twice as wide as the others, a little longer, with blood-red dots below. Germ silky. Style and stigma of a very dark blood red colour. It flowers in april.

61. Root rapaceous, two inches long, black, perennial. Root-leaves several, in a ring. Petiole somewhat hispid, with a lanceolate-linear hirsute stipule at the base on each side, and from two to four inches long, the leaves varying much even on the same plant; being acute or obtuse, ternate with the middle lobe more or less deeply three-lobed, very large or nearly equal to the lateral leaflets, which are sometimes quite entire, sometimes gashed; sometimes simple,

^d Cavanilles.^e Hort. kew.^f Cavanilles.^g Curtis,^h Idem.

simple, ovate, small, entire or obsoletely three-lobed. Scape upright, somewhat hispid, an inch or two in length, green. Umbel composed of three or four rays, half a foot long, purple, hispid. Leaflets of the involucre several, lanceolate, acute, hirsute, reflex, unequal, with one leaflet often larger and ternate: leaflets of the involucels several, linear-lanceolate, acute, hirsute, reflex, equal. Peduncles about eight, an inch long, purple, somewhat hispid. Calycine leaflets pale green, linear-lanceolate, acute, hirsute, spreading very much; the uppermost erect and concave. Petals wedge-shaped, springing from a long upright claw, turned back at top, blunt, twice as long as the calyx, white; the two upper ones a little wider, with a long dark blood-red spot above the claws. Anthers oblong, flesh-coloured. Stigma red. Germ silky. It flowers in march and april, and when bruised has the smell of turpentine. Jacquin suspects that it may perhaps be only a variety of *P. hirsutum*, n. 1.

62. Root rapaceous, two inches long, brown, perennial. Leaflets bluntish, petioled; some simple and subovate; others ternate; others three-lobed, with the lateral lobes smaller; all of them sometimes entire, sometimes gash-bifid. Petiole somewhat hirsute below; with a lanceolate acuminate stipule at the base on each side, which is also somewhat hirsute. Scape almost upright, about three inches high, round, roughish, hairy. Umbel usually composed of three rays, which are half a foot in length, hairy and round. Leaflets of the involucre about eight, lanceolate, acute, almost equal, hirsute: of the involucel similar. Peduncles from five to ten, hirsute, two inches long. Calycine leaflets lanceolate, acuminate, hairy at the back, woolly at the edges, equal, spreading very much, pale green with whitish edges. Petals twice as long as the calyx, wedge-shaped, very blunt, reflex and spreading very much, white; the two upper ones wider, with two branching red stripes arising from the base. Anthers oblong. Germ silky. Stigmas purple. It flowers in march and april, and when bruised has a little smell of turpentine.

63. Root rapaceous, roundish, an inch in length, brown, perennial. Root-leaves several, quite entire, somewhat convex, appearing somewhat villose at the edges when examined by a magnifier, often turned back a little, two inches long. Petiole of the same length, somewhat villose in the lower part, winged at the base on each side with a scariose, whitish stipule, which is acute and tooth-ciliate. Sometimes a few leaves come out later which are smaller and pinnate, the pinnae lanceolate-linear, acuminate and decurrent. Scape round, slender, weak, green, almost upright, half a foot high. Umbel composed of about four rays, which are half a foot long, villose, and lengthen successively. Involucre many-leaved: leaflets unequal, villose, acute, almost linear, one of them often much larger and lobed. Involucels the same number with the flowers, linear, acute, somewhat villose, upright. Peduncles purple, half an inch long, villose. Calycine leaflets linear-lanceolate, acute, villose, green, spreading. Petals wedge-shaped, blunt, half-reflex, uniformly red-purple, the two upper ones a little wider. Anthers oblong, red with a yellow pollen. Germ roundish, five-grooved, green, silky, with white hairs. Style and stigma red. It flowers in march and april.

64. Root rapaceous, fusiform, brown, three inches long, perennial. Leaves narrowly and elongately lanceolate, quite entire, about three inches long, with a hirsute petiole of the same length, hairy above and at the edges; some have a small linear-lanceolate sharp leaflet or two at their base; at the origin of the petiole on each side they are winged with a lanceolate sharp hirsute stipule. Scape half a foot high and more, round, upright, hirsute. Umbel composed of three or four rays, which are three inches long and hirsute. Leaflets of the involucre several, linear-lanceolate, acute, hirsute, with one of them commonly much larger than the rest: those of the involucel similar, but all nearly equal. Peduncles five or more, half an inch long, hirsute. Calyx green, hirsute; leaflets lanceolate, acute, four of them spreading very much, the uppermost erect. Petals linear-cuneiform, bluntish,

erect at bottom, but spreading very much at top, twice as long as the calyx, pale yellow; the three lower unspotted, the two upper above the claw to the middle of the border dark blood red. Anthers red. Germ villose. It flowers in may.

65. Root rapaceous, roundish or oblong, brown, perennial. Root-leaves several, very much narrowed at the base, quite entire, appearing somewhat villose at the edge when examined by a magnifier, bright green, three or four inches long. Petiole two or three inches in length, somewhat villose, winged at the base on each side with an acute ciliate purple or white stipule. Scape slender, upright, round, almost smooth, half a foot high and more. Umbel composed of three or four rays, which are four inches long, round and villose. Leaflets of the involucre about five, lanceolate-linear, acute, ciliate, unequal: of the involucel linear, acute, villose, small, spreading, about the same number with the flowers. Peduncles about eight, an inch long, somewhat villose, channelled, forming at first a convex umbel, but afterwards spreading out so much, that the umbel is flat and depressed. Calycine leaflets linear-lanceolate, acute, villose, spreading very much, green with white edges, one third only of the length of the petals; which are lanceolate-linear, sharpish, half turned back, pale yellow; the two upper ones a little wider and dark blood red in the middle. Filaments nine only, of which five are short and barren, the anthers on the other four are oblong and scarlet with a yellow pollen. Germ long ovate, villose, green. Style and stigma blood-red. It flowers in march and april.

66. Root rapaceous, oblong, brown, perennial. Root-leaves several, very much narrowed at the base, quite entire, appearing somewhat villose at the edge when magnified, from three to five inches long, with a smoothish petiole nearly of the same length, having a narrow-lanceolate, acute, smoothish stipule on each side. Scape round, smoothish, flexuose, weak, about half a foot in height. Umbel composed in general of two rays, which are villose and about half the length of the scape. Leaflets of the involucre few, linear-lanceolate, acute, villose, unequal, one or two resembling the radical leaves, but scarcely two inches long: those of the involucel equal. Peduncles from four to seven, villose, an inch or an inch and half in length. Calyx green: leaflets linear-lanceolate, acute, villose; the upper one erect, the rest reflex. Petals linear, sharpish, channelled, erect at bottom, but spreading very much above, an inch and half long, very pale yellow, with a longitudinal purple band above the claw, of a very deep colour in the two uppermost petals: the uppermost petal is sometimes so deeply cloven that the corolla appears to be six-petalled. Filaments ten, extremely short. Anthers four, oblong, obtuse, red. Germ villose. It flowers in may.

All the above species from n. 57. inclusive, are natives of the Cape of Good Hope, and belong to the first division.

67. Root branching, annual. The whole plant villose, and smelling rather disagreeably. Stems several, branched, diffused, from six to ten inches in length, the thickness of a pigeon's quill at the base, round, jointed, knobbed, in the primary divisions dichotomous, more or less of a dusky purple. Leaves petioled, opposite, entire, thickish, hoary green, the largest scarcely an inch long, but most of them only half that length. Stipules lanceolate, acute, small, withering in a short time. Peduncles axillary, alternate, longer than the leaves. Leaflets of the involucre about four, lanceolate, acute, small. Pedicels shortly grooved above. Flowers very small. Calyx green and somewhat rough-haired; leaflets lanceolate, drawn to a point and ending in a bristle, erect, the uppermost a little wider. Petals the length of the calyx, wedge-shaped, blunt, upright, spreading a little at top, white with a dark-purple disk; the two uppermost twice as broad as the other three. Anthers yellow. Germ hirsute. Stigma five-cleft, purple, somewhat villose. Seed hirsute; the tail half an inch long and bearded.

68. Root branched, biennial. Stem branching from the

the very bottom, so that it appears to be many-stemmed, the thickness of a reed, round, a foot high, when young very soft and like velvet, as are also the other parts of the plant. Leaves scattered, blunt, nerved and veined, flat except that they are often a little waved at the ferratures, thickish, somewhat hoary on both sides, an inch or an inch and half in length. Petiole round, from three to six inches long. The uppermost leaves are opposite. Stipules on each side of the petioles, ovate-acuminate, quite entire, upright, pressed close, often dusky purple, towards the bottom of the branches imbricate. Common peduncles erect, about three inches long, umbelled. Leaflets of the involucre few, ovate, acute, small. Pedicels from one to three, erect, an inch and half long, very shortly grooved at top. Calycine leaflets ovate, bluntish, concave, three-streaked, bearded at the tips, spreading, pale green, three of them twice as wide as the other two. Petals very blunt, uniformly red-purple, spreading very much above the claws, the two upper ones very wide and roundish, the other three oblong. Filaments united almost up to the middle, very closely villose on the outside with capitate hairs; five of them alternately awl-shaped, white, and also a little capitate villose, have hastate yellow anthers; of the five barren ones the three lower are very short, the two upper are as long as the fertile ones, simply hairy, and purple at the tip. Germ hirsute. Stigma scarlet. It flowers in march and the following months.

69. Root branching, the thickness of a reed, brown, long. Stems few, procumbent, half a foot high, round, perennial, more slender by half than a reed, covered with the imbricate permanent brown stipules of fallen leaves; which are acute, simple, tooth-ferrate towards the end, but quite entire in the other parts, thickish, often somewhat keeled, narrowing at the base into the petiole, the larger ones half a foot in length, spreading, closely imbricate on the stems, but on the flowering branches distant, alternate except the uppermost, which are opposite. Stipules lanceolate, acuminate, erect, quite entire, appearing ciliate and silky by a magnifier, growing to the petioles. Peduncles opposite to the leaves and axillary, alternate, erect, villose, soft, three inches long, the lowest umbelled two-flowered, the rest three-flowered. Leaflets of the involucre commonly five, lanceolate, acute, ciliate, a little rough-haired, as are also the pedicels and calyx. Pedicels two inches long, shortly grooved at top. Calycine leaflets lanceolate, acute, spreading very much and reflex; the uppermost a little wider. Petals blunt, spreading very much, white at the claws, the rest purple; the two upper ones very wide, obovate, with the claw on each side produced and wedge-shaped; the three lower from a narrow claw oblong. Filaments declined, awl-shaped; five longer with anthers, which are oblong and tawny red: of the five barren ones, four are white and the upper one purple. Germ and style hirsute. Stigma smooth, purple. The little smell it has is unpleasant. It flowers in june and july.

There is a variety which has smaller flowers, with the claw of the two upper petals white and crowned with a deep-red band: all the leaves are linear-lanceolate, and gash-ferrate almost their whole length.

70. Root branched. Stem round, the thickness of a reed, dusky, dividing presently into several branches or stems, procumbent, round, subdivided, herbaceous, a foot and half long, appearing very closely and shortly villose in the magnifier, but neither hairy nor hirsute. Lower leaves alternate, the rest opposite, petioled, somewhat hispid on both sides when viewed in a glass, shortly ciliate, above deep green with the disk sometimes brownish, pale green underneath, oblong, blunt, gash-ferrate, some of the lower ones entire, the next ternate, with the lateral leaflets more or less roundish and lobed, the middle leaflet subpinnatifid; upper leaves pinnatifid; almost all so rolled back as to be convex and resemble a bladder. Stipules ovate, acute, thinly ciliate with long hairs. Common peduncles axillary, a few opposite to a leaf, round, somewhat villose, longer than the leaves. Leaflets of the involucre commonly four, lanceolate, acute, green, some-

what villose in the magnifier, spreading or reflex. Pedicels scarcely half an inch long, grooved almost to the base, somewhat rough-haired, dusky purple. Calycine leaflets lanceolate, acuminate, striated, villose, spreading; the uppermost wider than the rest. Petals always four, very pale purple or flesh-colour, twice as long as the calyx; the two upper ones from a long claw widen into a rounded very broad lamina, stand erect, and from the bottom have two branching red lines; the two lower ones are long lanceolate, reflex above the claws, shorter than the upper ones and much narrower. Anthers scarlet. Stigma blood-red. Fruit hirsute, two inches long. Seeds acuminate at the base, hirsute with a feathered awn. It flowers in the summer, and when rubbed has an unpleasant smell.

71. Root brown, round, the thickness of a reed, biennial. Stems several, procumbent or ascending, branched, herbaceous, round, attaining the height of eighteen inches. Leaves oblong, blunt, crenate, stiffish, on long petioles, dark green with the disk frequently brownish, alternate except the uppermost. Stipules ovate, acute. Common peduncles axillary and opposite to a leaf, commonly two-flowered, seldom one-flowered or three-flowered, two or three inches in length. Leaflets of the involucre few, lanceolate, acute. Pedicels half an inch long, grooved almost to the base. Calycine leaflets lanceolate, acute, striated; the uppermost twice as broad as the others. Petals wedge-shaped, blunt, spreading, flesh-coloured or white, twice as long as the calyx; the two upper ones much larger and having two branching red lines. Anthers oblong, red. Stigma blood-red. Awn of the seed feathered and two inches long. It flowers in summer, has but little smell, and is rough-haired all over.

72. Root branched. Stem herbaceous, round, procumbent or almost erect, the thickness of a reed, a foot and half high, branched, blood-red next the sun. Leaves on long petioles, alternate or opposite, oblong, blunt, hispid at the edges and underneath on the nerves and veins, having a few hairs scattered over the upper surface, spreading, the largest five inches long, with a petiole three inches in length and hirsute; the lowest simple and pinnatifid; the rest ternate, with the lateral leaflets roundish lobed and gashed, the middle one oblong and pinnatifid with the segments approximating and gashed, the lowest of them even lobed. Stipules subcordate, acuminate, hirsute, ciliate, green, spreading very much. Common peduncles opposite to a leaf, a few of them axillary, round, somewhat hirsute, from three to six inches long, umbelliferous. Leaflets of the involucre about five, lanceolate-ovate, acute, somewhat hirsute, ciliate, reflex. Pedicels commonly five, round, somewhat compressed, rough-haired, grooved almost to the base, half an inch long. Calycine leaflets long-lanceolate, acute, somewhat rough-haired, striated, spreading, the uppermost wider. Petals blunt, spreading, pale flesh-colour; the two uppermost obovate, very wide, with two branching blood-red streaks above the claw; the three lower ones much shorter and narrower, almost spatulate. Anthers oblong, red. Germ hirsute. Stigma blood-red. Fruit rough-haired. It flowers from may to july, and has an unpleasant smell.

73. Root branched. Stems several, herbaceous, at most the thickness of a reed at bottom, round, often jointed and knobbed, dusky purple, wholly procumbent, and closely hirsute with white hairs, three feet high, branched. Leaves on long petioles, the lower alternate, the upper opposite, ciliate, somewhat hirsute underneath along the nerves and veins, the rest smoothish, appearing dotted when examined by a magnifier; the nerve and veins on the back often purple; the lateral leaflets lobed and gash-ferrate, the middle one lengthened out, three inches long, pinnatifidly cut into oblong distant lobes gash-toothed at top; petiole hirsute. Stipules ovate, acute or truncated, ciliate, hirsute. Common peduncles opposite to a leaf, axillary and terminating, umbelliferous, erect, from two to four inches long, hirsute. Leaflets of the involucre about four, lanceolate, acuminate, striated, ciliate, somewhat

somewhat hirsute. Pedicels from one to five, grooved almost to the base, somewhat rough-haired, half an inch long. Calycine leaflets oblong-lanceolate; acuminate, striated, spreading, somewhat rough-haired. It resembles the preceding very much; but it has very seldom five petals, and has always seven fertile filaments. It flowers from may to july, and has a disagreeable smell.

74. Root the thickness of a reed and more; about three inches long, round, branched, pale. Stems numerous, procumbent except at the end, where they ascend in a bow stiffly, branched, round, smooth, somewhat villose towards the top, knobbed, blood-red at the joints, dusky purple at bottom, in other parts green with a tinge of purple here and there, herbaceous, two feet long, the thickness of a pigeon's quill. Leaves alternate, except the upper ones, which are opposite, two or three inches in length reckoning the petioles, three-lobed, gashed, blunt, smooth, green; the side-lobes on very short petioles, subovate, in the larger ones three-lobed; the middle lobe lengthened out and pinnatifid. Stipules ovate, acuminate, smooth, blood-red. Peduncles round, appearing somewhat villose when magnified, terminating and axillary, erect, rigid, almost as thick as the stem, green, about two inches in length. Leaflets of the involucre commonly five, ovate, acute, concave, pale green with blood-red streaks, spreading very much. Pedicels grooved two-thirds of their length, villose, scarcely longer than the involucre, almost upright, dark blood-red. Calycine leaflets oblong, mucronate, streaked, spreading, blood-red, the uppermost twice as wide as the others. Petals spreading, deep purple, with deeper purple bands above the claw; the two upper spatulate, subemarginate, almost twice as long as the calyx; the two lower blunt, less than half the breadth and much shorter than the others. Filaments awl-shaped, shorter than the calyx, purple. Anthers oblong, erect, flesh-coloured with a yellow pollen. Germ villose. Stigma purple. Fruit hirsute. Seeds villose, with a feathered awn an inch in length. It flowers in april and the following months, and is void of smell.

75. Root round, the thickness of a reed, brownish. Stem round, the thickness also of a reed, a foot high, branched, somewhat rugged, rough-haired, hispid, erect, with the lower branches somewhat spreading. Leaves oblong, alternate except the upper ones, which are opposite, blunt, appearing dotted on both sides when examined by a magnifier; underneath and at the edges roughish with white hairs, pinnatifidly lobed, gashed, crenate, the largest three inches in length, with a petiole two inches long and hirsute; the uppermost sessile and stiffish; the lowest lobes of the larger leaves commonly distinct; inasmuch that the leaves are then ternate: the uppermost leaves in some individuals are bipinnatifid. Stipules roundish, acute, ciliate. Peduncles opposite to a leaf or axillary, round, thickened at the base, somewhat rugged, two inches long. Leaflets of the involucre about seven, lanceolate, acute, striated, ciliate, reflex. Pedicel rugged, roughish, erect, grooved almost to the base, half an inch long. Calycine leaflets lanceolate, acuminate, roughish, ciliate, spreading, green with purple streaks, the upper one a little wider. Petals wedge-shaped, rose-coloured, twice as long as the calyx, blunt, spreading; the two upper ones much wider and marked with branched blood-red lines. Anthers blood-red. Stigma of the same colour, villose above. Fruit hirsute: awn an inch and half in length. It flowers in the summer, and when bruised has an unpleasant balsamic smell.

76. Root round, the thickness of the little finger, half a foot long. Stem procumbent, twisted, shrubby, branched, the same size with the root, brown, rough with the indurated scars of fallen leaves; when young fleshy and hirsute. Leaves on long petioles: pinnae opposite; pinnules linear, acute, quite entire, sessile. Stipules lanceolate, acute, fastened to the petiole on each side. Peduncles hirsute, roughish, spreading, three or four inches long, sustaining from three to five flowers in an umbel. Leaflets of the involucre commonly five, lanceolate, acuminate, ciliate, spread-

ing, green. Pedicels short, hirsute, grooved to the middle. Calycine leaflets lanceolate, acute, hirsute; spreading, the upper one twice as wide as the rest. Petals spatulate, blunt; spreading, red purple; the two upper ones nearly twice as wide as the others and of a deeper colour. Seven of the filaments have flesh-coloured anthers with a yellow pollen. Germ hirsute. Stigma blood-red. It flowers in march and april; and has little smell, but that unpleasant.

77. Root branched. The whole plant is covered very closely with villose hairs, and has a strong unpleasant smell. Stem shrubby, branched, erect, round, knobbed, two feet high and more. Leaves alternate; three-lobed or five-lobed, bluntish; veined, thickish; three or four inches in length and breadth; petioles as long or longer, round, the thickness of a pigeon's quill and spreading. Stipules from a wider base lanceolate-acuminate, in a short time becoming dry and of a rust-colour. Peduncles terminating, solitary, in pairs or threes, about three inches in length, the thickness, at most, of a pigeon's quill, almost erect or spreading a little. Leaflets of the involucre to the compound umbel several; to the simple and partial umbels commonly six, lanceolate, acute, spreading very much, green. Peduncles of the particular umbels about two inches long. Pedicels about six, an inch long, very shortly grooved, green, dusky purple above. Calycine leaflets lanceolate, acute, hirsute underneath and at the edges, slightly striated, spreading very much; the upper one twice as wide as the rest. Petals oblong, blunt, a little longer than the calyx, white with a little longitudinal red band at the claw; the two upper ones spreading very much and three times as wide as the three lower ones, which are extended downwards. Filaments blood-red, the length of the calyx. Anthers oblong, flesh-coloured. Germ hirsute. Stigma blood-red. It flowers in april and the following months.

78. Root branched. The whole plant has a strong smell. Stem shrubby, the thickness of a finger, round, irregular with projecting scars, erect, firm, branched, three feet high, when young hirsute, when old smooth and brown. Branches hirsute, pale green. Leaves scattered, roughish, wrinkled underneath, stiffish; the uppermost opposite: lobes sharpish: petioles round, hirsute, commonly longer than the leaf. Stipules from a broad subcordate base acuminate or cusped, hirsute, ciliate, spreading very much. Peduncles opposite to a leaf and axillary, hirsute, an inch or two in length, spreading. Umbel from five to ten-flowered, having the pedicels bent outwards. Leaflets of the involucre five or more, lanceolate, acuminate, hirsute, ciliate, spreading very much, green. Pedicels at most an inch long, grooved to the middle and jointed, hirsute, spreading very much, green. Calycine leaflets lanceolate, acute, half rolled back, hirsute, green; the upper one twice as wide as the rest. Petals blunt, snow white without any spot; the two upper ones longer, three times as wide as the others, wedge-shaped, emarginate, half turned back; the three lower sublinear, quite entire, stretched forwards. Filaments awl-shaped, erect, white, seven fertile. Anthers oblong, incumbent, orange-coloured. Stigma purple. Fruit hirsute. It flowers from june to august, and has a strong smell.

79. Stem three or four feet high, round, branched, brownish, with ash-coloured scars from the fallen leaves. Stipules acuminate, toothed, smooth, appearing in the magnifier ciliate along the edge, often as broad as they are long. Leaves alternate, except on the flowering branches, where they are commonly opposite, three-lobed or almost five-lobed, a little rough-haired only along the dorsal veins, which are very protuberant; the lower ones less deeply divided into rounder lobes, much larger and unspotted, the others more deeply divided into oblong lobes, with a ferruginous or brownish blood-red zone on the upper surface. Petioles round, rough, the lower ones twice as long as the leaf. Peduncles axillary, alternate, erect, somewhat rugged, the lower often opposite to a leaf. Leaflets of the involucre four or five, ovate, ciliate, caducous. Pedicels an inch long, rough, green, jointed about the middle,

middle, and thence to the top thicker and grooved. Calycine leaflets lanceolate, rough, acuminate, ciliate, green; the four lower reflex, the upper one wider and erect. Petals blunt, spreading: the three lower oblong, shorter, pale rose colour; the two upper wedge-shaped, three times as wide as the lower ones, twice as long as the calyx, all over dark red, with longitudinal bands of a much darker red. Filaments short, seven of them fertile. Anthers oblong, yellow. Germ hirsute. Style somewhat hairy. Stigma villose, blood-red. It flowers here in the summer. The leaves have hardly any smell. The flowers have rather a disagreeable scent.

80. From a branched root arise very many weak stems, two feet high and more, round, smooth, almost upright, of a pale bay colour, irregular from the scars of fallen leaves. Stipules lanceolate-oblong, acuminate, smooth, ciliate with whitish soft prickles, dusky purple. Leaves mostly opposite, three or five-lobed, beneath along the principal veins a little rough-haired, green above, glaucous or sometimes purplish underneath: petioles very long, round, somewhat rugged, spreading out horizontally. The floral leaves are sessile. Peduncles alternate. Leaflets of the involucre four or five, lanceolate, acuminate, smooth, ciliate, purple. Pedicels purple, an inch and half long, smooth, jointed, from the joint to the top thicker and grooved. Calycine leaflets lanceolate, acuminate, ciliate, green, four of them reflex, the upper one erect and a little wider than the others. Petals wedge-shaped, blunt, pale rose-colour, spreading; the two upper ones emarginate, almost twice as wide as the three others, and having a red band below the middle. Anthers blood-red. Germ hirsute. Stigma villose above, blood-red. It flowers in summer, and has little smell.

81. Stem upright, three feet high, woody, very much branched, ferruginous, when young red, round, roughish, appearing rough-haired in the magnifier, the thickness of a finger at the base. Leaves alternate except the uppermost which are opposite, approximating, numerous, rigid, petioled: lobes thickish, pinnatifidly and acutely gashed, a little converging or somewhat cowed, about an inch and half in length. Stipules in pairs or threes, lanceolate, acuminate, somewhat rough-haired, spreading very much, brownish. Peduncles axillary, round, somewhat rough-haired, sustaining from one to three flowers. Leaflets of the involucre few, lanceolate, acute, villose, spreading very much, of the same colour with the stipules. Pedicels half an inch long, jointed above and thence very shortly grooved. Calycine leaflets lanceolate, acuminate, villose, spreading. Petals flesh-coloured, spreading very much; the two upper ones obovate, emarginate or quite entire, twice as wide as the three lower, which are oblong, narrow, blunt, quite entire. Seven filaments fertile. Anthers oblong, yellow. Germ ovate, hirsute. Style white. Stigma blood-red. It flowers in summer; and the whole plant has a balsamic scent approaching to that of Tacamahaca.

82. Stem four or five feet high, almost upright: branches rod-like, round, ferruginous: these with the leaves, stipules, peduncles, involucres and calyxes are very shortly rough-haired. Leaves closely distich or in two rows all along the branches, the upper ones converging, the lower spreading, alternate, rigid, thickish, on very short petioles, three-nerved, from a quite entire wedge-form base widening above into a rounded gash-toothed prickly-ciliate circumference, the largest scarcely an inch in length. In the axils of these there are two or more very small ones, from the middle of which a new branch frequently arises. Stipules two, cordate, acuminate, small, ciliate. Peduncles terminating, solitary, short, erect. Leaflets of the involucre five lanceolate, acute, almost upright, green. Pedicels scarcely an inch long, erect. Calycine leaflets lanceolate, acuminate, green; four of them reflex, the upper one erect and wider. Petals white or tinged with flesh-colour, twice as long as the calyx; the two upper ones spatulate, rounded at top, erect, with two parallel lines at the base; the three lower linear-oblong, bent forwards, three times narrower than the

others. Filaments flesh-coloured, one-third shorter than the petals, seven fertile. Anthers vermilion. Germ silky. Style blood-red, hirsute. Stigma blood-red. Seed acuminate at the base, silky with a bearded awn. It has little smell. After flowering whilst the seeds are growing, young branches are pushed out beyond them, and the peduncles cease to be terminating.

It is easily distinguished from *P. crispum* by having no smell, or at most a slight smell of turpentine when bruised: the leaves are larger, always on very short petioles, of a true wedge shape, scarce obsoletely three-lobed, scarce curled, and the stature of the whole is much greater.]

PROPAGATION AND CULTURE.

All the sorts of Pelargonium or African Crane's-bill may be propagated by seeds; they may be sown upon a bed of light earth towards the end of march, where the plants will appear in a month or five weeks after, and by the beginning of june the plants will be fit to remove; when they should be carefully taken up, and each planted into a separate pot, filled with light kitchen-garden earth, and placed in a shady situation till the plants have taken new root; then they may be removed into a sheltered situation, and placed among other of the hardier green-house plants, where they may remain till autumn, when they must be removed into the green-house, and treated in the same manner as other hardy kinds of green-house plants.

But those who are desirous to have their plants large, and flower soon, sow the seeds upon a moderate hot-bed in the spring, on which the plants will come up much sooner, and will be fit to remove long before those which are sown in the open air; but when these plants come up, there must be great care taken not to draw them up weak; and when they are transplanted, the pots should be plunged into another moderate hot-bed, observing to shade them from the sun till they have taken new root; then they must be gradually inured to bear the open air, into which they should be removed the beginning of june, and placed in a sheltered situation with other exotic plants. If these plants are brought forward in the spring, most of the sorts will flower the same summer, and the plants being strong before the winter, will make a better appearance in the green-house.

The shrubby African Geraniums are commonly propagated by cuttings, which, if planted in a shady border in june or july, will take good root in five or six weeks, and may then be taken up and planted into separate pots, placing them in the shade till they have taken new root; after which they may be removed into a sheltered situation, and treated in the same manner as the seedling plants. The seventeenth, nineteenth, twentieth, and thirty-fourth sorts, have more succulent stalks than the others, the cuttings therefore of these sorts should be planted in pots filled with light kitchen-garden earth, and plunged into a very moderate hot-bed, where they should be shaded from the sun in the heat of the day, and have but little water; for these are very apt to rot with much moisture. When these are well rooted, they may be separated and planted in pots filled with the same sort of earth, and placed in the shade till they have taken new root; then they may be removed into a sheltered situation, where they may remain till autumn. These four sorts should be sparingly watered, but especially in the winter, for they are apt to take a mouldiness with moisture, or in a damp air: they will thrive much better in an airy glass-case than in a green-house, because in the former they will have more sun and air than in the latter. But all the other shrubby sorts are proper furniture for the green-house, where they will only require protection from frost, but should have a large share of free air when the weather is mild; they will require water every week, in mild weather once or twice, but it should not be given them in too great plenty, especially in frosty weather. These plants should be hardened in the spring gradually, and towards the middle or end of may, they may be taken out of the green-house, and at first placed under the shelter of trees, where they may remain a fortnight or three weeks to harden;

harden; then should be removed into a situation where they may be defended from strong winds, and enjoy the morning sun till eleven o'clock, where they will thrive better than in a warmer situation.

As these shrubby sorts grow pretty fast, they soon fill the pots with their roots; and if they stand long unremoved in summer, they frequently put out their roots through the holes at the bottom of the pots into the ground, and then the plants will grow vigorously; but when they are suffered to grow long in this manner, it will be difficult to remove them, for if their roots are torn off, all the younger branches will decay, and many times the plants are killed. Therefore the pots should be moved once in a fortnight or three weeks, in the summer months, and the roots which may be then pushing through the holes in the pots cut off, to prevent their striking into the ground.

These plants will also require to be new potted at least twice in the summer; the first time should be after they have been three weeks or a month out of the greenhouse; the second should be towards the end of august, or the beginning of september, that the plants may have time to establish their new roots before they are removed into the greenhouse.

When these are new potted, all the roots on the outside of the balls of earth should be carefully pared off, and as much of the old earth drawn away from the roots, as can be done with safety to the plants; then if they require it, they should be put into pots a size larger than those out of which they were taken, putting a quantity of fresh earth into the bottom of the pot; then place the plants upon that, being careful the ball about the roots of the plant is not so high as the rim of the pot, that some room may be left to contain the water which may be given to the plants. Then the cavity all round the ball should be filled up with fresh earth, which should be gently pressed down, and the bottom of the pot beaten upon the ground, to settle down the earth; then the plant should be well watered, and the stem fastened to a rail, to prevent the wind from displacing the roots before they are fixed in the new earth.

The compost in which these plants thrive best (where there is not a conveniency of getting some good kitchen garden earth) is fresh hazel loam from a pasture, mixed with a fourth or fifth part of rotten dung; if the earth is inclinable to bind, then a mixture of rotten tan is preferable to dung; but if it is light and warm, then a mixture of neat's-dung is best: this compost should be mixed three or four months before it is used, and should be turned over three or four times, that the parts may be well mixed and incorporated; but where a quantity of good kitchen-garden earth can be had, which has been well worked, and is clean from the roots of bad weeds, there will need no composition, for in that they will thrive full as well as in any mixture which can be made for them, especially if the earth has lain in a heap for some time, and has been two or three times turned over to break the clods, and make it fine: these plants should not be planted in very rich earth, for that will cause them to grow very luxuriant, but they will not flower so well as in a poorer soil.

The shrubby sorts must be looked over frequently during the winter, whilst they are in the greenhouse, to pick off all decayed leaves from them, which, if left on, will not only render the plants unsightly, but by their falling off, will make a litter among the other plants; and if they are suffered to rot in the house, they will occasion a foul, nasty, damp air, which will be very prejudicial to all the plants; therefore to avoid this, they should be constantly picked off every week; and during the summer season, they will require to be picked every fortnight or three weeks to keep them clean from dead leaves; for as the branches advance, and new leaves are produced on their top, the under ones as constantly decay; and if left on till they drop off, will render the plants very unsightly.

The species of the two first divisions are generally increased by parting the roots in august. Every tuber will grow, if it has a bud or eye to it. They may be planted in the same sort of earth as was before di-

rected; and if the pots are plunged into an old tan-bed, under a good frame in winter, the plants will thrive better than in a greenhouse: the glasses may be drawn off every day in mild weather; and if in severe frost the glasses are well covered, it is all the shelter they require: they should have little wet in winter, and therefore the glasses should be kept over them in heavy rains, or in mild weather raised only at the top. They may also be propagated by seeds.

8. This having herbaceous stalks is best propagated by seeds. The cuttings indeed will take root, but seedling plants are preferable. Where the seeds of this, and many other sorts are permitted to scatter, there will be a supply of young plants the spring following, provided the seeds are not buried too deep in the ground.

9. This may be propagated by seeds, or from heads slipped off from the short fleshy stalk: these heads should have their lower leaves stripped off, and then be planted single in a small pot; or if the heads are small, two or three may be put into one pot. Plunge them into a very moderate hot-bed, shade them, and refresh them gently with water; they will take root in a month or five weeks; then harden them gradually to the open air, where they may remain till autumn, when they must be removed into shelter for the winter season.

10. Sow the seeds on a moderate hot-bed or on an open bed of light earth in the spring. The latter will require only to be kept clean from weeds, and to be thinned where they are too close: they will flower in july and august, and if the autumn prove favourable, the seeds will ripen in september. Those which were raised on the hot-bed will come earlier to flower, and more certainly perfect seeds. Some of these plants put into pots, plunged into an old tan-bed under a frame, and treated as directed for the tuberous-rooted sorts, may be preserved through the winter.

14. Being an annual plant, is propagated by seeds, sown on a gentle hot-bed in the spring. When the plants are strong enough to remove, plant each in a separate small pot, plunged into a moderate hot-bed, shaded, and gradually hardened to the open air, into which they may be removed in june: when the plants have filled the pots with their roots, shake them out, preserving a ball of earth to their roots, and put them into pots a size larger: in these they will flower and ripen seeds, soon after which the plants will decay.

[18. This may be increased both by seeds and cuttings, but is found to be more tender than many other sorts, and more liable to be injured by damps.

23. Readily increased by cuttings.

31. This is not disposed to ripen its seeds; nor is it very readily increased by cuttings.

34. Readily propagated by cuttings; and sometimes raised from seeds.

38. Readily strikes from cuttings.

39. In favourable seasons produces seeds, but is more usually increased by cuttings.

40. 47. Readily propagated by cuttings.

48. This species rarely ripens its seeds with us; and is therefore usually raised from cuttings, which are not very free in striking.

55. Raised from cuttings without difficulty.

56. Most of the branches in this species running out speedily into flowering stalks, form few proper for cuttings, and these are struck with difficulty. Perfect seeds are produced sparingly¹.

PELECINUS. See *Biserrula*.

PELLITORY, BASTARD. See *Achillea*.

———— of Spain. See *Anthemis*.

———— of the Wall. See *Parietaria*.

PELORIA. See *Antirrhinum*.

PELTARIA. (From the form of the seed-vessel, round and flat, like the Pelta or round shield.)

Lin. gen. n. 806. Reich. n. 871. Schreb. n. 1083.

Jacqu. vind. 260. Gært. t. 141. Clyspeola.

Juss. 240.

Class. 15. 1. Tetradynamia Siliculosa.

Nat. order of *Siliculosæ*; *Cruciformes* or *Cruciferae*.

¹ Curtis magaz.

GENERIC CHARACTER.

- CAL. *Perianth* four-leaved: *leaflets* ovate, concave, erect, coloured, deciduous.
- COR. four-petalled, cruciform. *Petals* obovate, entire, flat, with claws shorter than the calyx.
- STAM. *Filaments* six awl-shaped: of these two opposite shorter, the length of the calyx. *Anthers* simple.
- PIST. *Germ* roundish, compressed. *Style* short. *Stigma* simple, blunt.
- PER. *Silicle* entire, suborbiculate, compressed-flat, one-celled, not opening.
- SEED single, (one to three, G.) roundish, compressed-flat, emarginate.

ESSENTIAL CHARACTER.

Silicle entire, suborbiculate, compressed-flat, not opening.

SPECIES.

1. *Peltaria alliacea*. *Garlick-scented Peltaria*.
Lin. spec. 910. *syft.* 591. *ed.* 13. 494. *Reich.* 3. 239. *suppl.* 295. *Jacqu. austr.* 2. 14. t. 123. *Scop. carn. n.* 784. *Gertn. fruct.* 2. 284.
Bohadschia. *Crantz. austr.* 5. t. 1. f. 1.
Clypeola. *Ard. spec.* 26. t. 16.
Thlaspi montanum glasti folio majus. *Baub. pin.* 106. *Raii hist.* 841. *Park. theat.* 841.
T. montanum 1. *Clus. hist.* 2. 130.
T. pannonicum *Clus.* *Ger.* 208. 2. *emac.* 266. 2.
Leaves embracing oblong undivided.
- [2. *Peltaria capensis*. *Cape Peltaria*.
Lin. syft. 591. *suppl.* 296.
Stem-leaves quinate-pinnate linear somewhat fleshy.]

DESCRIPTIONS, &c.

1. This is a biennial plant, and generally dies soon after the seeds are perfected. It rises with an upright branching stalk about a foot high. Leaves heart-shaped, smooth. White flowers terminate the stalk in form of umbels. [Silicle obovate or orbiculate-peduncled, not emarginate, leafy-compressed, coriaceous, somewhat rigid, netted-veined, smooth, valveless, and not divisible into regular valves with a knife. Seeds one to three, seldom more, ovate-reniform, compressed a little, ferruginous, supported by capillary threads proceeding from each edge of the silicle and verging towards the centre^k.
Native of Austria. Cultivated in 1768 by Mr. Miller. It flowers in may^l.
2. Stem upright, branched, round, even, a foot high, leafy. Leaves alternate, pinnate; segments five, linear, smooth, acute. Racemes long, with the peduncles and calyxes scarcely pubescent. Petals white, subemarginate, four times as big as the calyx, spreading, sessile. Silicle roundish or ovate, entire, with the partition parallel. Seeds in the centre as in *Clypeola*, solitary in each cell, compressed.—Native of the Cape of Good Hope^m.]

PROPAGATION AND CULTURE.

1. This is easily propagated by seeds, which ripen in July, and may be sown in small patches in the borders of the flower-garden at the beginning of April. When the plants are up, leave four or five in each patch; pulling the others out, to give these room to grow. Keep them clean from weeds.

[PEMPHIS. See *Lytbrum*.

PENÆA. (So named by Linneus from Peter Pena, who in conjunction with Lobel published *Adversaria Botanica*, 1570. Penæa of Plumier, is a species of *Polygala*, according to Linneus.)

Lin. gen. n. 138. *Reich. n.* 144. *Schreb. n.* 182. *Juss.* 419.

Class. 4. 1. Tetrandria Monogynia.

GENERIC CHARACTER.

- CAL. *Perianth* two-leaved: *leaflets* opposite, lanceolate, concave, equal, coloured, shorter by half than the corolla, loose, deciduous.
- COR. one-petalled, bell-shaped: *border* four-cleft, spreading a little, much shorter than the tube; *segments* sharp.
- STAM. *Filaments* four, awl-shaped, extremely short, placed on the tube of the corolla between the divisions of it, upright, naked. *Anthers* upright, flattish, emarginate both ways.

^k Gartner.

^l Hort. kew.

^m Linn. suppl.

PIST. *Germ* ovate, four-cornered. *Style* four-cornered by four membranaceous longitudinal wings. *Stigma* cruciform, blunt, permanent.

PER. *Capsule* four-cornered, furnished with the style, four-celled, four-valved.

SEEDS two, somewhat oblong, blunt.

ESSENTIAL CHARACTER.

CAL. two-leaved. COR. bell-shaped. Style quadrangular. Caps. four-cornered, four-celled, eight-seeded.

SPECIES.

1. *Penæa Sarcocolla*. *Ovate-leaved Penæa*.
Lin. spec. 162. *Reich.* 1. 315. *Willd.* 626. *mat. med.* 51. *Pluk. mant. t.* 446. f. 6.
Leaves ovate flat, calyxes ciliate larger than the leaf.
2. *Penæa mucronata*. *Heart-leaved Penæa*.
Lin. spec. 162. *syft.* 138. *Reich.* 1. 315. *Willd.* 626. *hort. cliff.* 37. *Thunb. prodr.* 30. *Berg. cap.* 37.
Erica africana Unedonis flore amplo, foliis cordiformibus in acumen desinentibus. *Sher. Raii dendr.* 97.
Flowers terminating, leaves acuminate smooth.
3. *Penæa marginata*. *Margined Penæa*.
Lin. mant. 199. *syft.* 154. *Reich.* 1. 316. *Willd.* 627.
Leaves cordate margined, flowers lateral.
4. *Penæa lateriflora*. *Side-flowering Penæa*.
Lin. suppl. 122. *syft.* 154. *Willd.* 627. *Thunb. prodr.* 30.
Leaves ovate, flowers lateral sessile.
5. *Penæa tomentosa*. *Downy-leaved Penæa*.
Lin. spec. ed. *Willd.* 627. *Thunb. prodr.* 30.
Leaves ovate tomentose, flowers lateral.
6. *Penæa fucata*. *Painted Penæa*.
Lin. mant. 199. *syft.* 154. *Reich.* 1. 316. *Willd.* 627. *Thunb. prodr.* 30.
P. Sarcocolla. *Berg. cap.* 25.
Leaves rhomb-ovate, bractes wedge-shaped acute coloured.
7. *Penæa squamosa*. *Scaly Penæa*.
Lin. spec. 162. *Reich.* 316. *Willd.* 628. *mant.* 331. *Thunb. prodr.* 30.
Leaves rhomb-wedge-shaped, fleshy.
8. *Penæa fruticulosa*. *Shrubby Penæa*.
Lin. suppl. 121. *syft.* 154. *Willd.* 628. *Thunb. prodr.* 30.
Leaves somewhat oblong blunt, bractes orbiculate acute.
9. *Penæa Myrtoides*. *Myrtle-leaved Penæa*.
Linn. suppl. 122. *syft.* 154. *Willd.* 628.
P. Myrtilloides. *Thunb. prodr.* 30.
Leaves lanceolate.

DESCRIPTIONS, &c.

These are shrubs, rugged below with the vestiges of fallen leaves, leafy above; leaves opposite cross-wise, sessile, approximating imbricately in a fourfold row, the upper ones near the flowers like scales and coloured, whence the calyx in some species is as it were many-leaved and imbricated; flowers terminating, sessile, solitary or several heaped together; fruit as in the order of *Acanthi*, but four-celled. Perhaps this genus may be allied to them, but having been hitherto little examined except in dried specimens, the natural order of the genus *Penæa* must yet remain uncertainⁿ.

1. Leaves bluntish. Corollas blunt. Calyx to the middle flower none. Style more awl-shaped than in the rest.

2. Flowers red. Style four-cornered^o. Leaves on the stems and branches frequent, sessile. Flowers at the ends of the branches, heaped together^p.—Introduced in 1787, by Masson^q.

3. This is a stiff shrub, with the branches commonly in threes. Leaves opposite or in threes, subsessile, bluntish, shining, with the edge curved back, the size of Box-leaves. Flowers among the leaves, subsessile, not longer than the leaves, white^r.

4. Stems red, with elongated branches. Leaves sessile, exactly ovate, even, sharpish, quite entire, al-

ⁿ Juss. gen.

^o Linn. spec. & syft.

^p Ray.

^q Hort. kew.

^r Linn. mant.

most keeled under the base, longer than the interstices. Flowers in the axils of the leaves, yellow, the length of the leaves. Calyx four-leaved, yellow, scarious, the length of the leaves. Segments of the corolla lanceolate, three-sided or keeled within, the keel cut out at the base. Filaments none. Anthers in the throat of the corolla. Stigma blunt, four-cornered*.

Willdenow doubts whether this be distinct from the preceding.

5. Of this we have no description.

6. Branches very numerous, round; branchlets angular. Leaves ovate, narrower at the base, acute, spreading, even. Flowers purple, in terminating bundles. Bractes smaller than the leaf, purple.

7. Leaves even, with a longitudinal line, subglandular at the tip. Bractes of the spike, twice as broad as the leaf, ciliate, resinous and unctuous. Corollas rather large.—Introduced in 1787, by Masson*.

8. This is a little shrub with round branches. Leaves subpetioled, oval or somewhat oblong, thickish, veinless, remote. Floral leaves small, rhomb-orbiculate, or orbiculate-acute. Flowers at the ends of the branches, subsolitary, on very short peduncles, sharpish.

9. Branches upright round red. Leaves sessile clustered even, like those of *Myrtus tarentina*, scarcely nerved underneath. Flowers terminating, subsolitary, surrounded by sharp green bractes, under which are two small leaves. Calyx acute, green, not at all coloured*.

All these shrubs are natives of the Cape of Good Hope. Loureiro has added two species, natives of Cochinchina: *Penæa nitida*, which he thinks is allied Linneus's *P. Myrtoides*; and *Penæa scandens* to *P. marginata*. He allows that they are not conformable to Linneus's generic character: and indeed they certainly belong to another genus.

PENÆA. See *Polygala*.

PENAR-VALLI. See *Zanonia*.

PENNANTIA. (So named by Forster in honour of Thomas Pennant, Esq. of Downing in Flintshire, author of various works in Natural History, &c.)

Lin. gen. Schreb. n. 1602. Forst. gen. t. 67. Juss. 428.

Class. 23. 2. Polygamia Dioecia.

GENERIC CHARACTER.

* Hermaphrodite Flower.

CAL. none.

COR. Petals five, lanceolate, acute, spreading very much.

STAM. Filaments five, capillary, the length of the petals. Anthers oblong, incumbent.

PIST. Germ superior, bluntly three-cornered. Style none. Stigma flat, peltated, subtrilobate.

PER. three-sided, two-celled.

SEEDS solitary, subtriquetrous.

* Male Flower.

CAL. and COR. as in the Hermaphrodite.

STAM. Filaments five, capillary, twice as long as the petals. Anthers ovate, incumbent.

ESSENTIAL CHARACTER.

Cal. none. Cor. five-petalled. Stam. five. Per. three-sided, two-celled, with solitary subtriquetrous seeds.

SPECIES.

1. *Pennantia corymbosa*.

Forst. gen. 134. flor. austral. n. 396.

Native of New Zealand.

PENNY-GRASS. See *Rhinanthus*.]

PENNY-ROYAL. See *Mentha Pulegium*.

[PENNY-WORT. See *Hydrocotyle*.

PENTAGONIA. See *Campamula*.

PENTAGONOTHECA. See *Pisonia*.]

PENTAPETES (of Pliny. Perhaps from *πεντε* five, and *πεταω*, pando or *πετομαι*, volo.)

Lin. gen. n. 834. Reich. n. 899. Schreb. n. 1122.

Juss. 276. Gertn. t. 134.

Class. 16. 5. Monadelphia Dodecandria.

Nat. order of *Columniferae*. *Malvaceae*, Juss.

* Linn. suppl.

* Linn. mant.

* Hort. kew.

* Linn. suppl.

GENERIC CHARACTER.

CAL. Perianth double: outer three-leaved, one-sided, caducous; leaflets linear, acuminate: inner one-leaved, five-parted, permanent; segments lanceolate, acuminate, spreading, longer than the corolla.

COR. Petals five, roundish, spreading, fastened to the pitcher of stamens.

STAM. Filaments fifteen, filiform, upright, shorter than the corolla, united below into a pentagon pitcher, but free above. Anthers sagittate, upright. Ligules five, linear-lanceolate, petal-shaped, upright, each between every three stamens, springing from the pitcher.

PIST. Germ ovate. Style filiform, thickened above, striated, longer than the stamens, permanent. Stigma obsoletely five-toothed.

PER. Capsule membranaceous, subglobular, acuminate, five-celled, five-valved: partitions contrary.

SEEDS eight, ovate, acute, four on each side, fastened within side to the partition.

ESSENTIAL CHARACTER.

Cal. double: outer three-leaved; inner five-parted. Stam. fifteen, with five ligules, petal-shaped. Caps. five-celled, many-seeded.

SPECIES.

1. *Pentapetes phœnicea*. Scarlet-flowered *Pentapetes*.

Lin. spec. 958. Syst. 619. Reich. 3. 300. Lour.

cochin. 409. Mill. fig. t. 200. Mill. illustr.

Gertn. fruct. 2. 248.

Alcea indicæ cognata. Pluk. phyt. t. 255. f. 3. Trew.

rar. 7. t. 5.

A. fruticosa, &c. Pluk. phyt. t. 126. f. 4.

Blattaria zeylanica, &c. Comm. hort. 1. 11. t. 6. Raii

suppl. 523.

Flos impius. Rumph. amb. 5. 288. t. 100. f. 1.

Naga-pu. Rheed. mal. 10. 111. t. 56. Pluk. phyt.

t. 256. f. 3.

Leaves hastate-lanceolate ferrate.

DESCRIPTION, &c.

1. This is an annual plant which dies in the autumn, soon after it has ripened the seeds. It has an upright stalk from two to near three feet high, sending out side branches the whole length; those from the lower part of the stalks are the longest, the others gradually diminish, so as to form a sort of pyramid. They are garnished with leaves of different forms; the lower leaves, which are largest, are cut on their sides towards the base into two side lobes which are short, and the middle is extended two or three inches farther in length, so that the leaves greatly resemble the points of halberts in their shape; they are slightly ferrate, and of a lucid green on their upper side, but paler on their under, standing upon pretty long foot-stalks. The leaves which are on the upper part of the branches are much narrower, and some of them have very small indentures on their sides; they sit closer to the stalks, and are placed alternately. The flowers are axillary; they come out for the most part singly, but sometimes there are two arising at the same place from the side of the footstalk of the leaves. The peduncle is short and slender. The flower is of one petal, cut into five obtuse segments almost to the bottom; but as they are joined and fall off in one piece, the flower is monopetalous, according to Ray and Tournefort: [but Linneus makes it pentapetalous.] It is of a fine scarlet colour; appears in July; and the seeds ripen in the autumn.

Native of India, whence Mr. Miller received the seeds several times. [But it was cultivated at Hampton Court in 1690*.

It is also a native of Japan, according to Thunberg, and is cultivated both in China and Cochinchina according to Loureiro.

Linneus describes the cotyledons as two-parted; the peduncles as axillary and twin; the involucre as one-flowered, three-leaved and deciduous; the flowers drooping; the stamens as fifteen, and between each three a castrated filament, the length of the corolla, petaloid and coloured.

* Hort. kew.

Loureiro remarks, in correspondence with the generic character as given above, that the five leaflets of the nectary are improperly called castrated filaments, being so different from them in size, figure and situation. He regards the tubular, five-cornered body on which the stamens are placed rather as the nectary, than as the coalescent filaments.

He describes the stem as five feet high, upright, round, straight, with few ascending branches; the leaves as eared-hastate at the base, thence awl-shaped and ferrate; alternate, on short petioles; the flowers as solitary, expanding at noon, and falling in the evening. Calyx inferior, five-leaved, spreading, permanent: leaflets lanceolate, curved in, ciliate-hairy, with a reflex acuminate point. Petals blunt, subequilateral, spreading out very much in a wheel-shape. Nectary tubular, five-cornered, short, supporting five, lanceolate, erect, concolor leaflets. Filaments awl-shaped, placed on the nectary, shorter than the leaflets of it, and deciduous with it. Style turbinate-linear, five-cornered, equal to the petals. Stigma simple. Capsule ovate. Seeds in a double row, angular towards the centre, convex outwardly.]

PROPAGATION AND CULTURE.

1. The seeds of this plant must be sown upon a good hot-bed early in march, and when the plants are fit to transplant, there should be a new hot-bed prepared to receive them, into which should be plunged some small pots filled with good kitchen-garden earth; in each of these should be one plant put, giving them a little water to settle the earth to their roots; they must also be shaded from the sun till they have taken new root, then they should be treated in the same way as other tender exotic plants, admitting the free air to them every day in proportion to the warmth of the season, and covering the glasses with mats every evening to keep them warm. When the plants are advanced in their growth so as to fill the pots with their roots, they should be shifted into larger pots, filled with the same sort of earth as before, and plunged into another hot-bed, where they may remain as long as they can stand under the glasses of the bed without being injured; and afterwards they must be removed either into a stove or a glass-case, where they may be screened from the cold, and in warm weather have plenty of fresh air admitted to them. With this management the plants will begin to flower early in july, and there will be a succession of flowers continued till the end of september, during which time they will make a good appearance. The seeds ripen gradually after each other in the same succession as the flowers were produced, so they should be gathered as soon as their capsules begin to open at the top.

These plants are sometimes turned out of the pots, when they are strong, and planted in warm borders, where, if the season prove very warm, the plants will flower pretty well; but these very rarely perfect their seeds.

[PENTAPETES. See *Pterospermum*.]

PENTAPHYLLOIDES. See *Potentilla*. [Sibbaldia.

PENTAPHYLLUM. See *Gleome*, *Comarum*, *Potentilla*, *Tormentilla*.

PENTAPTERIS, and PENTAPTEROPHYLLUM. See *Myriophyllum*.]

PENTHORUM.

Lin. gen. 580. Reich. n. 630. Schreb. n. 790.

Gron. virg. 51. Gært. t. 65. Juss. 308.

Class. 10. 4. Decandria Pentagynia.

Nat. order of *Succulentæ*. *Sempervivæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five or ten-cleft, acute, permanent.

COR. *Petals* often five (seldom none) linear, very small, between the segments of the calyx.

STAM. *Filaments* ten, bristle-shaped, equal, twice as long as the calyx, permanent. *Anthers* roundish, deciduous.

PIST. *Germ* coloured, ending in five, conical, upright. *Styles*, the same length with the stamens, and distant. *Stigmas* blunt.

PER. *Capsule* simple, five-cleft, with cogles, five-celled.

SEEDS numerous, very small, a little compressed.

Obs. It differs from *Sedum* in having no nectaries.

ESSENTIAL CHARACTER.

Cal. five (or ten) cleft. Pet. none or five. Caps. five-cusped, five-celled: (compound, five-beaked, G.)

SPECIES.

1. *Penthorum Sedoides*: *American Penthorum*.

Lin. spec. 620. syst. 431. Reich. 2. 386. mant. 389.

Gron. virg. 51. 71. Aët. upf. 1744. p. 12. t. 2.

Gært. fruct. 1. 312.

DESCRIPTION, &c.

Stalks about a foot high. Leaves oblong, alternate, Flowers greenish-yellow in terminating clusters, making little appearance. [Stem herbaceous, diffused or straight, angular; the angles rugged. Branches alternate, like the stem. Leaves alternate, subpetioled, ferrate, scarcely fleshy, green on both sides. Peduncle terminating with a few revolute spikes. Flowers alternate, pedicelled, ascending. The segments of the calyx for the most part alternately larger and smaller. Anthers red. Styles none^a. Capsule undivided, composed of five partial capsules, ventricose at bottom, rounded-five-cornered, starred at top, five-beaked, opening five ways between the beaks: beaks filiform, short, conical at the base, with a small head at top, spreading out horizontally. Partitions simple, fastened to the axis and grooves of the valves. Seeds irregular like sawdust, or linear acuminate, shagreened with raised dots, rufescent, fastened to the partitions on every side^b.

Native of Virginia. Biennial, according to Miller, who cultivated it in 1768^c. Others reckon it to be perennial.] It flowers at the end of july, and the seeds ripen in the autumn.

[PENTSTEMON. (So named from the flower having a fifth imperfect stamen.)

Lin. gen. Schreb. n. 1753. p. 808. Mitchell in Aët.

nat. cur. 8. app. 214. Ait. hort. kew. 3. 511.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted, permanent: segments lanceolate, almost equal.

COR. one-petalled, two-lipped: tube longer than the calyx, gibbous above at the base, wider at top, and there ventricose underneath: upper lip upright bifid; segments ovate, blunt, shorter than the lower lip: lower lip three-parted; segments ovate, blunt, bent down, shorter than the tube.

STAM. *Filaments* four, filiform, diverging at the tip, inserted into the base of the tube, and shorter than it; the two lower longer. *Anthers* roundish, distant, included, bifid; with the lobes divaricating.

The Rudiment of a fifth filament between the upper ones inserted into the tube, the same length with the stamens, filiform, straight, bearded above at the tip.

PIST. *Germ* ovate. *Style* filiform, the length of the tube, bent down at the tip. *Stigma* truncate.

PER. *Capsule* ovate, acute, compressed, two-celled, two-valved.

SEEDS numerous, subglobular. Receptacle large.

ESSENTIAL CHARACTER.

Cal. five-leaved. Cor. bilabiate, ventricose. Rudiment of a fifth stamen bearded above. Caps. two-celled.

SPECIES.

1. *Pentstemon lævigata*. Smooth *Pentstemon*.

Ait. hort. kew. 2. 361.

Chelone Pentstemon. J. F. Miller ic. 4. Ard. anim. 1. 14. t. 5.

Digitalis perfoliata glabra, flore violaceo minore. Mor. hist. 2. 479. f. 5. t. 8. f. 6.

Stem smooth, barren filament bearded above.

2. *Pentstemon pubescens*. Hairy *Pentstemon*.

Ait. hort. kew. 2. 360.

Chelone Pentstemon. Lin. spec. & Dist. nostr.

α. *Latifolia*; foliis ovato-oblongis. Broad-leaved.

Mor. hist. 3. 417. f. 11. t. 21. f. 3. *Dracocephalus*.

^a Linn. mant.

^b Gærtner.

^c Hort. kew.

β. An-

P E P

β. Angustifolia; fol. lanceolatis. *Narrow-leaved.*
Mor. f. 2.
Stem pubescent, barren filament bearded from the tip below the middle.

DESCRIPTIONS, &c.

1. Root perennial, creeping, fibrous, white. Stem a foot and half high and more, round, purple below, brachiate. Lower leaves ovate-acuminate, quite entire, petioled, sometimes purple underneath, on petioles winged to the base. Stem-leaves ovate-lanceolate, opposite, embracing, toothletted, smooth on both sides. Flowering branches in a manner dichotomous, with the flowers two together. Corolla pale purple, somewhat hirsute on the outside^d.

2. See Chelone.

PROPAGATION AND CULTURE.

See CHELONE.]

PEONY. See *Pæonia*.

[PEPLION and PEPLIOS SPECIES. See *Euphorbia*.

PEPLIS. (Πεπλῖς of *Dioscorides*.)

Lin. gen. n. 446. Reich. n. 482. Schreb. n. 605.

Gærtn. t. 51. Juss. 333. Portula. Dill. gen. 7.

Glaucoides. Mich. 18.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Calycanthemæ. Salicariæ, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, bell-shaped, permanent, very large, with the mouth twelve-cleft, toothlets alternate, reflex.

COR. *Petals* six, ovate, very small, inserted into the throat of the calyx.

STAM. *Filaments* six, awl-shaped, short. *Anthers* roundish.

PIST. *Germ* oval. *Style* very short. *Stigma* orbiculate.

PER. *Capsule* superior, cordate, two-celled: partition opposite.

SEEDS very many, three-sided, very small.

OBS. *In many florets on the same plant the corolla is entirely wanting.*

In P. tetrandra the parts of fructification are less by one-third.

ESSENTIAL CHARACTER.

Cal. bell-shaped, with a twelve-cleft mouth. Pet. six, inserted into the calyx, (or none.) Caps. two-celled.

SPECIES.

1. *Peplis Portula. Water Purslane.*

Lin. spec. 474. Syst. 345. Reich. 2. 112. fl. lapp.

n. 128. Juss. n. 312. Hudf. angl. 147. Wither.

arr. ed. 3. 352. Curt. lond. 4. 27. 288. Lightf.

scot. 187. Relb. cant. n. 267. Sibth. oxon. n. 328.

Hall. belv. n. 856. Fl. dan. t. 64. Neck. gallob.

172. Pollich pal. n. 355. Krock. files. n. 562.

Villars dauph. 3. 267. Gærtn. fruct. 1. 237.

Portulaca. Dill. giff. 120. Raii syn. 368.

Glaucoides palustre portulacæ folio flore purpureo.

Mich. gen. 21. t. 18. 1.

Glaux palustris, flore striato clauso, foliis portulacæ.

Petit. gen. t. 43.

G. aquatica folio subrotundo. Loef. pruss. 106. t. 20.

G. altera subrotundo folio. Vaill. par. 80. t. 15. f. 5.

Bocc. mus. t. 84.

Anagallis serpillifolia aquatica. Baub. hist. 3. 372. 3.

Alfine fluviatilis. Tabern. 713.

A. palustris minor serpillifolia. Baub. pin. 251.

A. rotundifolia f. Portulaca aquatica. Ger. emac. 614.

11. Raii hist. 1035.

A. aquatica minor folio oblongo, f. Portulaca aquatica.

Park. theat. 1260. 4.

Flowers apetalous.

2. *Peplis tetrandra.*

Lin. spec. 474. Syst. 345. Reich. 2. 113. amoen. 5.

412. Jacqu. amer. 100. t. 180. f. 29. pict. 52.

t. 103.

Hedyotis tuberosa. Swartz obs. 136.

Ammannia hirta, &c. Brown. jam. 145.

Flowers one-petalled four-stamened.

DESCRIPTIONS, &c.

1. This is an annual creeping plant. Stems numerous, branched, dichotomous, from half a foot or a span to a foot in length, smooth, angular, jointed,

^d Arduini.

P E R

of a reddish colour. Leaves opposite, obovate, orbiculate or spatulate tapering into the petiole, smooth, quite entire. Flowers very small, solitary, opposite, sessile. Corolla and filaments pinky red. Petals deciduous, regularly six, but more frequently one, two or three, and sometimes none. Calyx greenish white, smooth, angular-plaited, striated. Anthers dark coloured. Stigma white^e. Capsule small, globular, membranaceous, very thin, knobby on account of the protuberant seeds, valveless; partition membranaceous, corresponding with the external groove of the capsule: Receptacle fleshy, roundish; compressed a little, fastened to the partition on both sides. Seeds about thirty in each cell, obovate acuminate, convex on one side, flat on the other, pale^f.

Native of many parts of Europe, in bogs, marshes, ditches, and especially where water has stagnated in winter and becomes dry in summer. It flowers from July to September.

2. Calyx bell-shaped; with the border eight-cleft. Corolla tubular, with the border four-parted: Stamens four. Germ growing to the tube of the calyx. Stigmas two. Capsule inferior, two-celled; crowned^g.

According to Jussieu, the corolla is monopetalous, four-stamened, the germ inferior, the stigma double; the capsule two-celled; two-valved; many-seeded; with a stipule between the leaves: it is therefore more nearly allied to the *Rubiaceæ*, and particularly to *Oldenlandia* or *Gomozia*; but it is distinguished from them by its eight-toothed calyx.

In the opinion of Swartz, the corolla, fruit, number and habit do not admit of its ranging with *Peplis*. It seems rather to be a *Hedyotis*, and differs little in appearance from *H. pumila*. He thus describes it—The root consists of globular distinct tubers. Stem subdivided, divaricated, round. Stipules small, sheathing, acuminate. Leaves subsessile, the upper ones in fours, ovate-cordate, subspatulate, entire, somewhat hispid above, smooth beneath. Flowers terminating, peduncled, the size of a pin's head. Peduncles short, one-flowered. Perianth four or five-cleft, superior: segments bifid, so that it seems to be eight or ten-toothed, permanent. Corolla one-petalled, ovate, scarcely longer than the calyx, four-parted; segments blunt, upright. Filaments four, awl-shaped, shorter than the corolla. Anthers ovate, small, concealed by the divisions of the corolla. Germ twin. Style cloven almost to the base. Stigmas awl shaped. Capsule twin, globular, two-celled, furrowed and crowned by the calyx, opening at top by four valves. Seeds two in each cell, orbiculate covered by the valves. It is an annual plant, native of the West Indies, in dry shady places at the foot of mountains and trees.

PEPLIS and PEPLUS. See *Euphorbia*.

PEPO. See *Cucurbita* and *Momordica*.

PEPPER. See *Piper*.

——— Grass. See *Pilularia*.

———, Guinea. See *Capsicum*.

———, Jamaica. See *Myrtus*.

——— Mint. See *Mentha*.

——— Wort. See *Lepidium*.

PERA. See *Perula*.

PERADO. See *Ilex*.

PERAGU. See *Clerodendrum*.

PERAGUA. See *Cassine*.

PERALU. See *Ficus*.

PERAMA. See *Mattuschkaea*.

PERCEPIER. See *Aphanes*.

PERDICUM. (*The name of a plant in Theophrastus.*

Περδίκιον is also a young or little partridge.)

Lin. gen. n. 960. Reich. n. 1040. Schreb. n. 1298.

Gærtn. t. 170. Juss. 181. Trixis. Brown.

Class. 19. 2. Syngenesia Polygamia Superflua.

Nat. order of Compositæ Discoideæ. Corymbifera, Juss.

GENERIC CHARACTER.

CAL. *Common* oblong, imbricate: *leaflets* lanceolate, the inner ones scarcely longer than the corolla.

COR. *Compound* imbricate, rayed: *corollets* hermaphrodite in the disk; female in the ray.

^e Krock, Withering, Lyons M.S. in Relh.

^f Linn. Syst.

^g Gærtner.

Proper of the hermaphrodite tubular, semibifid: inner lip two-parted, acuminate, equal; outer semitrifid, linear, equal: of the female linear, ligulate, three-toothed, two-toothed within at the base.

STAM. in the hermaphrodites: Filaments five, short. Anther cylindric, tubular, five-toothed.

PIST. in the hermaphrodites: Germ small. Style simple. Stigma bifid, blunt. In the females—Germ small. Style semibifid. Stigmas blunt.

PER. none. Calyx unchanged.

SEEDS solitary, obovate. Down capillary, sessile, very copious, the length of the calyx, fastigate.

REC. naked.

Obs. The flower resembles a semisfloscular corolla though it is really rayed.

The character is taken from *P. semisflosculare*, which is very distinct in the genus.

P. radiale agrees with the genus in its bilabiate capsules, but differs in the whole habit.

P. brasiliense has subradiate flowers, and hermaphrodite bilabiate florets in the disk and ray.

ESSENTIAL CHARACTER.

Corollets bilabiate. Down simple. Recept. naked.

SPECIES.

1. *Perdicium semisflosculare*.
Lin. spec. 1248. fyst. 769. Reich. 3. 836. amoen. 6. afr. 72.
Flower semisfloscular; scape one-flowered naked.
2. *Perdicium radiale*.
Lin. spec. 1248. fyst. 769. Reich. 3. 837.
Inula Trixis. Lin. amoen. 5. 406.
Trixis frutescens, &c. Brown. jam. 312. t. 33. f. 1.
Flowers subradiate, outer calyx four-leaved, stem shrubby.
3. *Perdicium brasiliense*.
Lin. mant. 115. fyst. 769. Reich. 3. 837.
Flowers subradiate, calyxes simple, stem herbaceous.
4. *Perdicium magellanicum*.
Lin. suppl. 376. fyst. 769.
Leaves runcinate, stem two-leaved simple one-flowered.
5. *Perdicium tomentosum*.
Thunb. jap. 319. Lin. fyst. 769.
Leaves lyrate tomentose underneath.
6. *Perdicium lævigatum*.
Gertn. fruct. 2. 450. Berg. act. bot. 1772. 236. t. 7.
Flowers subradiate, stem suffruticose, leaves lanceolate acute quite entire.

DESCRIPTIONS, &c.

1. Root fibrous. Stature of *Leontodon*. Root-leaves of *Taraxacum*, naked. Scape the length of the leaves. Flower the size of *Leontodon*. Calyx of *Scorzonera*. Corolla rayed. Corollets between those of semisfloscular and radial flowers, semibifid, with the inner lip two-parted, the outer three-parted. Down simple. Receptacle naked.—Native of the Cape of Good Hope^a.

2. Habit of the flowers as in *Inula* or *Conyza*. These two species differ in their whole appearance, and are scarcely allied; but the singular division of the corollets, in the outer segments smoother, almost as in *Elephantopus*, made Linneus unite them, till they were examined more carefully in a living state¹.

Browne, who calls it shrubby *Trixis*, says that this little shrub is very common in the savannas about Kingston in Jamaica, and seldom rises above four or five feet in height. The common receptacles are disposed at the extremities of the branches, and the outer divisions of the flowers grow gradually smaller, and curl more downwards as they approach the centre; which gives the whole something the appearance of a radiated flower; at the first appearance.

3. Root-leaves lanceolate-ovate, repand-toothed, subpubescent, viscid. Stem-leaves alternate, sessile, lanceolate, narrow, somewhat toothed. Flowers at the top of the stem, naked, several. They have the appearance of *Arnica montana*, with the proper peduncles elongated and submonophyllous. Calyx twelve

to sixteen-leaved; the leaflets lanceolate, blunt, equal. Corolla yellow. Florets both in the disk and ray bilabiate hermaphrodite.—Native of Brasil^k.

4. This is a pretty little plant. Leaves small, radical, several, runcinate-pinnatifid, and ciliate on the rachis, whence they are scabrous. Stem quite simple, tomentose, with two alternate ferrate leaves. Flower white, rayed.—Native of Terra del Fuego^l.

5. This is a small, stemless, herbaceous plant. Leaves radical, several, petioled, erect, a finger's length: lobes toothed, the end tooth rounded. Scape tomentose, erect, one-flowered, a little longer than the leaves. Calyx many-leaved, imbricate, smooth. Flowers with a purple-ray. Corollets of the disk yellow, four-cleft; one segment longer, linear, more deeply divided from the rest; the two lateral ones similar and equal; the middle one wider, rounded, scarcely longer than the lateral ones. Down simple.—Native of Japan; flowering there in april and may^m.

6. Calyx cylindric, consisting of eight equal leaves in one row; besides which it has often at the base two or four similar leaflets, a little longer than the others. All the florets androgynous, bilabiate, fertile; in the disk four or five, tubular, bifid at top, with the lips equal, concave, quite entire, villose on the outside; in the ray eight, unequally bilabiate; the outer lip ovate-oblong, with two or three teeth, and rayed; inner lip linear, quite entire, rolled back at the tip. Receptacle narrow, flat, densely and very shortly villose. Seeds uniform, oblong, obsoletely angular, with very minute bristles scattered over them; bay-coloured. Down bristle-shaped, with very many toothlets, twice as long as the seed. This differs from the others in the shape of the floretsⁿ.

Stem round, smooth, ash-coloured, naked, striated, with warted scars: branches greenish, smooth, leafy at top, alternate, spreading out at a right angle. Leaves alternate, on short petioles, an inch long, smooth on both sides, ciliate, spreading. Stipules none, but a callus, from which the petiole springs, is permanent. Flowers two or three, often five, terminating; on smooth capillary divaricating peduncles. Bractes spatulate, acute, smooth, solitary; but near the calyx two or three together^o.

PERESKIA. See *Cæsus*.

PERFOLIATA. See *Brassica*, *Bupleurum*, *Ophrys*.

PERFOLIATUM. See *Bupleurum*.

PERGULARIA. (From Pergula, an arbour or trellis, the first species was named *Vallis pergulans* by Burman, and *Flos pergulanus* by Rumphius. Linneus altered these names to *Pergularia*.)

Lin. gen. Reich. n. 329. Schreb. n. 428. Juss. 146. Smith rar. t. 6.

Class. 5. 2. Pentandria Digynia—potius Gynandria. Nat. order of *Contortæ*. *Apocineæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, upright, acute, permanent.

COR. one-petalled, salver-shaped: tube cylindrical, longer than the calyx: border five-parted, flat, with oblong segments.

Nectaries five, semisagittate, erect, compressed, attenuated into a dagger point, curved inwards, with a nodding tooth at the outer base.

STAM. Filaments —. Anthers two to each gland, curved upwards, divaricating, obovate, pellucid, yellow, with scarcely any discernible pollen. Sm. Tubercles (glands) five, immersed in the stigma.

PIST. Germs two, ovate, acuminate. Styles none, (two, very short, united, villose. Stigmas obsolete. Sm.)

PER. Follicles two.

SEED — — —

Obs. Allied to *Periploca græca*.—The character wants correction. S. and Juss. — See description of *P. odoratissima* by Smith.

ESSENTIAL CHARACTER.

Contorted. Nectary furrounding the genitals with five sagittated cusps. Cor. salver-shaped.

^a Linn. amoen.

¹ Linn. spec.

^k Linn. mant.

^l Gertner.

^m Linn. suppl.

ⁿ Bergius.

^o Thunberg.

SPECIES.

1. *Pergularia glabra*. *Smooth Pergularia*.
Lin. mant. 53. *syft.* *Reich.* 1. 602. *Willd. spec.* 1247.
Vallis pergularis. *Burm. ind.* 51.
Flos pergularis. *Rumph. amb.* 5. 51. t. 29. f. 2.
Leaves ovate acute smooth, stem shrubby.
2. *Pergularia edulis*. *Eatable Pergularia*.
Lin. spec. ed. Willd. 1247. *Thunb. prodr. cap.* 38.
Leaves ovate acuminate smooth, stem herbaceous.
3. *Pergularia odoratissima*. *Sweet-scented Pergularia* or *Creepers*.
Smith ic. rar. t. 16.
P. tomentosa. *Lin. mant.* 53. (quoad descr.) *syft.* *Reich.* 1. 602. *spec. Willd.* 1247. *Vahl symb.* 1. 23. *Desfont. fl. atlant.* 209.
Cynanchum odoratissimum. *Lour. cochinch.* 166.
Flos Siamicus. *Rumph. amb.* 6. 58. t. 26. f. 1.
Leaves heart-shaped nearly smooth, nectary and genitals shorter than the tube of the corolla, stigma conical obtuse.
4. *Pergularia purpurea*. *Purple Pergularia*.
Lin. spec. ed. Willd. 1248. *Vahl symb.* 3. 44.
Asclepias cordata. *Burm. ind.* 72. t. 27. f. 2.
Leaves heart-shaped smooth, segments of the corolla linear-oblong smooth, umbels proliferous.
5. *Pergularia japonica*.
Thunb. jap. 111. *Lin. syft.* 256. *spec. Willd.* 1248.
Leaves heart-shaped smooth, segments of the corolla ovate villose within, umbels simple.

DESCRIPTIONS, &c.

1. Stem twining, even. Leaves opposite, petioled, quite entire. Peduncles axillary, subdivided, alternate. Native of the East Indies^p.

2. The stem of this is also twining, but herbaceous, whereas in the preceding it is shrubby.—Native of the Cape of Good Hope.

3. Root branched, much spreading, whitish. Stem shrubby, twining, branched, round; its bark ash-coloured, spongy, full of longitudinal fissures; branches nearly opposite, very long, flaccid, mostly simple, round, brown, downy, leafy. Leaves opposite, spreading and bent downwards, pointed, entire, slightly concave, opaque, veiny, downy on the veins and margin, paler beneath: footstalks one fourth of the length of the leaves, round, downy, with a furrow along the upper side, furnished at the base on each side and at the top with two or three acute brown-tipped glands. Stipules none. Panicles axillary, solitary, on longish flower-stalks, dichotomous, somewhat corymbose, many-flowered, downy: general flower-stalks round; partial slightly angular. Bractes solitary at each division of the panicle, lanceolate, obtuse, brown on the back and at the tip. Flowers the size of a Primrose, yellowish green, with a sweet lemon-like smell, especially in an evening. Calyx bell-shaped, deeply five-cleft; segments lanceolate, veined, slightly downy, minutely ciliated, tipped with brown. Tube of the corolla a little longer than the calyx, slightly downy, striped; inflated, and with five swellings in the base; having a pervious orifice, set with numerous hairs pointing backwards. Border spreading, five-cleft; segments the length of the tube, obtuse, smooth, ciliated, oblique, their margin turned down, the under side palest. Outer nectary half as long as the tube, green, consisting of five triangular bodies, somewhat arrow-shaped at their base; concave behind, and with two notches in the upper part; keel-shaped within; their summits pointed, bent in, thin, white, and sticking together: inner nectary somewhat shorter, of five membranous leaves, dilated at the base, hollowed at the back, united by their sides, attached together by their pointed membranous tips, embracing the organs of fructification, and on their inside towards the top having two yellow membranous hoods, connected by their backs, formed to embrace the anthers in their natural situation. Column of the fructification rather shorter than the nectaries. Germs superior, distinct but close together, small, smooth, green, surrounded at the base with a

^p Linn. mant.

single row of numerous, probably nectariferous glands. Styles terminating in one densely villose, conical, obtuse (not truncated) body; on the sides of which stand five glands, alternate with the portions of the nectary, dark purple, with one anther on each side.

In the natural order to which this plant belongs the essential parts of fructification are more than commonly obscure. It seems to be of the class Gynandria, as perhaps are all the true *Contortæ*, whose anthers have a great affinity, in appearance as well as structure, with those of the Orchis tribe.

Its native place is uncertain; but it is cultivated in China, whence Lady Hume received the plant. It flowered in her stove in august 1791.

A variety of this, with somewhat rounder leaves, and more tawny flowers, is cultivated for its agreeable fragrance in the gardens of the East Indies, and is commonly called there *West Coast Creeper*. It was brought to the Kew garden about the same time that Lady Hume had the Chinese plant. The specimen in the Linnean herbarium is from China; whence it appears to have been brought to the Upsal garden; and to this belongs the description in the Mantissa, where the leaves are, not much amiss, described as smooth: but the specific character and place of growth relate to a widely different plant, *Asclepias cordata* of Forskall (*Vahl symb.* 1. 23.) the leaves of which are clothed with extremely thick down (as in the Banksian herbarium); and it appears from Forskall's description, (*Flora Egypt. Arab.* 49.) that the structure of its flowers perfectly agrees with the *Asclepias*^q.

4. Branches twining, slender, ash-coloured, appearing villose when examined by a glass. Leaves opposite, nerved and veined, two inches long; the upper one less. Petiole the length of the leaves. Umbels lateral, peduncle, shorter than the leaves. Peduncle thicker than the petiole, rigid. Pedicels filiform, pubescent like the calyxes. Corollas funnel-form: throat villose; sometimes also the border is a little villose. It is allied to *P. japonica*, but the umbels are proliferous, not simple; the segments also of the border are linear, not ovate: still it may be doubted whether they be actually distinct.—Native of the East Indies and of China^r.

5. Stem twining, round, smooth, simple. Leaves opposite, acute, quite entire, nerved, spreading, an inch long, on round, smooth petioles. Flowers axillary, peduncled, erect. Calyx parted almost to the base, shorter than the corolla; the parts lanceolate, rough-haired. Tube of the corolla bell-shaped, a little shorter than the calyx: segments of the border blunt, spreading and bent back, smooth on the outside but villose within. Nectaries subsagittate, connate with the anthers into a cylinder, and also with the stigma. Filaments scarcely any. Anthers connate with the nectary into a cylinder, and together covering the other parts of fructification. Germs upright, smooth, the length of the calyx. Styles none, except the elongation of the germs. Stigma covering the pistils, connate with the summits of the nectary, terminating in a long upright thread, attenuated at the tip, flexuose, white, the length of the corolla. The rest as in the generic character.—Native of Japan, where it flowers in august^s.

Loureiro has two species, both natives of China, which he names *divaricata* and *sinensis*. He remarks, that in all the species of *Pergularia* and *Apocynum* which he had seen, the flowers have one pistil only.

PERICLYMENI FLORE. See *Spigelia*.

—SIMILIS. See *Volkameria*.

PERICLYMENO ACCEDENS. See *Cinchona* and *Psychotria*.

PERICLYMENUM. See *Chiococca*, *Commelina*, *Cornus*, *Hamelia*, *Lantana*, *Lenicera*, *Loranthus*, *Morinda*, *Varronia*.

PERILLA.

Lin. gen. n. 1236. p. 578. *Reich. n.* 772. *Schreb. n.* 968. *Juss.* 113.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillatæ*. *Labiata*, Juss.

^q Smith.

^r Vahl.

^s Thunberg.

GENERIC CHARACTER.

- CAL. *Perianth* one-leafed, upright, half-five-cleft: segments equal, the uppermost very short; permanent.
- COR. one-petalled, irregular, four-cleft: upper segment emarginate, lateral ones spreading, lowest longer, blunt.
- STAM. *Filaments* four, simple, distant, shorter than the corolla. *Anthers* bifid.
- PIST. *Germes* four. *Styles* two, filiform, connected, the length of the stamens. *Stigmas* simple.
- PER. *Calyx* unchanged.
- SEEDS four.

ESSENTIAL CHARACTER.

- Cal. uppermost segment very short. Stam. distant. Styles two connected.

SPECIES.

1. *Perilla ocymoides*.

Lin. syst. 533. *Reich.* 3. 47. *gen.* 578.

Melissa maxima. *Arduini animadv.* 2. 28. t. 13.

DESCRIPTION, &c.

Stem simple, stiff, blunt, quadrangular, rough-haired. Leaves ovate, almost naked, ferrate; on petioles the length of the leaves. Racemes lateral and terminating, rough-haired, upright. Flowers small, white, solitary or by threes, rough-haired in the calyx, with leafy bractes longer than the flower.

It is an annual plant, native of the East Indies².

PERIM KAKU-VALLI. See *Mimosa*.

PERIM-TODDAL. See *Rhamnus*.

PERIN-KARA. See *Elæocarpus*.]

PERIPLŌCA. (From *περι* circum, and *πλοκη*, nexus. The branches twining round each other.)

Lin. gen. n. 303. *Reich. n.* 330. *Schreb. n.* 427.

Tournef. t. 22. *Juss.* 146. *Jacqu. misc. t.* 1. f. 2, 3.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Contortæ*. *Apocineæ*, *Juss.*

GENERIC CHARACTER.

- CAL. *Perianth* five-cleft, very small, segments ovate; permanent.
- COR. one-petalled, wheel-shaped, five parted: segments oblong, linear, truncated, emarginate.
- Nectary* very small, five-cleft, furrounding the genitals, putting out five threads, curved inwards, shorter than the corolla, and alternate with it.
- STAM. *Filaments* short, curved inwards, converging, villose. *Anthers* twin, acuminate, converging over the stigma; with lateral cells. *Pollen bags* five, at the notches of the stigma, each common to two anthers.
- PIST. *Germes* two, ovate, approximating. *Styles* united at top. *Stigma* capitate, convex, five-cornered, with the corners notched.
- PER. *Follicles* two, large, oblong, ventricose, one-celled, one-valved, glued together at the tip.
- SEEDS very many, imbricated, crowned with a down. *Receptacle* longitudinal, filiform.

OBS. The above character is taken from *P. græca*.

ESSENTIAL CHARACTER.

- Order of *Contortæ*. *Nect.* encircling the genitals, and putting forth five threads.

SPECIES.

1. *Periploca græca*. Common Virginian Silk or *Periploca*.

Lin. spec. 309. *Reich.* 1. 603. *Willd.* 1248. *hort.*

cliff. 78. *Pallas it.* 3. 589. *Du Roi barb.* 2.

p. 1. Medic. in obs. soc. æcon. Lutr. 1774. *p.* 233.

Kniph. cent. 2. n. 52. *Jacqu. misc. 1. 11. t. 1. f.* 2.

Hort. ang. t. 15. *Dubam. arb. 2. t.* 11.

P. repens. *Ger.* 754.—*angustifolia.* *Ger. emac.* 902. 1.

Apocynum folio oblongo. *Bauh. pin.* 303.

A. f. Periploca scandens, fol. longo, flore purpurante.

Bauh. hist. Raii hist. 1087.

A. 2. angustifolium. *Clus. hist.* 1. 125.

A. angustif. f. repens. *Park. theat.* 386. *f.* 2.

Flowers internally hirsute terminating.

[2. *Periploca Secamone*. Green *Periploca*.

Lin. syst. 256. *Reich.* 1. 603. *Willd.* 1249.

mant. 216.

P. foliis oblongis angustioribus. *Tournef. inst.* 93.

Secamone. *Alp. ægypt.* 133. *t.* 134.

² *Lin. gen. and syst.*

Flowers internally hirsute panicled, leaves lanceolate-elliptic.

3. *Periploca lævigata*. Smooth *Periploca*.

Ait. hort. kew. 1. 301. *Lin. spec. ed. Willd.* 1249.

P. punicæfolia. *Cavan. ic.* 3. 9. *t.* 217.

Corollas smooth with blunt segments, cymes trichotomous, leaves oblong-lanceolate veined even, stem smooth.

4. *Periploca angustifolia*. Narrow-leaved *Periploca*.

Billard. ic. syr. 2. 13. *t.* 7. *Lin. spec. ed. Willd.*

1249. *Desfont. fl. atlant.* 209.

P. lævigata. *Vahl symb.* 4. 45.

Corollas smooth, segments emarginate, cymes trichotomous, leaves lanceolate veinless even, stem smooth.

5. *Periploca esculenta*. Esculent *Periploca*.

Lin. suppl. 168. *syst.* 256. *ed. Willd.* 1250. *Roxb.*

corom. 1. 13. *t.* 11. *Pluk. amalth.* 19. *t.* 359.

f. 6. (*Apocynum*).

Corollas smooth wheel-shaped, racemes axillary, leaves linear-lanceolate veined.

6. *Periploca emetica*. Emetic *Periploca*.

Willd. spec. 1250. *phytog.* 1. 6. *n.* 21. *t.* 5. *f.* 2.

Retz. obs. 2. 14.

Corollas smooth, corymbs few-flowered axillary, leaves linear-lanceolate veinless.

7. *Periploca indica*. Indian *Periploca*.

Lin. spec. 309. *Reich.* 1. 603. *Willd.* 1251. *fl.*

zehl. n. 113. *Burm. zehl.* 187. *t.* 83. *f.* 1. *Pluk.*

mant. 17. *t.* 359. *f.* 2. (*Apocyni genus, &c.*)

Spikes axillary imbricated, leaves elliptic obtuse mucronate, stem smooth.

8. *Periploca capsularis*. New Zealand *Periploca*.

Forst. prod. flor. austral. n. 126. *Lin. spec. ed.*

Willd. 1251.

Leaves lanceolate quite entire opposite, cymes axillary diffused.

9. *Periploca africana*. African *Periploca*.

Lin. spec. 309. *Reich.* 1. 604. *Willd.* 1251. *Jacqu.*

misc. 1. 13. *t.* 1. *f.* 3. *hort. cliff.* 79. (*Cynanchum*).

Comm. rar. t. 18. *Pluk. phyt. t.* 137. *f.* 4. *Mor.*

hist. 3. 611. *f.* 15. *t.* 3. *f.* 62. (*Apocynum*).

β. Burm. afr. 34. *t.* 14. *f.* 2. (*Cynanchum*).

Leaves ovate acute, flowers corymbed, stem hirsute.

[10. *Periploca tunicata*.

Lin. spec. ed. Willd. 1252. *phytog.* 1. 7. *n.* 22. *t.* 5.

f. 1. *Retz. obs.* 2. 15.

Leaves oblong heart-shaped acuminate, flowers umbelled.

11. *Periploca sylvestris*.

Lin. spec. ed. Willd. 1252. *phytog.* 1. 7. *n.* 23. *t.* 5.

f. 3. *Retz. obs.* 2. 15.

Leaves roundish-ovate netted-veined pubescent underneath, flowers umbelled.

12. *Periploca cochinchinensis*.

Lour. cochinch. 167.

Stem arboreous, leaves fleshy, racemes terminating.

13. *Periploca fruticosa*.

Mill. dict. n. 3.

P. foliis cordatis holosericeis, floribus parvis albis campaniformibus. *Houft. Mss.*

Leaves oblong-cordate pubescent, flowers axillary, stem shrubby climbing.

DESCRIPTIONS, &c.

1. Stems shrubby twining round any support more than forty feet in height, covered with a dark bark, and sending out slender branches which twine round each other. Leaves ovate-lanceolate, near four inches long, and two broad in the middle, of a lucid green on their upper side, but pale on their under, opposite, on short foot-stalks. The flowers come out towards the ends of the small branches in bunches, and are of a purple colour.

[Jacquin, in his miscellanies, has given a very particular and accurate description, accompanied with figures, of the extraordinary structure of the flower, in this species and *africana*, n. 9.—Native of Syria. Cultivated by Gerarde in 1597¹. "My loving friend," says he, "John Robin, herbarist in Paris, did send me plants for my garden, where they flower and flourish." He calls it *Climing Dog's bane*.]

It flowers in July and August, but rarely ripens seeds in England.

¹ *Hort. kew.*

[2. Stem twining, shrubby, even. Leaves opposite, petioled, even, underneath paler veined transversely. Panicles axillary, alternate, dichotomous, shorter than the leaves. Flowers small. It differs at first sight from the preceding in its small copious flowers^a.

Said to be a native of Egypt—but its place of growth is uncertain. It was cultivated in 1775, by John Fothergill, M. D. It flowers in July^x.

3. Corolla greenish-yellow within; the segments linear, blunt, with an orange dot above. Leaves simply veined^y.

Native of the Canary islands, where it was found by Masson. Introduced in 1779^z.

4. Stem frutescent, from three to five feet high, upright, branched, sometimes scandent by the top. Leaves some opposite, others in bundles, evergreen, smooth, sharp at both ends, but sometimes blunt, quite entire. Petioles short, with two opposite tubercles at the base. Panicle axillary, the length of the leaves. Segments of the calyx blunt, falling with the ripe fruit. Segments of the corolla more produced on one side, purple within, the edges pale yellow, with a whitish submentose dot towards the middle. Scales (of the nectary) purple, somewhat fringed; and between them five purple bowed filaments, from the sinuses of the corolline segments: besides these, there are five villose pedicelled scales, which are two-celled and surround the germ: they are the stamens (or anthers) of Linneus. There are also five small bodies (which perhaps may be the stamens) club-shaped at the base, fastened underneath to the pelta of the styles; the apex cloven, and mealy or containing pollen, lodged in the cells of the scales: probably these are the anthers. Germ very small, bifid. Styles two, short. Stigmas two, covered with a fleshy five-cornered pelta, within which the little club-shaped bodies are lodged. Capsules (or follicles) lanceolate, acute, even, horizontal, sessile, opposite at the base. Seeds oblong, compressed; crowned with a white bristly down^a. Though very like the preceding, yet it is sufficiently distinct from it, by its narrower veinless leaves, and the emarginate segments of the corolla^b.

Found by Billardiere near Laodicea by the sea, and in the island Lampedusa; by Desfontaines on mount Atlas; also on mount Shibel Ischel in the kingdom of Tunis.

5. Root filiform, fibrous. Stems and branches numerous, twining, round, smooth, running over bushes of considerable size. Leaves opposite, spreading, short-petioled, linear tapering to a fine point, rounded at the base, entire, smooth, from four to six inches long, and about three-eighths of an inch broad. Racemes lateral, long, few-flowered. Flowers large, beautiful white with a small tinge of the rose, and striated with purple veins; inodorous. Nectary and stamens as in *Asclepias* and *Pergularia*. Follicles oblong, inflated^c.

Willdenow adds, that there are but two or three flowers in a raceme, and that they are pedicelled; that the corolla is yellow with ferruginous streaks; the nectary five-horned, the genitals yellow, and the follicles smooth. His description of the colour of the flower is taken from a dried specimen. He says farther, that it varies in the width of the leaves; that he has specimens with oblong-lanceolate, linear-lanceolate and linear-subulate leaves, but the second predominate.

Native of the East Indies, called Oudy-palla by the Telingas. It grows in hedges, and among bushes, on the banks of water-courses, pools, &c. casts its leaves during the dry season, and is in flower and foliage during the rainy season. Cattle eat it, but the natives do not, nor do they apply it to any purpose whatever. Its elegant flowers render it deserving of a place in the flower garden^d.

6. Stem shrubby, with diffused rod-like, even branches. Leaves entire, smooth, short-petioled, opposite. Peduncles short, many-flowered, scaly with

little bristles, especially at the ends of the branches. Flowers small, smooth.

Native of the East Indies, at the foot of mountains. Koenig sent it from Tranquebar. Thunberg says that the root is used as an emetic in the East Indies^e.

7. Stem twining, round. Leaves opposite, smooth, quite entire, on very short petioles: from the axils of them simple spikes come out imbricated with sharp scales^f.

According to Burman, the stem is ash-coloured, rugged with many very small tubercles. A pair of leaves from each joint, almost sessile, bright green above, pale and ash-coloured underneath, oblong, acute, entire, veined; at the axils of these there are many flowers sitting close.—Native of the island of Ceylon.

8. Native of New Zealand^g.]

9. This has many slender stalks, which twine about each other, and by a shrub or other support will rise near three feet high, putting out several small side-branches: these are hairy, as are also the leaves; which are about three quarters of an inch long, and half an inch broad, standing by pairs upon very short foot-stalks. The flowers come out in small bunches from the side of the stalks; they are small, of a dull purple colour, and have a sweet scent. It flowers in the summer, but does not produce seeds here.

[Native of the Cape of Good Hope. Cultivated by Mr. Miller in 1726^h.]

There is a variety of it with smooth leaves and stalks from the same country.

[10. Stem twining, even. Leaves opposite, petioled, smooth on both sides. Stipules cordate, petioled. Flowers smooth in axillary few-flowered umbels (two to five.) Koenig sent it from Tranquebar.

11. Stems shrubby, tomentose. Leaves ovate, somewhat hirsute on both sides, entire. Flowers small in opposite axillary umbels, smooth within. Calyx tomentose, with the segments ovate, obtuse.—Native of the East Indies; found by Koenigⁱ.

12. This is a middle-sized tree, with spreading branches. Leaves heart-shaped, oblong, acute, quite entire, large, smooth, opposite. Flowers blueish white, on short racemes. Calyx five-leaved; leaflets lanceolate, spread out. Nectary surrounding the genitals with five filiform upright little columns, curved at the base.

Native of CochinChina, to the south of Huæa the metropolis. It occurs also in Bengal, but of a smaller size^k.]

13. This rises with a strong woody stalk to the height of five or six feet, covered with a gray bark, putting out many weak branches, which twist themselves about any neighbouring support, and rise to the height of twenty feet; they are garnished with heart-shaped leaves three inches long, and two broad near their base; they are of a yellowish green, covered with silky hairs, which are soft to the touch; and stand opposite upon pretty long foot-stalks. The flowers come out in small bunches from the wings of the leaves; they are small, white, and of the open bell shape; these are succeeded by swelling taper pods, filled with seeds crowned with long feathery down.

Discovered by Dr. Houstoun at Vera Cruz in America.

PROPAGATION AND CULTURE.

1. This is easily propagated by laying down the branches, which will put out roots in one year, and may then be cut from the old plant, and planted where they are to remain. These may be transplanted either in autumn, when the leaves begin to fall, or in the spring before they begin to shoot, and must be planted where they may have support, otherwise they will trail on the ground, and fasten themselves about whatever plants are near them.

9. The ninth sort is hardy enough to thrive in this country, with a little protection from the frost in winter. If the plants are sheltered under a common frame or placed in a green-house during the winter season, and

^a Linn. mant.

^z Hort. kew.

^x Hort. kew.

^y Billardiere.

^y Willdenow.

^b Willdenow.

^c Roxburgh.

^d Idem.

^e Retzius.

^f Linn. zeyl.

^g Forster.

^h Hort. kew.

ⁱ Retzius.

^k Loureiro.

placed abroad with other hardy exotic plants in summer, they will thrive and flower very well; but as all the plants of this genus have a milky juice, so they should not have much wet, especially in cold weather, lest it rot them. They are easily propagated by laying down their branches, which in one year will have roots enough to transplant; these should be planted in a light sandy loam not rich, and the pots must not be too large, for when they are over potted they will not thrive.

13. The thirteenth sort being tender, will not thrive in England, unless the plants are placed in a warm stove. They may be propagated by laying down their branches in the same manner as the former; or from seeds, when they can be procured from the places where they naturally grow. These should be sown upon a good hot-bed, and when the plants come up, they must be treated in the same manner as other tender exotic plants.

If these plants are constantly kept plunged in the tan-bed of the stove, they will thrive and flower much better than in any other situation, but the stove should not be kept too warm in winter; and in the summer the plants should have a large share of free air admitted to them; for when they are kept too close, their leaves will be covered with insects, and the plants will become sickly in a short time.

[PERIPLOCA. See *Ceropegia*, *Cynanchum*, *Ecbites*.

PERIPU. See *Delima*.]

PERIWINKLE. See *Vinca*.

[PEROLA. See *Momordica*.

PEROTIS. (From *περος*, *maius*; the flowers being deficient, as wanting the calyx.)

Ait. hort. kew. 3. 506. *Lin. gen. Schreb.* n. 1714. p. 786.

Class. 3. 2. Triandria Digynia.

GENERIC CHARACTER.

CAL. none.

COR. Glume two-valved: valves oblong, acute, almost equal, awned at the tip.

STAM. Filaments three, capillary. Anthers oblong.

PIST. Germ superior, oblong. Styles two, capillary, shorter than the corolla. Stigmas feathered, divaricating.

PER. none. Corolla inclosing the seed.

SEED one, linear-oblong.

ESSENTIAL CHARACTER.

Cal. none. Cor. two-valved: valves equal, awned.

SPECIES.

1. *Perotis latifolia*.

Ait. hort. kew. 1. 85. *Lin. spec. ed. Willd.* 324.

Saccharum spicatum. *Lin. spec.* 79. *syn.* 103. *Reich.* 1. 147.

Alopecurus malabarica foliis undulatis, spica prætenui. *Scheuch. gram.* 91.

Gramen paniculatum brevifolium crispum, spica purpureo-fericea maderaspatanum. *Pluk. phyt.* t. 199. f. 1. *Mor. hist.* 3. 191. n. 7.

Tsjeria-Kurén-pullu. *Rheed. mal.* 12. p. 117. t. 62.

β. With flat lanceolate leaves.

Saccharum spicatum. *Burm. ind.* t. 9. f. 3.

Culm simple, leaves waved, joints smooth.

2. *Perotis polytachya*.

Lin. spec. ed. Willd. 324.

Saccharum paniceum. *Lamark, encycl.* 1. 588. t. 40. f. 3.

Culm branching, leaves flat, joints bearded.

DESCRIPTIONS, &c.

1. Culm a foot and half high, frequently jointed to a third part of its height, the joints half an inch and an inch distant from each other; from each joint springs a branch, which is also frequently jointed, and terminated by a spike. Leaf at each joint waved and as it were curled, an inch long or less, a line and half or two lines wide, smooth, with a white line, and short loose stiffish hairs at the edge. Sheath half an inch or an inch in length, whitish especially towards its origin; ending in a scarcely visible whitish ligule. Spike a hand or half a foot in length, very thin. Florets pedicelled, a line long, livid or purplish; awn very slender, yellowish or purple, four or five lines

in length. Seed very slender, acuminate, brown, near a line long¹. Petiver sent it to Scheuchzer from London.—It is an annual grass, native of the East Indies. Introduced in 1777 by Daniel Charles Solander, L.L.D. It flowers in august and september^m.

The variety, according to Willdenow, is a distinct species of this genus.

2. Culm branched. Leaves linear, not waved. Sheaths bearded at the edge.—Native of the East Indiesⁿ.

PERPENSUM. See *Gunnera*.

PERSEA. See *Laurus*.

PERSIAN LILY. See *Fritillaria*.

PERSICA. See *Amygdalus*.

PERSICÆ SIMILIS. See *Mangifera*.

PERSICARIA. See *Polygonum*.

————— SILIQUOSA. See *Impatiens*.

PERSIMON. See *Diospyros*.

PERSONATA. See *Aretium*.

PERSOONIA. (So named by J. E. Smith, M.D. President of the Linnean Society, in honour of C. H. Persoon, author of several treatises on Fungi, and editor of the 15th edition of *Systema Vegetabilium*, Gotting. 1797.)

Smith in Linn. trans. 4. 215.

Class. 4. 1. Tetrandria Monogynia.

ESSENTIAL CHARACTER.

Cal. none. Pet. four, stamiferous towards the base. Glands four at the base of the germ. Stigma blunt. Drupe one-seeded.

OBS. This genus differs from *Loranthus*, to which it is nearly allied, in the number of parts and in the want of a calyx. It can scarcely be associated with the *Caprifolia* of Jussieu.

It consists of subvillineous shrubs. Leaves commonly alternate, without stipules. Corolla smooth within. Anthers linear, finally bent back. Style permanent, smooth. Drupe eatable in most. Flowers yellow. Natives of the islands in the Southern Ocean. Smith.

PERU. See *Dolichos*.]

PERVINCA. See *Vinca*.

[PERULA. (A little scrip, bag or satchel; from the form of the seed-vessel.)

Lin. gen. Schreb. n. 1549.

Pera. *Mutis æst. holm.* 1784. p. 299. t. 8.

Class. 22. 12. Dioecia Polyandria.

GENERIC CHARACTER.

* Male.

CAL. Perianth two-leaved, very small: leaflets opposite, oblong, somewhat concave, spreading, the upper one twice as big as the other.

COR. Petal one, semiglobular-concave, hanging down, heart-shaped at the base, scarcely emarginate at the tip. Nectary; membranes multifid, somewhat plaited, erect, inserted into the receptacle between the rows of stamens.

STAM. Filaments very many (24 to 30), set transversely in a double row, thickish, upright, the height of the nectary. Anthers thickish, four-cornered, oblong, blunt, upright, raised above the nectary.

PIST. Germs four, barren, very small, subglobular, very shortly pedicelled, placed at the angles of the receptacle above the nectary. Style very short, upright. Stigmas three: with segments peltate, standing out at the tips.

* Female on a distinct tree.

CAL. Perianth as in the male, deciduous.

COR. as in the male.

Nectary as in the male, with the membranes approximating, somewhat inflated, filling the disk of the receptacle.

PIST. Germs four, fertile, inserted into the receptacle, as in the male, a little larger, shortly pedicelled. Style to each, upright, short, three-cornered. Stigmas as in the male.

PER. Capsule obovate, subtrigonal, hanging down from the elongated pedicel, three-celled, three-valved: valves bilid, at length two-parted.

SEEDS solitary, obovate-truncated, smooth, small.

¹ Scheuchzer.

^m Hort. kew.

ⁿ Willdenow.

OBS. Is not the calyx rather a double bracte? Corolla before it unfolds globular, with a longitudinal future, when that opens the orifice of the petal becomes transverse, the receptacle is almost prominent beyond the corolla, and the flower hangs down from the nodding apex of the incurved peduncle. Mutis.

SPECIES.

Perula arborea.

Pera arborea. Mutis in *act. holm.* 5. 299. t. 8.

Native of New Granada, about Mariquita, where it was found by Mutis.

PERUVIAN MASTICK TREE. See *Schinus*.

PES ANGERINUS. See *Chenopodium*.

— CAPRÆ. See *Convolvulus* and *Oxalis*.

— EQUINUS. See *Hydrocotyle*.

— LEONIS. See *Alchemilla*.

— TIGRIDIS. See *Ipomœa*.

PETAGLOSSUM. See *Lythrum*.

PETALOMA. (From *πέταλον*, a leaf.)

Lin. gen. Schreb. n. 1750. p. 802. Swartz prodr. 73.

Mouriri. Aubl. guian. t. 180. Juss. 320.

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. Perianth one-leafed, goblet-shaped, five-toothed, superior, permanent: teeth sharp, almost upright.

COR. Petals five, oblong, spreading, each inserted by the claw between the teeth of the calyx, deciduous.

STAM. Filaments ten, placed on the margin of the calyx, longer than the corolla. Anthers oblong, incumbent.

PIST. Germ ovate, in the bottom of the calyx. Style long, awl-shaped. Stigma simple, acute.

PER. Berry globular, fleshy, crowned with the calyx, one-celled.

SEEDS solitary or in fours, angular on one side, convex on the other.

OBS. It should be separated from *Myrtus* on account of the form of the calyx, and the insertion of the stamens.

ESSENTIAL CHARACTER.

Cal. goblet-shaped, five-toothed. Petals five, inserted between the teeth of the calyx. Stam. on the margin of the calyx. Berry one-celled. Seeds one or four.

SPECIES.

1. *Petaloma myrtilloides.*

Swartz prodr. 73. Sloan. jam. 2. 78. t. 187. f. 3.

Peduncles solitary one-flowered, leaves subsessile ovate attenuated oblique at the base.

2. *Petaloma Mouriri.*

Lin. syst. Gmel. 678. Swartz prodr. 73.

Mouriri guianensis. Aubl. guian. 453. t. 180.

Peduncles corymbed axillary, leaves petioled ovate acuminate, berries four-seeded.

DESCRIPTIONS, &c.

1. Trunk straight, twenty feet high, no thicker than the human leg; bark almost smooth, gray, with some very white spots, whence its name of *Silver-wood*. Leaves in pairs, smooth, very thin, yellowish green, an inch long, and almost as broad at the base, entire. Flowers axillary, small, white, on crooked pedicels. The wood is hard, tough, heavy, and good for looms, handles, staves for oars, or scouring rods for guns.

Native of Jamaica, and other parts of the West Indies.

2. This is a tree from thirty to forty feet in height, and a foot and half in diameter; with a grayish bark, and a whitish hard compact wood; with a great number of branches at top, some straight, others inclined, spreading out in every direction, and subdividing into knobbed branchlets. Leaves at each knot in pairs ovate-acuminate, smooth, entire, strong, thick, on short petioles. Flowers axillary on opposite corymbs. A very small bracte at the base of the common peduncle and pedicels, and two under the calyx. Corolla yellow.

Native of Guiana, in the forests bordering on the river Sinemari; flowering in november, and fruiting in january. Named by the natives *Mouririchira*.*]

* Sloane.

* Aublet.

PETASITES. [(From *πέτασος*, a bat, on account of the great size of the leaves.) See *Clerodendrum*, *Gunnera*,] *Tussilago*.

PETESIA.

Lin. gen. n. 133. Reich. n. 139. Schreb. n. 170.

Juss. 199. Brown. t. 2. f. 2, 3. & t. 3. f. 2.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Rubiaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, superior; with the mouth toothed.

COR. one-petalled, funnel-form: tube cylindrical, longer than the calyx: border four-parted; lobes rounded, blunt.

STAM. Filaments four, awl-shaped, the length of the tube. Anthers somewhat oblong.

PIST. Germ inferior. Style filiform. Stigma bifid, acute.

PER. Berry globular, crowned, two-celled.

SEEDS very many, roundish.

ESSENTIAL CHARACTER.

Cor. one-petalled, funnel-form. Stigma bifid. Berry many-seeded.

SPECIES.

1. *Petesia stipularis.*

Lin. spec. 160. Reich. 1. 312. Willd. 612. Brown. jam. 143. t. 2. f. 2.

Leaves lanceolate-ovate tomentose underneath, flowers in lateral thyrses.

2. *Petesia carnea.*

Lin. spec. Willd. 613. Forst. prodr. n. 51.

Leaves oblong-lanceolate even, flowers in terminating trifid cymes.

3. *Petesia tomentosa.*

Lin. spec. 161. Reich. 1. 313. Willd. 613. Jacqu. amer. 18.

Leaves oblong tomentose on both sides.

DESCRIPTIONS, &c.

1. This is a shrub. Leaves opposite, quite entire. Racemes axillary, brachiate, shorter than the leaf.—Native of Jamaica†.

According to Swartz, it is allied to *Rondeletia*, and should be referred to the class Pentandria, as appears from Browne's figure and description.

2. Native of the island of Namoka in the great Southern Ocean‡.

3. Native of the woods about Carthagena in New Spain§.

Loureiro has two species, natives of CochinChina, which he names *simplicissima* and *trifida*.

PETESIA LYGISTUM. See under *Manettia*.

PETESIOIDES. See *Wallenia*.

PETILIUM. See *Fritillaria*.

PETITIA. (So named by Jacquin, in memory of Francois Petit, a surgeon at Paris, who in 1710 published Letters containing some botanical remarks.)

Lin. gen. Schreb. n. 172. Jacqu. amer. 14.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Vitices*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, small, upright, four-toothed, inferior, permanent.

COR. one-petalled: tube cylindrical, upright, long: border four-cleft; segments ovate, acute, flat, reflex, half the length of the tube.

STAM. Filaments four, awl-shaped, very short, in the upper part of the tube. Anthers upright.

PIST. Germ roundish, superior. Style awl-shaped, upright, the length of the stamens. Stigma simple.

PER. Drupe roundish.

SEED. Nut ovate, blunt, two-celled: kernels solitary, oblong.

OBS. Flowers often three-stamened, with the calyx and corolla trifid.

ESSENTIAL CHARACTER.

Cal. four-toothed, inferior. Cor. four-parted. Drupe with a two-celled nut.

SPECIES.

1. *Petitia domingensis.*

Lin. spec. Willd. 614. Jacqu. amer. 14. t. 182. f. 6.

† Linn. spec.

‡ Forster.

§ Jacquin.

DESCRIPTION, &c.

This is a small tree, with four-cornered striated branches. Leaves ovate-oblong, acuminate, quite entire, opposite. Flowers paniced, axillary.—Found in the island of St. Domingo, in woods, by Jacquin¹.]

PETIVERIA. (So named by Plumier in honour of James Petiver, apothecary of London, author of *Museum*, 1695, *Gazophylacium*, 1702, collected into one volume folio, with many plates.)

Lin. gen. n. 459. Reich. n. 494. Schreb. n. 623.

& p. 828. Plum. 39. Gært. t. 75. Juss. 84.

Class. 6. 4. Hexandria Tetragynia.—Heptandria Monogynia. Swartz.

Nat. order of *Holoraceæ*. *Atriplices*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* four-leaved: *leaflets* linear, blunt, equal, spreading, permanent.

COR. none (except the coloured calyx.)

STAM. *Filaments* six or eight, unequal, awl-shaped, converging. *Anthers* erect, linear-sagittate, bifid at top.

PIST. *Germ* ovate compressed, emarginate. *Style* very short, lateral, in the groove of the germ. (*Styles* four, permanent, finally bent outwards, spinescent, G.) *Stigma* pencil-shaped.

PER. none, except the crust over the seed.

SEED single, oblong, narrower below, roundish, compressed, emarginate: with four barbed hooks, bent back outwards, rigid, acute, the middle ones longer: (naked, but armed above with reflex spines. G.)

OBS. The flowers have mostly seven stamens. Sw.

ESSENTIAL CHARACTER.

Cal. four-leaved. *Cor.* none. *Seed* one, with reflex awns at top.

SPECIES.

1. *Petiveria alliacea*. Common Guinea-ben weed.

Lin. spec. 486. syst. 350. Reich. 2. 131. hort. cliff.

141. upf. 91. Act. holm. 1744. p. 287. t. 7.

Swartz obs. 138. Gært. fruct. 1. 363. Trew.

Ebrét. 33. t. 67. Mill. illustr. ic. Kniph. cent. 2.

n. 53. Plenck, ic. 291. Brown. jam. 274. Sloan.

jam. 1. 172. Raii suppl. 287.

Flowers six-stamened.

2. *Petiveria octandra*. Dwarf Guinea-ben weed.

Lin. spec. 486. syst. 350. Reich. 2. 131. Jacq.

amer. 201. pict. 52: t. 104. Plum. gen. 50.

ic. 219.

Flowers eight-stamened.

DESCRIPTIONS, &c.

1. Root strong, striking deep into the ground. Stems from two to three feet high, jointed and becoming woody at bottom. Leaves oblong, three inches long and an inch and half broad, of a deep green and veined, placed alternately on short foot-stalks. The flowers are produced in slender spikes at the ends of the branches; they are very small and make no figure.

[Seed cuneiform-oblong, round-flatted, with an obscure ridge on one side and a depressed line on the other, armed at top with four pungent spines, at first almost upright, but afterwards reflected to the back; of a bay or pale-green colour².]

It is a common plant in most of the islands in the West Indies, where it grows in shady woods, and all the savannas, in such plenty as to become a troublesome weed. As this plant will endure much drought, it remains green when others are burned up: the cattle then feed on it, and it gives their milk the taste of Garlick, and an intolerable rankness to their flesh. It flowers here in June.

[Browne informs us that it is very common in all the lower lands of Jamaica, and that it is so remarkably acrid, as to render the smell and taste hardly tolerable. On chewing a little of the plant, it burns in the mouth, and leaves the tongue black, dry and rough, as it appears in a malignant fever. It is however thought to be coveted by Guinea Hens, and hence its name of *Guinea-ben weed*. It thrives most in a dry gravelly soil and a shady situation. Cultivated in 1758, by Mr. Miller³.]

2. This is very like the first, but differs in having a shorter and narrower stalk, and in the flowers having

¹ Willdenow.

² Gartner.

³ Hort. kew.

eight stamens; but except to a nice observer, they may both pass for the same species. [Linneus adds, that the leaves are more rigid and quite smooth, the filaments purple and not white. It is a mere variety of the preceding, according to Swartz.

Jacquin describes it as a shrubby plant, smelling strong of Garlick, differing from the common sort only in having eight filaments, which are all unequal, and the pencil-shaped body placed on the germ red, whereas in the other it is white.

Native of the West Indies: according to Jacquin frequent in Martinico and the other Caribbee islands, flowering almost all the year.—It was cultivated in 1739, by Mr. Miller¹.]

PROPAGATION AND CULTURE.

These plants may be increased by slips or cuttings, as well as seeds; which must be sown on a hot-bed early in the spring. When the plants are come up, transplant each into a separate pot, and plunge the pots into a moderate hot-bed. When the plants have obtained a good share of strength, inure them by degrees to the open air, into which remove them towards the end of June, placing them in a warm situation, where they may remain till autumn, when they should be placed in the stove, and during winter have a moderate degree of warmth. They will produce flowers and seeds every summer, and will continue several years, remaining constantly green throughout the year.

[**PETOLA.** See *Momordica*.]

PETREA. (So named by Houstoun, who discovered the plant at Vera Cruz in New Spain in 1731, in honour of Lord Petre, who possessed a noble collection of exotic plants, and was a great encourager of botany.)

Lin. gen. n. 764. Reich. n. 822. Schreb. n. 1024.

Houst. reliqu. 11. Jacq. amer. 180. Juss. 108.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of *Personatæ*. *Vitices*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, bell-shaped: *border* five-parted, spreading, very large, coloured, permanent: *segments* oblong, blunt, closed at the throat by five doubled, truncated scales.

COR. one-petalled, wheel-shaped, unequal, less than the calyx: *tube* very short: *border* flat, five-cleft: *segments* rounded, almost equal, spreading very much; the middle one larger and of a different colour.

STAM. *Filaments* four, concealed within the tube of the corolla, ascending, two shorter. *Anthers* oval, erect.

PIST. *Germ* ovate. *Style* simple, the length of the stamens. *Stigma* blunt.

PER. *Capsule* obovate, flat at top, two-celled, concealed at the bottom of the calyx.

SEED single, fleshy.

ESSENTIAL CHARACTER.

Cal. five-parted, very large, coloured. *Cor.* wheel-shaped. *Caps.* two-celled, at the bottom of the calyx. *Seeds* solitary.

SPECIES.

Petrea volubilis.

Lin. spec. 873. syst. 565. Reich. 3. 163. hort. cliff.

319. Jacq. amer. 180. t. 114. pict. 89. t. 173.

DESCRIPTION, &c.

It rises with a woody stalk to the height of fifteen or sixteen feet, covered with a light-gray bark, and sending out several long branches, having a whiter bark than the stem. Leaves at each joint, on the lower part of the branches placed by threes, but higher up by pairs; they are five inches long, and two inches and a half broad in the middle, drawing to a point at each end; they are stiff, and their surface is rough, of a light green, having a strong dark midrib, with several transverse veins running to the borders, which are entire. The flowers are produced at the ends of the branches in loose bunches, nine or ten inches long; each flower upon a slender pedicel about an inch in length. Calyx composed of five narrow obtuse segments, an inch long, of a fine blue colour, and much more conspicuous than the petals, which are white, and not more than half their length.

¹ Hort. kew.

Dr. Houstoun found a variety of this with blue petals, of the same bright colour with the calyx, and making a fine appearance, each branch being terminated by a long string of these flowers; whence he has ranked it among the first class of beautiful American trees.

[Jacquin describes it as a shrubby plant, with rugged, round, brachiate branches, climbing trees to the height of twenty feet. Leaves ovate, acute, quite entire, very rugged on both sides, petioled, opposite, three or four inches long. Racemes simple, loose, the flowers pointing one way, handsome, terminating, pendulous, nine inches long, containing about thirty flowers; which are inodorous, open successively, on long peduncles: calyx blue or blueish purple, corolla deep violet and caducous. The seeds very seldom ripen, the calyxes falling prematurely.

Native of South America and the West Indian islands.

Linneus does honour to the nobleman from whom this plant was named, in the following words:—

“Perit egregius Petreus 1742, ætatis 32, variolis correptus, longiori vita dignissimus, utpote qui floræ indicæ domicilia extruxit in Europa omnium splendissima.”]

PROPAGATION AND CULTURE.

This is propagated by seeds, which must be obtained from the places where the trees grow naturally, and very few of them are good; for, from the seeds which Dr. Houstoun sent to England, there were but two plants raised, though the seeds were distributed to several persons; and this is a sort of confirmation of the spikes of flowers being of different sexes, and that the seeds gathered by the Doctor, were taken either from trees at some distance from the male, or such parts of the same tree which were remote from the male flowers. The seeds must be sown in a good hot-bed, and when the plants come up, they should be each planted in a separate small pot filled with light loamy earth, and plunged into a hot-bed of tanners bark, and afterwards placed in the bark-bed in the stove, where they should constantly remain, and be treated like other plants of the same country.

[PETROCARYA. (From *πέτρος*, a stone; and *καρύα*, a nut; the shell of which is as hard as a stone.)

Lin. gen. Schreb. n. 629. Parinari. Aubl. t. 204. Parinarium. Juss. 342.

Class. 7. 1. Heptandria Monogynia.

Nat. order of Pomaceæ. Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, turbinate, five-cleft: segments ovate, acute, rigid, spreading (the two upper ones more erect?) Leaflets two, oblong, concave, at the base of the perianth.

COR. Petals five, ovate, acute, unequal, less than the calyx, and inserted into it between the segments.

STAM. Filaments fourteen, capillary, longer than the calyx, inserted into the edge of it below the petals; seven antheriferous, the other seven in the opposite (upper!) part of the calyx, barren. Anthers roundish, gaping inwardly.

PIST. Germ ovate, villose. Style cylindrical, curved in, villose, longer than the stamens. Stigma capitate.

PER. Drupe large, ovate, compressed, fleshy-fibrous, one-celled.

SEED. Nut ovate, compressed, sinuous-wrinkled longitudinally, tubercled: shell thick, very hard, two-celled: kernels oblong.

ESSENTIAL CHARACTER.

Cal. turbinate, five-cleft, with two bractes at the base.

Cor. five-petalled, less than the calyx. Filam. fourteen, seven of which are barren. Drupe inclosing a two-celled nut, with a stony shell.

SPECIES.

1. Petrocarya montana.

Lin. syst. ed. Gmel. 596.

Parinari montana. Aubl. guian. 514. t. 204, 205.

Leaves ovate.

2. Petrocarya campestris.

Lin. syst. ed. Gmel. 596.

Parinari campestris. Aubl. guian. 517. t. 206.

Leaves cordate.

DESCRIPTIONS, &c.

1. This is a very lofty tree; with a trunk eighty feet high, dividing at the top into very thick, wide-spreading branches; the ramulets or smaller branches being villose and reddish. The leaves are ovate and acuminate; perfectly entire and beset on their under surface with a whitish down. The stipules are two, very broad, sharp, oblong, and deciduous; and are semi-amplexicaul at the bases of the leaves. The flowers are raceme-terminal; the common footstalk being downy and whitish. The flowers are white. The drupe smooth and fulvous; it has a thick acid bark; and the nut or kernel in each loculament of the putamen is sweet and edible. Sometimes one of the seeds is abortive.

A native of woods in Guiana.

2. A tree, with a trunk from thirty to forty feet high, branching at top: ramulets villose and whitish: leaves alternate, subsessile, green above, whitish beneath. Stipules as in the former. Flowers racemose, axillary, terminal, and resembling those of the former species. Drupe ovate, small, with a thick, brown-green bark, which is also acid. Putamen very hard, compressed, wrinkled and unequal. A single edible sweet seed in each loculament.

In woods in Guiana.]

PETROSELINUM. See *Apium*, [*Bubon*, *Ligusticum*, *Sison*.

PETTY WHIN. See *Genista*.

PETUM. See *Nicotiana*.]

PEUCEDANUM (of Pliny. *Πευκεδανόν* of Theophrastus and Dioscorides: from *πυκνὴ* picea, and *δανός* humilis. Linn.—Rather ab amaritudine, from its bitterness, *πυκνὴ* amarus and *δανός* munus. Πτολεμαίοιο μεγά σφομα πευκεδανοιο. Hom. il. κ.)

Lin. gen. n. 339. Reich. n. 370. Schreb. n. 472.

Gartn. t. 21. Tournef. t. 169. Juss. 223.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatæ or Umbelliferæ.

GENERIC CHARACTER.

CAL. Umbel universal manifold, very long, slender: partial spreading.

Involucre universal many-leaved, linear, small, reflex: partial less.

Perianth proper five-toothed, very small.

COR. universal uniform. Florets of the disk abortive.

Proper of five equal oblong incurved entire petals.

STAM. Filaments five capillary. Anthers simple.

PIST. Germ oblong, inferior. Styles two, small. Stigmas obtuse.

PER. none. Fruit ovate, girt with a wing, striated on both sides, bipartile.

SEEDS two, ovate-oblong, compressed, more convex on one side, with three raised streaks, girt with a wide entire membrane, emarginate at top.

ESSENTIAL CHARACTER.

Fruit ovate, striated on both sides, girt with a membrane. Involucres very short.

SPECIES.

1. Peucedanum officinale. Common Sulphur-wort.

Lin. spec. 353. Reich. 1. 679. Willd. 1405. hort.

upf. 60. cliff. 93. mat. med. 78. Gartn. fruct.

1. 89. Hudf. angl. 116. Wither. arr. ed. 3. 294.

Sauv. monsp. 182. 257. Gmel. fib. 1. 188. 4. 41.

Pollich pal. n. 280. Hoffm. germ. 96. Allion.

pedem. n. 1295. Plenck, ic. 180.

Peucedanum. Ger. 896. 1. emac. 1054. 1. Fuchs.

599. Dod. pempt. 317. Lob. obs. 453. ic. 1. 781.

Trag. 881. Baub. hist. 3. 36. Raii hist. 416.

syn. 206. Riv. pent. t. 11.

P. germanicum. Baub. pin. 149.

P. vulgare. Park. theat. 880. 2.

β. P. italicum. Mill. dict. n. 2. Italian Sulphur-wort.

P. majus ital. Baub. pin. 149. Park. theat. 880. 1.

Raii hist. 416. 2.

Leaves five times three-parted filiform linear.

2. Peucedanum alpestre. Alpine Sulphur-wort.

Lin. spec. 353. Reich. 1. 679. Willd. 1405. hort.

cliff. 93. Boerb. lugdb. 65. (Ferula).

Leaflets linear branched.

* Hort. kew.

[3. Peuce-

- [3. *Peucedanum capillaceum*. *Hairy-leaved Sulphur-wort*.
Thunb. prodr. cap. 50. Lin. spec. ed. Willd. 1406.
Leaves bipinnate, segments capillaceous grooved.
4. *Peucedanum tenuifolium*. *Fine-leaved Sulphur-wort*.
Thunb. prodr. cap. 50. Lin. spec. ed. Willd. 1406.
Leaves bipinnatifid, segments lanceolate opposite and alternate margined.
5. *Peucedanum sibiricum*. *Siberian Sulphur-wort*.
Lin. spec. ed. Willd. 1406.
Leaflets linear acute, primordial umbels sessile.
6. *Peucedanum japonicum*. *Japanese Sulphur-wort*.
Thunb. jap. 117. Lin. spec. ed. Willd. 1406.
Leaves five times three-parted, leaflets wedge-form trifid.
7. *Peucedanum Silaus*. *Meadow Sulphur-wort or Saxifrage*.
Lin. spec. 354. syst. 280. Reich. 1. 679. Willd. 1406. hort. cliff. 94. Hudf. angl. 116. Wither. arr. ed. 3. 294. Relb. cant. n. 219. Sibth. oxon. n. 291. Fl. rust. 128. Hall. helv. n. 797. Sauv. monsp. 257. Pollich pal. n. 281. Hoffm. germ. 97. Jacqu. austr. t. 15. Gmel. fib. 1. 184. Neck. gallob. 143. Leers herborn. n. 197. Krock. files. n. 417.
Seseli Caruifolia. Hudf. angl. ed. 1. 106.
S. pratense. Baub. pin. 162. Raii syn. 216. Riv. pent. 58. Crantz. austr. 209. t. 6. f. 1. Park. theat. 904. 3. 4.
Siler alterum pratense. Dod. pempt. 310. 2.
Sium Silaus. Roth. germ. 129. 2. 340.
Saxifraga anglica facie Seseli pratensis. Ger. 891. cmac. 1047. 1. & 1048. 2. Raii hist. 453.
S. anglorum, fol. Foeniculi latoribus, &c. similis Silao. Baub. hist. 3. 2. 171.
Leaflets pinnatifid, segments opposite, universal involucre two-leaved.
8. *Peucedanum alsaticum*. *Small-beaded Sulphur-wort*.
Lin. spec. 354. syst. 280. Reich. 1. 680. Willd. 1407. (hort. cliff. 90. Hall. helv. n. 798. Crantz. austr. 159. Selinum.) Neck. att. palat. 2. 470. t. 3. f. 11. Jacqu. austr. t. 70. Pollich pal. n. 282. Hoffm. germ. 97. Krock. files. n. 418. Allion. pedem. n. 1296.
Selinum alsaticum. Roth. germ. 1. 133. 2. 357.
Daucus alsaticus. Baub. prodr. 77. Hall. opusc. 318. Park. theat. 900. n. 16.
Umbellifera alsatica magna, umbella parva sublutea. Baub. hist. 3. 106. Raii hist. 414.
Leaflets pinnatifid, the little segments trifid bluntish.
9. *Peucedanum aureum*. *Golden Sulphur-wort*.
Ait. hort. kew. 1. 341. Lin. spec. ed. Willd. 1407.
Leaves tripinnate, leaflets of the stem-leaves linear-lanceolate, of the root-leaves oblong and multifid.]
10. *Peucedanum nodosum*. *Knobbed Sulphur-wort*.
Lin. spec. 354. Reich. 1. 680. Willd. 1407. hort. cliff. 94.
Silaum (quod Ligusticum creticum, folio foeniculi, caule nodoso. Tournef. cor. 23.) Boerb. lugdb. 1. 51.
Leaflets alternately multifid.
- [11. *Peucedanum geniculatum*. *Jointed Sulphur-wort*.
Forst. prodr. n. 136. Lin. spec. ed. Willd. 1408.
Leaves roundish-kidney-form crenate.]

DESCRIPTIONS, &c.

1. Root perennial, dividing into many strong fibres which run deep in the ground. Leaves naked at bottom, but about four or five inches from the root branching into five parts, and these again into three, each of these divisions sustaining three narrow leaflets, which, when bruised, emit a strong scent like sulphur: footstalks channelled. Stems near two feet high, channelled, and dividing into two or three branches, each terminated by a large regular umbel of yellow flowers, composed of several small umbels which are circular.

[Stem upright, from two to four feet high, slightly striated, bright green, jointed, smooth. Leaves alternate, sheathing: leaflets quite entire, mucronate, stiffish, flat, one, two or three inches in length, and a line in width, bright green, smooth. Umbel large, the outer rays longest. Fruit middle-sized, compressed into the shape of a thin lens. Seeds subfoliaceous, surrounded by a very narrow attenuated rim,

^a Pollich.

having on the flat side two dark-ferruginous fillets, as in the Parsnep^b.

Native of the most southern parts of Europe, in moist meadows. In England, Gerarde found it growing very plentifully on the south side of a wood belonging to Waltham, at the Nase in Essex, also at Whitstable and Feverham in Kent. Ray observed it near Shoreham in Suffex; and adds, that it was said to grow abundantly on the banks of the Thames, and in the marsh ditches near Walton, not far from Harwich. James Sherard, M. D. found it a quarter of a mile below Feverham. Mr. Humphrey about Yarmouth and Clay in Norfolk. On the sea wall leading to Thorne, near Feverham, by Blackstone. It flowers in June and July.

In England, says Gerarde, it is called *Horestrange* and *Horestrong* (or *Harestrang*, from the German *Haarstrang*), *Sow-Fennell* or *Hog's-Fennell*, *Sulphur-wort* or *Brimstone-wort*.

The root has a strong fetid smell, and an acrid bitterish unctuous taste. Wounded in the spring, it yields a considerable quantity of yellow juice, which dries into a gummy resin, and retains the strong scent of the root. Its virtues have not yet been ascertained with precision^c.

β. Italian Sulphur-wort is a larger plant; the leaflets are much longer, and the flowers and seeds are much larger. It grows on the mountains, and also in the low vallies, by the side of rivers, in Italy.

2. Root perennial. Leaves branching into several divisions, that divide again into smaller, each of the latter having five short narrow leaflets. Stems round, not so deeply channelled as in the preceding, sustaining a large umbel of yellow flowers. The seeds are shorter. It flowers in June, and the seeds ripen at the beginning of September.

It is a native of the forest of Fontainebleau, and some other parts of France.

[3. 4. Natives of the Cape of Good Hope,

5. Leaves superdecompound, with long leaflets running down into the partial petiole; the lower stem-leaves have a wide sheath at the base. The primary umbel is sessile in the division of the stem; the rest are peduncled. It has no universal involucre. The involucrets have many very short bristle-shaped leaflets. Petals bent in. Styles permanent, divaricating. Native of Siberia^d.

6. The whole plant is smooth. Stem round, flexuose, upright, branched, the thickness of a goose quill, scarcely a foot high. Branches alternate, divaricating, subdivided, resembling the stem. Leaves petioled: leaflets five-cleft or three-cleft. Sheath of the petiole embracing, wide, striated. Umbels many-rayed, subfastigate. Seeds ovate, compressed, marked with raised lines, a little winged at the edge.—Native of Japan, on the coast^e.

7. Root perennial, long, wrinkled, black on the outside, white within, having a sweet aromatic flavour with some sharpness. Stems several, from two to three feet in height, almost as thick as the little finger at bottom, round, striated, full of pith, red near the ground, branched from the bottom, the branchlets coming out at long intervals from the axils of the leaves. Both root and stem-leaves smooth, dark green, divided into longish, narrow, acute, rigid segments. Umbels not very large or close, but rather loose and thin^f. The involucre has only one or two leaflets: the involucrel has twelve lanceolate leaflets, deep purple or black at the ends. The umbel has only seven rays, but the umbellules from twelve to twenty and upwards. The flowers are generally all fertile, but some of the central ones are sometimes barren. Petals whitish yellow, pointed, (entire, equal.) Germ crowned with a glandular yellow receptacle, turning to a deep red as the seeds ripen^g. Seeds short, striated, chestnut-coloured. The whole plant has a strong, but not unpleasant smell, approaching to that of Parsneps.

Native of many parts of Europe, as Switzerland,

^b Gartner.

^c Thunberg.

^e Withering.

^f Ray.

^d Willdenow.

^g Withering.

France,

France, Germany, England, &c. in moist meadows. It has the names *Saxifrage* and *Meadow Saxifraga* from its supposed lithontriptic qualities^b. August is its month of flowering.

8. Stem upright, three or four feet in height, and sometimes as high as a man, round, slightly striated, grooved only towards the top, very smooth, tinged with red, and wholly red at the base, jointed, dichotomous. Leaves alternate, sheathing; the lower ones tripinnate, the upper ones bipinnate; the last pinnae broadish, not simple, but two, three or four-lobed, bluntish, and terminating in a spinule, not keeled but flat; all of them are smooth and bright green. Umbel middle-sized. Universal involucre of about eight leaflets: partial many-leaved. Petals regular, entire, small, pale yellow. Seeds ovate, obtuse, smooth, margined, with four or five longitudinal furrows in the middle¹.

Root perennial, forked, branched, black. Lower leaves decussating, smaller: pinnae veined and nerved, the first bifid, trifid or sometimes simple, the last broadish, trifid. Universal involucre five or six-leaved: partial as many or more. Umbel of twenty or thirty unequal rays: umbellule of fewer and shorter. Petals sulphur-coloured, ovate, reflex at the tip. Seeds at first violet red, then black^k.

Native of Germany, Austria, Alsace, Switzerland, Silesia, Piedmont. Introduced in 1774, by Monf. Richard. It flowers in June and July.

9. Native of the Canary islands, where it was found by Masson; and introduced in 1779. It is a biennial plant, and flowers in June¹.

10. The stalks rise a foot and half high, having pretty large knots at the joints, from each of which springs a leaf cut into many divisions; the flowers terminate the stalks in umbels, and appear the beginning of July; in warm seasons the seeds will ripen in the autumn.

Native of Crete or Candia, and not of long duration in England. [Cultivated by Mr. Miller in 1768.

11. Native of New Zealand^m.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds sown in the autumn, soon after they are ripe: those which are sown in the spring seldom succeeding, or at best not coming up till the spring following. Keep the plants clean from weeds, and in the autumn transplant them where they are to remain. They love a moist soil and a shady situation, but will not thrive under the drip of trees.

[PEUCEDANUM MINUS. See *Pimpinella dioica*.

PEVETTI. See *Physalis*.

PEZIZA.

Class. 24. 6. Cryptogamia Fungi.

GENERIC CHARACTER.

Fungus bell-shaped, sessile, concealing lens-shaped, seed-bearing bodies.—Plant concave; feeds on the upper surface only: discharged by jerks. *Withering*.

Of this genus of *Fungus*, Linneus has eleven species in the 14th edition of *Systema Vegetabilium*: but Dr. Withering has given no less than forty British species, in the third edition of his Arrangement.

PEZIZA. See *Nidularia* and *Oëtopora*.]

PHACA. (*Φακος* of *Dioscorides*.)

Lin. gen. n. 891. *Reich. n.* 964. *Schreb. n.* 1207. *Gartn. t.* 154. *Juss.* 358. *Astragaloides*. *Tournef. t.* 223.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, tubular, five-toothed.

COR. papilionaceous. *Standard* obovate, straight, larger. *Wings* oblong, blunt, shorter. *Keel* short, compressed, blunt.

STAM. *Filaments* diadelphous (simple and nine-cleft.) *Anthers* roundish, ascending.

PIST. *Germ* oblong. *Style* awl-shaped, ascending. *Stigma* simple.

^b Ray.

ⁱ Pollich.

^k Krocken.

^l Hort. kew.

^m Forster.

PER. *Legume* oblong, inflated, half two-celled; with the upper suture depressed towards the lower.

SEEDS several, kidney-form.

OBS. *Legume* in some straight, in others recurved, so that the tip almost touches the base.

In some species of *Astragalus*, the partition of the *Legume* not being fastened to the lower suture, though it approximates to it, the great affinity between that genus and this is apparent.

ESSENTIAL CHARACTER.

Legume half-two-celled.

SPECIES.

1. *Phaca boetica*. *Hairy Phaca* or *Bastard Vetch*.
Lin. spec. 1064. *Reich.* 3. 523.
Astragalus boeticus. *Clus. hist.* 2. 234. *Park. theat.* 1084. f. 1. *Raii hist.* 920. —lanuginosus radice amplissima. *Baub. pin.* 351.
A. lusitanicus *Clusii*. *Ger.* 1058. *emac.* 1238. 1.
Caulescent erect hairy, legumes round-boat-shaped.
2. *Phaca alpina*. *Smooth Phaca* or *Bastard Vetch*.
Lin. spec. 1064. *synt.* 680. *Reich.* 3. 524. *fl. suec.* n. 657. *Gartn.* 2. 341. *Jacqu. ic. rar. misc.* 2. 93. *Fl. dan. t.* 856. *Villars dauph.* 3. 472. *Allion. pedem. n.* 1253. *Gmel. fib.* 4. 35. t. 14. *Hall. belv. n.* 401. (*Astragalus*).
Astragaloides elatior, &c. *Amm. ruth.* 148.
Caulescent erect smooth, legumes oblong inflated somewhat hairy.
- [3. *Phaca falsula*.
Lin. synt. 680. *suppl.* 336. *Pallas it.* 3. 747. t. B. b. f. 1. 2.
Caulescent erect canescent, leaves pinnate, legumes peduncled globular drooping.
4. *Phaca sibirica*.
Lin. spec. 1064. *synt.* 680. *Reich.* 3. 525. *suppl.* 336.
P. lanata. *Pallas it.* 3. 746. t. A. a. f. 2.
Astragaloides hirsuta, &c. *Amm. ruth.* 249. t. 19. f. 1, 2.
Caulescent, leaflets in fours lanceolate blunt silky, calyx villose, teeth bristle-shaped.
5. *Phaca australis*. *Trailing Phaca* or *Bastard Vetch*.
Lin. synt. 680. *Reich.* 3. 524. *mant.* 103. *Hall. belv. n.* 403. *Ger. prov.* 519. *Allion. pedem. n.* 1254.
P. Halleri. *Villars dauph.* 3. 473.
Astragaloides alpina supina glabra, foliis acutioribus. *Till. pis.* 19. t. 14. f. 1.
Stem branched prostrate, leaflets lanceolate, wings of the flowers semibifid.
6. *Phaca trifoliata*. *Three-leaved Bastard Vetch*.
Lin. synt. 680. *Reich.* 3. 524. *mant.* 270.
Leaves ternate oval blunt, legumes semiobovate.
7. *Phaca vesicaria*. *Smooth Bladdery Bastard Vetch*.
Lin. synt. 680. *Reich.* 3. 525. *mant.* 123. *Schreb. dec.* 9. t. 7.
Astragaloides orientalis vesicaria, foliis et fructibus glabris. *Tournef. cor.* 27.
Stemless smooth, fruiting calyxes ovate inflated, leaflets lanceolate.
8. *Phaca incana*. *Hoary bladdery Bastard Vetch*.
Vahl symb. 1. 57.
A. orient. vesic. fol. & fruct. incanis. *Tournef. cor.* 27.
Stemless hoary, fruiting calyxes ovate inflated villose, leaflets oblong blunt.
9. *Phaca prostrata*. *Procumbent Bastard Vetch*.
Lin. synt. 680. *suppl.* 336. *Pallas it.* 3. 744. t. Y. f. 2.
Stemless, leaflets binate linear silky, scape procumbent, calyx villose, teeth lanceolate short.
10. *Phaca microphylla*. *Small-leaved Bastard Vetch*.
Lin. synt. 680. *suppl.* 337. *Pallas it.* 3. 744. t. X. f. 1.
Stemless, leaflets binate ovate obtuse villose, calyx muricate and hairy, teeth hispid every way.
11. *Phaca muricata*.
Lin. synt. 680. *suppl.* 337. *Pallas it.* 3. 746. t. A. a. f. 1.
Stemless, leaflets in threes or fours linear awl-shaped muricate underneath, calyx smooth, teeth ciliate.]

DESCRIPTIONS, &c.

1. Roots perennial, running very deep into the ground. Stems commonly near four feet high, becoming woody, but decaying every autumn. Flowers in short axillary spikes, seldom opening in England, unless the season proves very warm, and never producing seeds here.

Native of Spain and Portugal. [Cultivated here in 1640, as appears from Parkinson^a.]

2. This has smooth stalks, which do not rise so high as those of the preceding; the flowers are smaller, the pods shorter and hanging down. It flowers in two years from seed, and the roots rarely live longer than three or four years.

[Plant a foot high. Stem angular, striated, almost upright, but bending from leaf to leaf. Leaves pinnate, alternate, longer than the internodes: leaflets ovate-oblong, blunt, from seven to fifteen, smooth, pubescent underneath. Stipules hastate, acute, quite entire. Peduncles thicker and longer than the petioles, angular, naked, upright. Raceme loose; pedicels the length of the calyxes; bractes lanceolate, commonly longer than the pedicel. Flowers pendulous, imbricate, smooth, yellow. Calyx bell-shaped, smooth, with brown teeth. Corolla oblong, yellow. Germ pedicelled, hairy. Legume semiovate, compressed^o.

Stems firm, straight, villose, branched, two feet high, with membranaceous, lanceolate, cordate or triangular stipules, seven or eight lines in length; those at the base of the leaves are narrower, but often as long as the leaflets; which are villose, oblong, in twelve or fourteen pairs. Peduncles from the axils of the upper leaves, villose, terminating in a spike of flowers of a fine yellow colour: wings quite entire; keel without any spot. Calyx small, villose and blackish. Legumes villose when young, but becoming smooth before they have attained their full size, inflated, pointed on both sides and irregular, the upper future being straight, the lower very convex. Seeds eight^p.

According to Villars, Linneus has confounded *Phaca frigida* of Jacquin, with *P. alpina*; or perhaps he was not acquainted with the *Pb. alpina* of Dauphiné. Haller, in his later works has distinguished them.

Jacquin thus describes it. Root perennial, resembling that of *P. australis*; producing several stems, about a span long, upright, but sometimes procumbent at the base, round, striated, at first villose, but becoming almost smooth. Leaves having from twelve to fifteen pairs of pinnae with an odd one: the pinnules on very short petioles, oblong-oval, quite entire, having a short little cusp at the tip, smooth above, villose underneath: the common axis of the pinnae also villose. Stipules sessile, entire, lanceolate, villose. Common peduncles from almost all the axils, erect, villose, longer than the leaves, having at top a compact spike of flowers, which is afterwards drawn out into length, with the flowers somewhat remote from each other. Flowers erect, on very short pedicels, from the axil of a very small, linear-subulate bracte. Calyx beset with blackish, villose hairs. Corolla yellow, of one colour: standard longer than the wings and keel, obcordate, the sides a little plaited back; wings converging about the keel, on a longish claw, having a lateral toothlet; keel of the same length with the wings, having a similar toothlet on each side. Germ pedicelled, linear, compressed, reddish black. Legumes at first nodding, finally pendulous, boat-shaped; the belly inflated, the back so much impressed, that the legume is half-two-celled; they are villose even when ripe, though the hairs, being prostrate, and less black, are less apparent. Seeds round. The plant has no smell^a.

Native of Siberia, Lapland, Austria, &c. Cultivated by Mr. Miller in 1759. It flowers in July^r.

Jacquin doubts whether the *Phaca* which Gerard has described in his *Flora Gallo-provincialis* be the same with this; the leaves being somewhat different, and the habit very much so. See *n. 5*.

3. In the herb and form of the legumes this very much resembles *Astragalus chinensis*. Native of Siberia^s.

^a Hort. kew.

^r Misc. 2. 93.

^o Linn. fuc.

^s Hort. kew.

^p Villars.

^r Linn. suppl.

4. The whole is clothed with soft white hairs. Leaves pinnate to the very insertion, silky. Peduncles shorter than the leaves. Corollas purple. Legumes ovate, woolly.

Native of Siberia, in very dry sand. Both these were found by Professor Pallas^t.

5. Leaves six-paired or thereabouts, ash-coloured, hairy. Flowers whitish yellow. Wings semibifid, which is singular. Legumes smooth. The keel of the corolla is violet, nor has it the two violet spots at the tip, as in *Pb. alpina*, from which it differs little. When young it is hirsute, but as it advances becomes smooth, and appears like a different plant^u.

Villars describes it under the name of *Phaca Halleri*. Root hard, small, creeping, divided at the upper part into several branches. Stems several, smooth, almost straight, half a foot long, sometimes branched. Leaves on a petiole naked at the base, placed between two lanceolate stipules, composed of five or seven, as far as thirteen leaflets, which are lanceolate, tender, green, distinct, smooth, or very slightly villose underneath. Peduncles from the upper axils, exceeding the plant in height, and terminated by ten or twelve flowers, which are whitish or grayish, with a small blackish stripe, corresponding with the extremity of the keel: standard straight, almost round, emarginate; wings oblong, with a triangular notch, equal to the two lateral pieces; a singular character which Haller notices, but which is found in some species of the *Astragalus*. Legumes pendulous and peduncled, inflated and smooth, in a blackish calyx; they are slightly villose, and contain from eight to ten seeds.

Villars describes another, under the name of *Phaca Gerardi*, supposing it may probably be the plant of Mons. Gerard, but neither Haller's *n. 403*. nor Linneus's *P. australis*.

Roots hard, small and branching as in the preceding. Stem from eight or ten inches to a foot in length, prostrate. Stipules villose and ciliate, in other respects like those of the *P. Halleri*. Flowers commonly on two peduncles, longer than the leaves. Leaflets fifteen or twenty in number, whitish. Calyx villose and blackish. Standard oblong, and standing up: wings oblong, narrow, rounded at the end: keel a little shorter than the wings, having a little black at the end. Legume a little villose. It is difficult to distinguish these two plants, without seeing the wings of the corolla, which in the latter have not the singular character noticed by Haller and Linneus. *Pb. Gerardi* however seems to be more villose, and is less uncommon; the stems also are less prostrate.

Native of the South of Europe. Introduced in 1779, by Anthony Chamier, Esq. It flowers in May and June^x.

6. Stems filiform, branched. Leaves petioled. Leaflets tomentose underneath, marked with lines; the middle one larger. Stipules lanceolate, drying up, having a bristle-shaped point. Raceme terminating: pedicels geminate, one-flowered. Legumes blunt, the upper future running out into a bristle-shaped recurved dagger-point.—Native of China^y.

7. Root-leaves pinnate, twelve-paired and more. Leaflets smooth, acuminate. Scapes upright, terminated by a raceme. Calyxes alternate, on short peduncles, when fruiting four times wider, globular, smooth, coloured. Legume small, within the oblong calyx.—Native of the Levant^z, where it was found by Tournefort.

8. Leaves pinnate: leaflets thirty-nine to forty five, sessile: the lower opposite; the upper ones gradually smaller, alternate. Stipules lanceolate, hirsute, imbricate, at the base of the leaves. Scape a span long, round, upright. Flowers sessile: the lower ones more remote, spreading. Bracte ovate, villose, acute. Flowering calyxes cylindrical, softly villose, brown; the younger ones subtomentose: teeth five, awl shaped, small. Corolla a little longer than the calyx. It differs from the preceding in its hoariness, the villoseness of the fruiting calyxes, and in having oblong, blunt,

^t Linn. suppl.

^u Linn. mant. & syst.

^x Hort. kew.

^y Linn. mant.

^z Idem.

approximating leaflets.—Native of Armenia*, where it was found by Tournefort.

9. A radical tuft, composed of very villose white scales. Leaves fewer, on longer somewhat spiral petioles. Scapes radical, loose, almost smooth, scarcely larger than the leaves.—Found by Professor Pallas in the salt sands about the lakes of Siberia.

10. Leaves fewer, shorter, on very villose petioles: leaflets very small. Scapes pubescent, erect. Calyxes smooth, but tubercled: teeth with black hairs. Corolla large, purple.—Found by Pallas in the sandy islands of Siberia.

11. Root-leaves several, from a villose tuft, longer. Leaflets as it were in whorls, channelled, smooth within, tubercled underneath. Scapes erect, smooth. Bractes and calyxes smooth. Corollas yellow. Legumes long, bowed, muricate.—Found by Pallas in the mountainous fields of Siberia.

The third, fourth, ninth, tenth and eleventh species have the habit of *Astragalus*. Perhaps *Astragalus verticillaris*, and many *Phacæ* described and figured by Pallas belong to this genus^b.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, sown in the place where the plants are to remain: for as the roots strike deep, it is difficult to transplant them safely, especially when they have remained long in the seed-bed. The plants should be left about six feet asunder, that there may be room to dig between them every spring, which is all the culture they require, except keeping them clean from weeds.

[PHACA. See *Astragalus*.

PHAETHUSA. (From *Φαῖθω*, splendo.)

Lin. gen. Schreb. n. 1319. Gært. t. 169.

Class. 19. 2. Syngenesia Polygamia Superflua.

GENERIC CHARACTER.

CAL. Common many-leaved: leaflets in a double row, oblong, gaping at the tip, blunt.

COR. Compound, half-radiate. Corollets hermaphrodite several in the disk: females one to three in the ray, only on one side of the flower.

Proper of the hermaphrodites funnel-form, five-toothed, pubescent.

Female ligulate, oblong, toothed, very long.

STAM. in the hermaphrodites: Filaments five, very short. Anther cylindrical, tubular, a little longer than the corolla.

PIST. in the hermaphrodites: Germ oblong, villose. Style filiform, longer than the stamens. Stigmas two, reflex.

In the females: Germ oblong, a little bigger. Style filiform, the length of the hermaphrodites. Stigmas two, reflex.

PER. none. Calyx unchanged.

SEEDS in the hermaphrodites solitary, oblong, compressed, villose. Down of two awns. In the females very like the others.

REC. chaffy: chaffs linear, acute, longer than the calyx.

ESSENTIAL CHARACTER.

Cal. subcylindric, many-leaved, with unequal recurved scales. Florets hermaphrodite several in the disk: females one or two in the ray. Recept. chaffy. Seeds hispid, without any proper down.

SPECIES.

1. Phaethusa americana.

Gært. fruct. 2. 425.

Sigesbeckia occidentalis. Lin. spec. 1269. syst. 779. Reich. 3. 875. mant. 475. Gron. virg. 128. ed. 1. 179. (Verbefina). Pluk. phyt. t. 346. f. 46. (Chrysanthemum).

DESCRIPTION, &c.

Stem gigantic, eighteen feet high, narrowly four-winged by the decurrent petioles. Leaves large, opposite, ovate-acuminate, triple-nerved, obsolete ferrate, subpubescent. Corymb terminating brachiate, very wide. Hermaphrodite corollets hirsute on the outside; with prominent dark-coloured anthers. Females commonly solitary, scarcely ever in threes: ligule sulphur-coloured, ovate, attenuated to both ends,

* Vahl.

^b Linn. suppl.

very shortly two-toothed at the tip. Down none, except the shagginess of the seed produced a little above the top of it, resembling a chaffy-lacerated rim. It differs abundantly both from *Sigesbeckia* and *Milleria*, in the whole of its external habit, the florets and seeds; inasmuch that it cannot be associated with either.—Native of Virginia.

PHAGUS. See *Quercus*.]

PHALANGIUM. See *Anthericum*, [*Convallaria*, *Hemerocallis*, *Ornithogalum*, *Scilla*.]

PHALARIS, (of Pliny, *Φαλαρίς* of Dioscorides, from *φαλος*, shining.)

Lin. gen. n. 74. Reich. n. 80. Schreb. n. 106.

Gært. t. 80. Juss. 29.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. double, one-flowered. Outer glume two-valved, compressed: valves boat-shaped, compressed, keeled, acute, almost equal, with the edges straight, converging parallelly. Inner two-valved: valves lanceolate, acute, pubescent, small, incumbent on the back of the corolla at the base.

COR. two-valved, less than the calyx: valves oblong, concave, acute: the inner smaller.

Nectary two-leaved: leaflets lanceolate, acuminate, hyaline, gibbous at the base.

STAM. Filaments three, capillary. Anthers oblong, forked.

PIST. Germ ovate. Styles two, capillary, connate at the base. Stigmas villose.

PER. none. The corolla grows round the seed like a crust, and does not open.

SEED single, ovate-oblong, acuminate, smooth.

Obs. Ph. phleoides and paradoxa do not seem to have nectaries. Retz.

ESSENTIAL CHARACTER.

Cal. two-valved, keeled, the valves equal in length, inclosing the corolla.

SPECIES.

1. Phalaris canariensis. Cultivated Canary-grass.

Lin. spec. 79. syst. 103. Reich. 1. 148. Willd. 326. hort. cliff. 23. upf. 19. mat. med. 46. Gært. fruct. 2. 6. Hudf. angl. 23. Wither. arr. ed. 3. 113. Sibth. oxon. n. 102. Schreb. gram. 83. t. 10. f. 2. Retz. obs. 3. p. 8. Neck. gallob. 30. Leers herb. n. 48. t. 7. f. 3. Krock. files. n. 85. Desfont. fl. atlant. 55. Kniph. orig. cent. 9. n. 76. Ludw. est. t. 117. Plenck, ic. t. 41. Fl. rust. t. 17.

Phalaris. Camer. epit. 661. Baub. hist. 2. 442. 2. Tabern. 240. Matth. 919. Dod. pempt. 510. Ger. 80. 1. emac. 86. Lob. obs. 26. 1. ic. 43. Raii hist. 1248.

P. Dioscoridis. Trag. 669.

P. vulgaris. Park. theat. 1163. 1.

P. major femine albo. Baub. pin. 28. theat. 534. Mor. hist. 3. 186. f. 8. t. 3. f. 1. Scheuch. agr. 52. t. 2. f. 3. Raii syn. 394.

Panicle awnless subovate spike-shaped, calycine glumes boat-shaped entire, corolla four-valved, outer valves lanceolate smooth, inner villose.

[2. Phalaris aquatica. Water Canary-grass.

Lin. spec. 79. Reich. 1. 148. Willd. 326. amoen. 4. 264. Desfont. fl. atlant. 56. Fl. rust. t. 18. Barr. rar. 1200. t. 700. f. 1. (Gramen typhinum).

Ph. minor. Retz. obs. 3. 8.

Panicle awnless cylindrical spike-shaped, calycine glumes boat-shaped, somewhat toothletted, corolla three-valved, inner valves villose, outer minute awl-shaped.

3. Phalaris capensis. Cape Canary-grass.

Lin. spec. ed. Willd. 327. Thunb. prodr. cap. 19.

Panicle spiked ovate, glumes entire, culm jointed decumbent.

4. Phalaris bulbosa. Bulbous Canary-grass.

Lin. spec. 79. Reich. 1. 148. Willd. 327. amoen.

4. 264. Cavan. hisp. 1. 46. t. 64. Desfont. fl. atlant. 55.

P. bulb. femine albo. Park. theat. 1163. Raii hist. 1249. Scheuch. gram. 53.

* Gærtner.

- Panicle awnless cylindrical spike-shaped, calycine glumes boat-shaped toothed, corolla two-valved, smooth, root bulbous.*
5. *Phalaris nodosa*. *Knobbed-rooted Canary-grass.*
Lin. syst. 104. *Reich.* 148. *Willd.* 327. *mant.* 557.
P. perennis major, radice nodosa. Mor. hist. 3. 187.
Panicle oblong, leaves rigid.
6. *Phalaris dentata*. *Tooth-keeled Canary-grass.*
Lin. spec. ed. Willd. 327. *suppl.* 106. *Thunb. prodr.*
cap. 19. *Retz. obs.* 4. 14.
Spike subpanicled cylindric, glumes serrate, culm jointed.
7. *Phalaris phleoides*. *Cat's-tail Canary-grass.*
Lin. spec. 80. *syst.* 104. *Reich.* 1. 149. *Willd.* 328.
fl. succ. n. 54. *Wither. arr. ed.* 3. 114. *Engl.*
bot. t. 459. *Fl. dan. t.* 531. *Pollich pal. n.* 54.
Gmel. fib. 1. 86. *n.* 13.
Gramen typhinum, spica conoide striata, culmo violaceo. Barrel. ic. t. 21.
Panicle nearly cylindrical spike-form, glumes linear-lanceolate smoothish, their inner margin abrupt, stem simple.
8. *Phalaris arenaria*. *Sea Canary-grass.*
Lin. spec. ed. Willd. 328. *Hudf. angl.* 23. *Wither.*
arr. ed. 3. 113. *Engl. bot. t.* 222.
P. phleoides β. Ait. hort. kew. 1. 86.
Phleum arenarium. Lin. spec. 88. *Reich.* 1. 164.
fl. succ. n. 58. *Fl. dan. t.* 915.
Gramen typhinum maritimum minus. Raii syn. 398.
Pluk. phyt. t. 33. *f.* 8.
Panicle awnless cylindrical spike-form, calycine glumes keeled quite entire ciliate, culm branched.
9. *Phalaris aspera*. *Rough Canary-grass.*
Lin. spec. ed. Willd. 328. *Retz. obs.* 4. 14. *Vahl symb.* 3. 9. *Lamarck. encycl.* 1. 92.
P. paniculata. Ait. hort. kew. 1. 87. *Sibth. oxon.*
n. 103.
Phleum paniculatum. Hudf. angl. 26. *Wither. arr.*
ed. 3. 117. *Relb. cant. suppl. n.* 998.
Phl. viride. Allion. pedem. n. 2133.
Phl. asperum. Villars dauph. 2. 61. *t.* 2. *f.* 4.
Gramen typhoides asperum primum. Baub. pin. 4.
theat. 51.
Panicle awnless cylindrical spike-form, calycine glumes keeled, gibbous at top, corolla two-valved smooth.
10. *Phalaris utriculata*. *Bladdery Canary-grass.*
Lin. spec. 80. *Reich.* 1. 149. *Willd.* 329. *Ait. hort. kew.* 1. 86. *Scop. insubr.* 1. 28. *t.* 12.
Gramen pratense, spica purpurea ex utriculo prodeunte, &c. Baub. pin. 3. *theat.* 44. 4. *Scheuch. gram.* 55.
Tournef. inst. 519.
G. pratense. Dalech. hist. 1. 425. *f.* 3.
Panicle ovate spike-form, calycine glumes boat-shaped dilated at the back, awn longer than the glumes.
11. *Phalaris paradoxa*. *Bristly-spiked Canary-grass.*
Lin. fil. dec. 35. *t.* 18. *Spec.* 1665. *Reich.* 1. 149.
Willd. 329. *Ait. hort. kew.* 1. 86. *Schreb. gram.*
t. 12. *Desfont. fl. atlant.* 56.
Gramen phalaroides lusitanicum. Raii hist. 1218.
Gr. phal. spica brevi reclinata ex utriculo prodeunte.
Pluk. phyt. t. 33. *f.* 5. *Mor. hist.* 3. 187. *f.* 8. *t.* 3.
f. 6. *Monti prodr.* 47.
Panicle awnless oblong spike-form, calycine glumes boat-shaped one-toothed, corolla two-valved smooth, lowest florets end-bitten.
12. *Phalaris hispida*. *Hairy-calyced Canary-grass.*
Lin. spec. ed. Willd. 330. *Thunb. jap.* 44.
Spikes digitate, glumes rugged, leaves ovate.

DESCRIPTIONS, &c.

1. Root annual. Culm from a foot to eighteen inches in height, upright, round, striated, swelling a little at the joints, and at the lower ones often branching. Leaves almost half an inch in breadth, of a lively green, with something of a glaucous hue; they grow upright, are sharp-pointed, roughish about the edge, and have at the base a very thin pellucid membrane or ligule: the lower part of the upper leaf swells out like a spathe, completely involving and protecting the head of flowers whilst young. This is single, large, an inch or more in length, and has a small linear sheathless leaf at the base of it. Valves of the calyx much larger than those of the corolla, with two green ribs on each side. Within these are two other small white

skinny valves, not more than half the length of the inner valves of the corolla, the larger valve of which is hairy, the other only so along its back. The nectary is two fleshy concave pear-shaped substances on the outside the base of the corolla^d. Seed marked with a blackish-brown line at one edge, and having a little shield at the base of the other; it continues covered with the corolla, one valve of which almost wholly embraces the other. This cover varies much in colour, being milk-white, straw-coloured, ash-coloured, livid, bay, chestnut and even black, but it is always very smooth and shining^e.

Canary-grass is a native of the Canary islands, but is now found in a wild state in Britain, Flanders, Hesse, Silesia, France, Italy and Spain. Our circumnavigators also discovered it in New Zealand. It is not mentioned as an indigenous plant with us by any of our old authors, not even in the third edition of Ray's synopsis (1724). It does not seem to be found in our island, except about dunghills, or by road sides, in places where it may have been thrown out among rubbish, or casually dropped by birds. Dr. Withering mentions that it has been found by Mr. Ballard in New's-wood, adjoining to Malvern, Worcestershire. Dr. Sibthorp observed it behind the Observatory at Oxford: and Dr. Milne near New Cross, on the Maidstone road, by Deptford Creek, and in Charlton wood. It flowers from June to August; and is cultivated for the sake of the seeds, which are the best food for the Canary and other small birds.

2. Root annual, according to Linneus; perennial and bulbous, according to Desfontaines. Culm reedy. From the swelling sheath of the upper leaf issues one smooth thick spike-shaped panicle of an oblong-ovate form. The glumes are lanceolate, smooth, keeled, and marked with a nerve on each side, pretty much like those of the preceding.

Retzius describes his *Ph. minor* as an annual grass, resembling *Ph. canariensis*, but smaller, the panicle narrower and not ventricose. Between the lesser ciliate glume of the corolla and the calyx there is a leaflet which may pass for the nectary, although it is on the outside of the corolla. The seeds were sent him under the name of *Ph. tuberosa*, but the root has no tubers.

Native of Egypt. Introduced in 1778 by Mons. Thouin. It flowers in June and July^f.

3. This is an annual grass, native of the Cape of Good Hope.

4. Culm a foot high, swelling out at the base, commonly into three round bulbs, one above another, the lower having filiform fibres at the bottom. Leaves for an inch and more having a ventricose sheath, above which they grow upright, and are lanceolate and acute. Flowers in a close, cylindrical spike-like panicle; each on a short pedicel^g.

It differs from *Ph. canariensis* in having a more slender spike, of a cylindric shape. The seeds are only half the size, of a gray colour, and do not adhere to the glume. The seeds are gathered by the Moors and sent into Europe^h.

Native of Spain, the Levant and Barbary; in which latter country the roots are not bulbousⁱ; but that in grasses does not make a specific distinction.

Desfontaines has a grass which he names *Phalaris caerulea*, and to which he refers the synonym of Buxbaum (4. 30. t. 53. attributed by Linneus to *Ph. aquatica*). It has a looser spike than *Ph. bulbosa*, and the glumes are blueish. The culm is upright, naked above, and filiform. The leaves smooth. The spike branched, round, loofish. The outer calyx two-glumed, one-flowered: glumes membranaceous, keeled, acuminate, converging, almost equal, pale blue. Inner calyx also two-glumed: glumes small, acute, almost equal, shorter than those of the outer.—It is found in the arable fields about Algiers.

5. Leaves rigid, like those of Reed, rugged at the edge; the uppermost slightly ventricose. Spike com-

^d Withering.^e Gartner.^f Hort. kew.^g Cavanilles.^h Desfontaines.ⁱ Idem.

paſt, ovate-oblong, awnleſs. Calyxes ovate-oblong. Native of the South of Europe^k.

6. This has the ſtature of *P. phleoides*. Culms ſmooth, with ſhort leaves. Glumes compressed: keel cartilaginous, toothed: teeth globuliſerous at the tip. It is a handſome graſs, and very diſtinct at firſt ſight^l. In the Supplement the glumes are ſaid to be hiriſute; but Retzius ſays, that in his ſpecimen they are ſmooth and naked.—Native of the Cape of Good Hope.

7. Root fibrous, perennial, crowned with tufts of ſpreading glaucous leaves which endure the whole winter. Culm ſimple, generally ſolitary, moſt leafy below; round, ſmooth, purple and ſhining above; from ten to eighteen inches in height. Leaves ſheathing, linear-lanceolate, rough at the edge, their ſheaths ſcarcely inflated, roughiſh. Panicle ſolitary, erect, denſe, exactly like a ſpike, but when bent on one ſide it ſeparates into lobes or branches of ſeveral flowers each. Calyx nearly linear, ſomewhat contracted near the top, purpliſh; valves compressed, pointed, three-nerved, a little divaricated at the point, and furniſhed with a white membranous margin, which at its ſummit is in ſome degree abrupt; approaching to the ſtructure of a *Phleum*: but it cannot be conſidered as ſuch, on account of its ſtrict affinity to *Phalaris arenaria*; from which it differs however in having a perennial root, a branched or paniced ſpike, glumes leſs frequently and completely ciliate, and lanceolate (not abrupt or crenate) petals^m. Dr. Withering obſerves, that the panicle is from near two inches to three inches and a half in length, thick as a gooſe quill: and Dr. Stokes, that a ſtiff awn-like thread riſes from the baſe of the inner valve, one third of its length, analogous to that of *Arundo arenaria*. Linneus regards this graſs as intermediate between *Phalaris*, *Phleum* and *Alopecurus*.

Native of ſeveral parts of Europe and Siberia. In England firſt obſerved by Mr. Lyons in Cambridgeſhire, and afterwards by Mr. Hemſted on Chippenham park wall in the ſame county. Mr. Crowe and Mr. Woodward found it on Swaffham heath in Norfolk, in 1780. Theſe two gentlemen firſt determined it; Mr. Hudſon having ſuppoſed his *Phleum paniculatum*, to be Linneus's *Phalaris phleoides*, which laſt he probably never ſawⁿ. It flowers in june and july.

8. Root annual, fibrous, downy. Stems ſeveral, dividing from the crown of the root or a little higher as in Wheat, ſometimes bent at the joints, clothed with leaves, the edge of which is a little rough; their ſheaths long, inflated, ſtriated and ſmooth. The culm commonly very little exceeds the uppermoſt leaf, and is terminated by an upright rigid ſpike, ſwelling in the middle, conſiſting of a great number of erect thick-ſet flowers. Calyx green, with white keel-ribs and margin; valves lanceolate, gradually tapering to a ſharp point and by no means lopped or truncated as in *Phleum*; their keel, and ſometimes their margin is ciliated with white hairs. The corolla conſiſts of two ſhort crenated ſtriated petals. The ciliated valves diſtinguiſh this graſs from the preceding^o.

Native of ſeveral parts of Europe. In England common on ſandy coaſts and the neighbouring fields; as at Yarmouth, by Mr. Woodward; in Wales, on Newborough ſands, Angleſea, by Mr. Griffith; in Scotland, near Preſton Pans, by Mr. Dickſon; more inland, on Swaffham-heath, by James Crowe, Eſq. and on Newmarket-heath, by the Rev. Mr. Hemſted^p. It flowers from june to auguſt.

9. Root annual, fibrous. Culms a ſpan high, upright, branched and ſheathing at the baſe. Leaves narrow, naked, ſhort. Panicle the thickneſs of a gooſe quill, from one to four inches in length. Calyx obcordate, pale green, hard; glumes equal, ventricofe above, terminated by a dagger-point, ſlightly keeled. Glumes of the corolla equal. Seed oval, oblong, not at all compressed^q. Sheaths of the leaves rough. Sheath-ſcale blunt. Panicle bending to one ſide. Calyx ſeſſile, imbricate, two-valved, one-flowered,

pointed, bellying upwards. Corolla two-valved, awnleſs, ſhorter than the calyx^r.

Native of ſeveral parts of Europe, as France, Italy, Sicily. In England on Gogmagog-hills, Newmarket-heath, and near Bourn-bridge, in Cambridgeſhire; on the wall of Roſe-lane, Oxford, obſerved there by Dr. John Sibthorp; in the meadows below King's Weſton, near Briſtol.

10. Root annual; fibrous. Culms ſeveral, a foot high or more, round, ſmooth; upright, commonly ſimple, marked with paler lines viſible with a glaſs, more or leſs refracted at the joints, which are from one to three, and tinged with red. Leaves two lines wide, two or three inches long, ſmooth; with long, ſmooth ſheaths: the upper leaf has an inflated ſheath, from which the upper part of the culm iſſues. Spike an inch long or more: ſpikelets ſubſeſſile; oblong, compressed. Glumes awnleſs, equal; with a white membranaceous edge; the nerve and edges below ciliate; the back rounded and wider; thence contracted and verging to a ſharp point: a ſingle elliptic, ſmooth, awnleſs glume inveſts the germ. Awn ſlender, double the length of the glumes, not jointed, pale yellow, iſſuing from the receptacle; reddiſh at top. Seed roundiſh. The ſpikelets are not altogether ſeſſile. It is diſtinguiſhed from all the other ſpecies by having the ſheath of the upper leaf widened and ſwelling like a ſpathe.

Native of Italy; where it is annually ſown in meadows about Pavia and Milan for cattle. It flowers there in may, and is called *Mazzuchello*^s. Dr. Smith found it as common in the gardens and waſte ground about Rome as *Poa annua* with us, flowering in april^t. It was introduced in 1777, by Monſ. Thouin, and flowers here from june to auguſt^u.

11. Root annual, fibrous. Culms a foot high, ſeveral, upright, decumbent before flowering-time. Stem and leaves even, not pubeſcent. Spike oblong, cylindrical, diviſible like the reſt into racemelets or corymbs. Florets in each little corymb neuter ſeveral, and one fertile at the end. Calycine glumes compressed: valves membranaceous-keeled, mucronate. The lower half of the ſpike has the barren florets as it were præmoſe, whence it ſeems as if gnawed off by inſects^x.

Native of the Levant and Barbary. Forſkahl ſent home ſeeds of it in 1762. It was introduced here in 1771, by Monſ. Richard, and flowers in june and july^y.

12. Culms capillary; decumbent; erect at top, jointed, ſmooth, branched, a foot high. Leaves ſheathing, (ſheaths glandular-hairy;) ſubcordate-ovate, acute, glandular-ciliate at the edge, ſmooth, ſpreading, ſcarcely an inch in length. Spikes from three to fix: rachis flexuoſe, ſmooth: florets ſeſſile, alternate, imbricate, twice as long as the interſtices of the rachis: calycine glume lanceolate, acute, convoluted, marked with lines, ciliate-hiſpid, one-flowered. The calycine glume ſeems to be one-valved.

Native of Japan^z. Willdenow remarks, that it is ſcarcely of this genus.]

PROPAGATION AND CULTURE.

1. Sow the ſeeds thin in drills made a foot aſunder; when the plants come up, thin them where they are too cloſe, ſo as to leave them at near two inches diſtance in the rows. Hoe the grounds three times in the intervals, to deſtroy the weeds. Three gallons of ſeed is ſufficient to ſow an acre; and if the ſeed be ſown by a hopper, the ſpring of which is properly ſet, to let it out at equal diſtances, this will be the beſt method of cultivating Canary-graſs.

The cultivation of this graſs is chiefly confined to the iſle of Thanet, where it is eſteemed a profitable crop; and may be ſo, where there is water-carriage to London, for there is the principal demand for it.

[As this ſeed is a ſlow grower, it is liable to be overrun with weeds, for which reaſon it ſhould be ſown after clover on a gentle clay; but on ſtrong ſoils

^k Linn. mant.

^l Linn. ſuppl.

^m Engl. bot.

ⁿ Idem.

^o Idem.

^p Idem.

^q Retzius.

^r Hudſon.

^s Hort. kew.

^t Scopoli.

^u Linn.

^v Thunberg.

^w Tour 2. 64 & 293.

^x Hort. kew.

a fallow is the best tilth. It is in general a valuable crop; and the chaff produces better, and a greater quantity of horse-meat than any other. The seed should be sown at the end of february or beginning of march, in furrows twenty to the rod, and six gallons of seed to the acre. The land must be dunged with fifty or sixty cart-loads on an acre^a.

PHALARIS. See *Briza*, *Cryptis*, *Panicum*.

— arundinacea. See *Arundo*.

— disticha of Forskahl is *Agrostis pungens* of Schreber, 2. 46. t. 27. f. 3. and of Abbé Pourret.

— erucæformis. See *Cynofurus*.

— minor. See *Phalaris aquatica*.

— muricata. See *Cenchrus racemosus* and *Lappago racemosa*.

— oryzoides. See *Leersia*.

— paniculata. See *Ph. aspera*.

— pubescens. See *Aira pubescens*.

— setacea of Forskahl, is *Panicum polystachyon*.

— velutina of Forsk. is *Panicum sanguinale*.

PHALLOBOLETUS. See *Phallus*.

PHALLUS.

Lin. gen. Schreb. n. 1677. Wither. 358. Mich. 83.

Boletus. Mich. 85. Phalloboletus. Mich. 84.

GENERIC CHARACTER.

Fungus even on the under surface; a network of cells on the upper surface: feeds in the cells.

SPECIES.

1. *Phallus esculentus. Esculent Morel.*

Lin. spec. 1648. Hudf. angl. 629. Wither. arr. ed.

3. 358. Lightf. 1043. Relb. cant. n. 958.

Fl. dan. t. 53. Bulliard. 218, B, D. Bolton

91. Schæff. 199, 298, 299, 300. Sterb.

10. Mich. 85. 1, 2. 84. 1, 2, 3. Gleditsch. 2.

Phallus. f. 1, 2, 4—7. Clus. 264. 1. Lob. ic.

2. 274. Dod. pempt. 481. 1. Ger. emac. 1583. 1.

Park. theat. 1317. 1. Baub. hist. 3. 836. 2.

Tournef. 329. A. Battar. 24. t. 2. f. F. Raii

hist. 102. syn. 11.

Helvella esculenta. Sowerby Fung. t. 51.

Fungus porosus rugosus albicans quasi fuligine infectus.

Baub. pin. 370.

Pileus or cap ovate cellular, stipe or stem naked wrinkled.

2. *Phallus impudicus. Stinking Morel.*

Lin. spec. 1648. Hudf. angl. 629. Wither. arr.

ed. 3. 358. Curt. lond. 3. 72. 199. Bulliard

182. Schæff. 196, 197, 198. Bolton 92. Mich.

83. Gleditsch. 2. Phallus. f. 3. Fl. dan. t. 175.

Raii cat. ed. 2. 122. Battar. 2. A. B. C. D.

Sterb. 30 at p. 276. Clus. 2. 295. Dod. pempt.

483. Lob. ic. 2. 275. Ger. emac. 1583. 2.

Park. theat. 1322. 13. Baub. hist. 3. 843. 3. &

845. 2, 3. Raii hist. 103. syn. 12.

Fungus foetidus penis imaginem referens. Baub. pin.

374.

Pileus or cap cellular above, even underneath, not united to the stem: stem perforating the pileus and open at the end.

3. *Phallus caninus. Red-headed Morel.*

Hudf. angl. 630. Wither. arr. ed. 3. 359. Curt.

lond. 4. 72. 235. Schæff. 330. Battar. 40. F.

Pileus or cap wrinkled red, covered with a greenish matter, conical, closed at the end: stem yellow, tapering at the bottom.

DESCRIPTIONS, &c.

1. Stem hollow, naked, white, one or two inches high, from half an inch to an inch in diameter. Cap entirely united to the stem, from the size of a pigeon's to that of a swan's egg; with very large cells, angular like a honeycomb: the colour of the cap is pale yellow or buff when young, but becomes brown when old. There is a variety which is small and black, found on the sandy heaths of Norfolk^b. Mr. Sowerby gathered plenty of the blackish Morels at Newington in Surrey, on an old garden ground among fugar-baker's rubbish. The Morel is commonly found in woods, under hedges, and among bushes, in a loamy soil, and springs up in april or may. It has an agreea-

^a William Hall, Esq. in Young's Annals. 4. 222.

^b Withering.

ble smell.—It is common in many parts of the continent: in Britain it has been observed at Moor-Barns, Trumpington, Triplov, &c. in Magdalen-College walks, Headington-Wick coppice, and Shotover plantations. Mr. Jacob Rayer found some buff-coloured specimens on a bank in Kent. It has been observed at Stone, Swanscomb, &c. in that county: at Boughton, Walcot, Weekly, &c. in Northamptonshire: near Asply and Outhorp in Nottinghamshire: in Scotland, at Blair in Athol, in the woods at Langholm in Eskdale, and in Logton wood near Dalkeith, &c.

According to Mr. Sowerby, in his elaborate work on English Fungi, the Morel belongs much more properly to the genus *Helvella*, if we consider its texture, duration and qualities. It is well known and much esteemed as an ingredient in gravies and ragouts, both recent and dried; for this purpose it may be kept many months or even years.

We are informed by Gleditsch, that Morels are observed to grow in the woods of Germany in the greatest plenty where charcoal has been made. Hence the people who collected them to sell, made fires in the woods, with heath, broom, &c. to obtain a more plentiful crop. Much mischief having been done by this practice, it was found necessary to forbid it by law^c.

2. Roots fibrous; fibres large, round, white, creeping a little under the surface, with white globules or tubercles growing to them here and there, which when full grown project above ground; and appear in the form of eggs, a little flattened at the base, smooth, the size of a tennis-ball, white, and heavy. On the bursting of this the stalk rises up, and is about the thickness of the thumb, four inches and more in height, a little crooked, round, white, spongy, hollow, very light, and pointed at both ends. Cap somewhat conical, fitting loosely on the stalk, at first smooth, solid, olive-coloured, slippery, soon becoming highly fetid, the cells being as yet filled with the matter containing the seed, which flowing out or being eaten by flies, the outer surface appears cellular, the inner a little wrinkled, the top as if cut off, very white, oblong and open^d.

Though this Fungus is so intolerably fetid, yet in its egg state it has no offensive smell: the odour resides in the green matter which fills the cells of the cap, and is commonly very soon devoured by flies, particularly the large blue flesh fly. It remains many days in the egg state before it bursts through its wrapper; but this being done, the stem pushes up with amazing rapidity, attaining the height of four or five inches in a few hours. This offensive green matter contains the seeds, which may be seen by the assistance of a good microscope. Such as have courage to smell this matter closely, will find it much less disagreeable than at a distance; for it then seems to have a slight pungency like that of volatile salts. The wrapper is filled with a clear jelly, like the white of an egg, but stiffer; within this is found the green matter, and within that the young plant. When it shoots up, the wrapper and the clear jelly remain at the root^e.

The disagreeable carrion-like smell of this Fungus has occasioned it to be called *Stinkborns* in some counties. It nourishes not only several species of flies, but also Snails and Slugs, who are extremely fond of the stem.

In august, september and october the stinking Morel appears in woods and hedge-rows, in some places abundantly, in others rarely, near London it has been found (about Hackney,) in Coomb-wood, Norwood (and in the closes about Streatham), but more plentifully in a small fir wood on Hampstead heath^f. Mr. Woodward found it frequent near Bungay in Suffolk, in sandy situations: Dr. Sibthorp in Kingston woods, Oxfordshire: Morton at Thorp-Malsor in Northamptonshire: the Rev. Charles Abbot at Silfoe and Market-street in Bedfordshire: Ray at Middleton, in Mr. Willoughby's orchard, Nottinghamshire: Sibbald in the woods at Blair in Athol; and in the sands by the

^c Lightfoot, Sowerby.

^d Curtis.

^e Curtis.

^f Withering.

sea side on both sides of the Forth, and at Carubber bank, in Scotland.

3. Volva the size of a nutmeg, of an oblong ovate shape, white, smooth, gelatinous within, the inner coat cut off at top. Stalk beyond the volva, an inch and half or two inches in length, the size of a large goose quill, round, filiform, terminating in a point at bottom, cellular, somewhat transparent, of a pale orange colour, hollow within, soon becoming flaccid. Head sitting on the stem, sessile, about half an inch in length, and of the same diameter with the stem, oblong, a little pointed, impervious and whitish at top, at first of a livid colour, and covered with a very thin shining membrane, under which is a small quantity of a greenish liquid, almost without scent; which being removed, the surface of the head appears of a red colour, and transversely wrinkled, but by no means cellular, as in the stinking Morel.

Mr. Ehret, the celebrated botanic painter, in company with Mr. More, first discovered this Fungus in woods and shady places near Shrewsbury. Mr. Hunter, gardener to the Earl of Mansfield, found it sparingly in Caen wood, and communicated it to Mr. Dickson. And Mr. Sowerby, with Mr. Curtis, discovered it in Lord Mansfield's small pine wood, on the 20th of September, 1781. The Rev. Charles Abbot also found it about Silsoe in Bedfordshire. It differs from the *impudicus*, in having no pileus properly speaking, but the part on the outside of which the seminal matter is lodged forms a head, which is only a continuation of the stalk, differing in its structure and colour: this head has a wrinkled, not a reticulated surface, within these wrinkles, which are not very deep, the seminal matter is contained, and covered by a very thin membrane. The structure of the head in this species by no means agrees with Linneus's generic character of *Phallus*.*

PHARNACEUM (of Pliny. From *Pharnaces*, son of *Mithridates*, King of *Pontus*.)

Lin. gen. n. 379. Reich. n. 410. Schreb. n. 517. Juss. 30. Gært. t. 130.

Class. 5. 3. Pentandria Trigynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: leaflets subovate, concave, spreading, equal, permanent, coloured within, having a thin edge.

COR. none; hence the edge of the calyx is thin, and the inside of it is coloured.

STAM. Filaments five, awl-shaped, the length of the calyx. Anthers bifid at the base.

PIST. Germ ovate, three-cornered. Styles three, filiform, the length of the stamens. Stigmas blunt.

PER. Capsule ovate, obsoletely three-cornered, covered, three-celled, three-valved.

SEEDS numerous, shining, orbicular, depressed, surrounded by a sharp rim.

OBS. The parts of fructification differ in *P. Mollugo*.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* none. *Caps.* three-celled, many-seeded.

SPECIES.

1. *Pharnaceum Cerviana*. Umbelled *Pharnaceum*.

Lin. spec. 388. Reich. 1. 744. Willd. 1507. Gmel. fib. 3. 102. n. 79. t. 20. f. 2. Gært. fruct. 2. 234.

Cerviana. Minuart. monogr. 1.

Trichlis pentastemon, floribus umbellatis. Hall. goett. 26.

Alfine pumila, gallii facie, foliis glaucis. Amm. ruth. 84.

A. Saxifraga, &c. Pluk. mant. 9. t. 332. f. 11.

Spergula purpurea minima. Buxb. cent. 3. 33. t. 62. f. 2.

Peduncles subumbelled lateral, equalling the linear leaves.

2. *Pharnaceum lineare*. Linear-leaved *Pharnaceum*.

Lin. syst. 298. ed. Willd. 1508. suppl. 185. Thunb. prodr. cap. 53.

Umbels unequal, leaves linear in remote oppositions.

* Curtis.

3. *Pharnaceum teretifolium*. Round-leaved *Pharnaceum*. Lin. spec. ed. Willd. 1508. Thunb. prodr. cap. 53. Leaves filiform mucronate, umbels lateral, stem erect frutescent.

4. *Pharnaceum microphyllum*.

Lin. syst. 298. ed. Willd. 1508. suppl. 183. Thunb. prodr. cap. 54.

Tomentose, peduncles umbelled, leaves ovate renundish obtuse interwoven with wool.

5. *Pharnaceum marginatum*.

Lin. spec. ed. Willd. 1508. Thunb. prodr. cap. 54.

Leaves ovate margined blunt, flowers axillary sessile.

6. *Pharnaceum Mollugo*.

Lin. spec. 389. syst. 297. Reich. 1. 744. Willd. 1508. mant. 56. 358. 561. Lour. cochinch. 185. Berg. cap. 79.

Mollugo Spergula. Lin. spec. ed. 1. 131. hort. cliff. 28. Burm. ind. 31. t. 5. f. 4. Kniph. orig. cent. 9. n. 68.

Alfine erecta pentaphylla, flore albo. Burm. zeyl. 13. t. 7.

A. procumbens, gallii facie, africana. Herm. lugdb. 19. t. 21.

Peduncles one-flowered lateral, flowers the length of the leaves, stem depressed.

7. *Pharnaceum glomeratum*.

Lin. syst. 298. ed. Willd. 1509. suppl. 185. Thunb. prodr. cap. 53. Pluk. mant. t. 331. f. 4. (Rubia).

Flowers glomerate, stem flexuose, leaves linear.

8. *Pharnaceum serpyllifolium*.

Lin. syst. 297. ed. Willd. 1509. suppl. 186. Thunb. prodr. cap. 54.

Peduncles one-flowered, axillary, leaves ovate blunt.

9. *Pharnaceum quadrangulare*.

Lin. syst. 298. ed. Willd. 1510. suppl. 185. Thunb. prodr. cap. 54.

Subfruticose, leaves linear imbricate in four rows.

10. *Pharnaceum incanum*. Hoary *Pharnaceum*.

Lin. spec. 389. syst. 297. Reich. 1. 745. suppl. 186. mant. 562. hort. cliff. 492. Thunb. prodr. cap. 54.

Common peduncles very long, leaves linear, stipules hairy.

11. *Pharnaceum albens*.

Lin. syst. 298. Willd. 1510. suppl. 186. Thunb. prodr. cap. 53. Pluk. phyt. t. 304. f. 4.

Common peduncles very long; leaves linear without stipules.

12. *Pharnaceum dichotomum*. Forked *Pharnaceum*.

Lin. syst. 298. Willd. 1511. suppl. 186. Thunb. prodr. cap. 53.

Peduncles axillary elongated dichotomous, leaves in whorls linear.

13. *Pharnaceum distichum*.

Lin. syst. 297. Reich. 1. 746. Willd. 1511. mant. 221. Pluk. mant. t. 332. f. 4. & phyt. t. 130. f. 6. (Alfine).

Racemes two-parted flexuose, leaves sublinear pubescent.

14. *Pharnaceum cordifolium*.

Lin. spec. 389. syst. 298. Reich. t. 746. amoen. 6. afr. 6. Thunb. prodr. cap. 54. Pet. mus. 478. (Spergula).

Racemes two-parted terminating, leaves obcordate.

DESCRIPTIONS, &c.

1. This is an annual plant, differing from *Mollugo* in little else than the number of stamens. Capsule ovate, thin, obsoletely three-grooved, slightly pustuled by the projecting seeds: partitions in the middle of the valves. Seeds eight or ten in each cell, small, roundish, beaked, marked on the back with a single filiform streak, very smooth and shining, of a rufous-ferruginous colour; fastened by very short umbilical cords to the central angle of the cells^b.

Native of Russia and Spain. Introduced in 1771, by Monf. Richard. It flowers in Juneⁱ.

2. Plant larger than *Spergula arvensis*. Stem even, prostrate, jointed with knobbed knots, dichotomously-branched. Leaves several, blunt, even, in whorls. Umbels peduncled, terminating and lateral, solitary, irregular^k.

^b Gærtner.

ⁱ Hort. kew.

^k Linn. suppl.

3. 4. 5. These and the preceding are natives of the Cape of Good Hope.

6. Root annual. Stems herbaceous, procumbent, dichotomous, jointed, round, even. Leaves in whorls, four or five, unequal in size, subpetioled, somewhat fleshy, elliptic-lanceolate, even, sharpish, rugged at the edge, scarcely veinless. Peduncles at the whorls (not at the forkings of the stem,) four or five, the length of the leaf, one-flowered. Calycine leaflets oblong-ovate, snow-white above, greenish more or less underneath, permanent. Petals very minute, linear, very narrow, semibifid, with bristle-shaped segments. Nectary or bristle awl-shaped, white, spreading, alternate with the filaments, and shorter than them. Stamens white, generally shorter than the petals. Germ ovate. Styles recurved, white. Anthers geminate, linear.

The plant in its whole appearance very much resembles *Illecebrum ficoideum*. The fructification is much like that of *Mollugo verticillata*, but it is a little larger. The petals resemble greatly those of *Glinus lotoides*. Burman's figure belongs to this species rather than to *Mollugo stricta*.

Mollugo verticillata differs from this in having the leaves fleshy and bluntish, not mucronate; the flowers the length of the leaves, and not shorter by half; the calyxes the size of *Alfina media*, and not of *Herniaria*; the stem green, not the colour of ivory. It is a native of the East Indies¹: and of Cochinchina, according to Loureiro.

7. Root annual. Stems herbaceous, even, flexuose. Leaves very many, in whorls, acute, smooth, even. Flowers very minute, few in a whorl, peduncled, besides the little leafy glomerate umbel. It has the appearance of a *Mollugo*.

8. This is a tender annual plant, with the leaves and stem smaller than in *Herniaria glabra*. Stems branched, dichotomous, filiform, jointed, smooth. Leaves opposite or several, petioled, many times shorter than the internodes. Peduncles lateral, capillary, the length of the leaves.

9. The stems of this are somewhat shrubby, and have the appearance of a Heath. Leaves acrosc, awl-shaped, minute, even. Panicles terminating, conglomerate, small. Flowers white, on the outside green^m.

10. This is also a shrubby plant, with an upright proliferous stem. Branches whitish with tunicated stipules. Leaves scattered, even, solitary, spreading. Stipules leafy, solitary, membranaceous, white, finely jagged. Peduncles terminating. Umbel compound, proliferous. Flowers white, green on the outsideⁿ. Introduced in 1782, by George Wynch, Esq.^o

11. This is a little shrub with white stems. Leaves opposite, spreading, with the oppositions remote.

12. This and the five species preceding are natives of the Cape of Good Hope.—The tenth is also a native of Cochinchina, according to Loureiro.—The twelfth species is an annual plant, and was introduced in 1783, by John Earl of Bute. It flowers in July^p.

13. Leaves narrow, subtomtose. Racemes geminate, flexuose. Pistil one. Capsule one-celled, three-valved.—Native of the East Indies^q.

14. Root fibrous. Stems herbaceous, a foot high, prostrate, even, knobbed at the joints. Branches alternate. Leaves numerous, in whorls, smooth, quite entire, much shorter than the internodes. Racemes peduncled. Flowers white, the size of those of *Spergula arvensis*.—Native of the Cape of Good Hope^r.

PHARUS. (*Φαρος*, *pallium*.)

Lin. gen. n. 1063. Reich. n. 1160. Schreb. n. 1434.

Juss. 33. Brown. t. 38. f. 3.

Class. 21. 6. Monoecia Hexandria.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

* Male flowers peduncled.

CAL. Glume two-valved, one-flowered: valves ovate, membranaceous, coloured; outer short, sharpish; inner twice as long, rounded at the tip.

¹ Linn. mant.
^o Hort. kew.

^m Linn. suppl.
^p Idem.
^q Linn. amoen.

^a Linn. mant.
^r Linn. mant.

COR. Glume two-valved, longer: valves equal, oblong, membranaceous, coloured; outer sharpish, keeled below the tip; inner emarginate.

STAM. Filaments six, very short, upright. Anthers linear, cloven at both ends, the length of the corolla.

* Females larger, sessile in the same panicle.

CAL. Glume two-valved, one-flowered: valves lanceolate, membranaceous, sharpish, nerved, almost equal.

COR. Glume two-valved, a little longer: outer valve subcylindric, rigid, closely pubescent: end three-sided, sharp; back keeled, bent back, and shaved at the base: inner valve linear, very narrow, membranaceous, with the margins folded together, the edge thickened on both sides, pubescent, with the tip cloven; the same length with the outer.

PIST. Germ linear. Style simple. Stigmas three, capillary, pubescent, prominent from the outer corolline glume.

PER. none. The outer glume of the corolla invests the seed, now larger, muricated all round with soft adhering little hooks.

SEED oblong, grooved on one side, large.

OBS. Schreber could not observe any nectary.

ESSENTIAL CHARACTER.

CAL. Glume two-valved, one-flowered.

MALE. Cor. glume two-valved.

FEM. Cor. glume one-valved, long, involving. Seed one.

SPECIES.

1. *Pharus latifolius*.

Lin. spec. 1408. Reich. 4. 151. amoen. 5. 409.

Brown. jam. 344. t. 38. f. 3. Sloan. jam. 1. 116.

t. 73. f. 2. (Gramen avenaceum).

Panicle branched, calyxes apetalous naked awnless.

2. *Pharus ciliatus*.

Retz. obs. 5. 23. n. 56.

Panicle somewhat branched, calyxes apetalous ciliate awnless.

3. *Pharus aristatus*.

Retz. obs. 5. 23. n. 57.

Panicle umbelled, calyxes apetalous awned naked.

DESCRIPTIONS, &c.

1. This Grass has many filaments three or four inches long, with lateral fibrils, uniting in a roundish root. Root-leaves several incompassing the stalk and one another by their foot-stalks, which are striated of a light brown colour, and about nine inches long. Leaves oblong-ovate, six inches long and two broad, acuminate, striated, thin, hard and rough, with the midrib prominent at the back. Stalk about a foot and half high, having below two very short joints, dividing at a foot from the ground into several branches, on which are naked flowers, half an inch in length, sessile, alternate. Outer glume blackish, and within that a long rolled-up membrane^s. The male flowers are smaller than the females, and stand on pretty long peduncles at the back of the others.

This Grass is frequent in all the woody hills of Jamaica, and reckoned a hearty wholesome food for all sorts of cattle. They call it there Wild Oats^t.

2. Culms very leafy, two feet high. Leaves linear, narrow, rugged. Panicle short, or rather a simple raceme. Calycine valves ovate, convolute, having two grooves on the back, awnless, ciliate at the edge. Corolla none.

3. Culm above the water scarcely two feet high, at the joints under water many pectinate fibres, upright, leafy. Leaves lanceolate, short, widish, naked, rough above, without any ligule. Sheaths on the barren branches swelling. Peduncles racemed, unequal. Pedicels thickened. Male flowers several lanceolate: stamens six, with very short filaments, and long linear yellow anthers, slightly bifid at top. Female flowers fewer, below: germ minute, styles two, stigmas white. Calyx in both two-glumed; outer glume five-nerved, awned, ciliate on the back and at the edges; inner narrower, longer except the awn, one-nerved, hyaline, acuminate, not awned. Corolla none in either.

These Grasses are natives of the East Indies, and nearly allied to *Phalaris oryzoides*^u.

^s Sloane.

^t Browne.

^u Retzius.

PHASCUM.

Lin. gen. Schreb. n. 1636. Schreb. monogr. Hedw. fund. 2. 85. Schmidel. ic. t. 58. f. 1.

Class. 24. 3. Cryptogamia Musci.

GENERIC CHARACTER.

CAPS. ovate, veiled, subsessile or on a short bristle, closed on every side, sometimes with the rudiment of a lid, never opening.

MALES subdiscoid terminating, or gemmaceous axillary.

SPECIES.

Five species of this Moss are enumerated in the 14th edition of *Systema Vegetabilium*. Withering has eleven species in his *Arrangement of British plants*.

PHASEOLIS ACCEDENS. See *Piscidia*.

PHASEOLOIDES. See *Glycine*.]

PHASEOLUS. (Φασόλος of Theophrastus and Dioscorides; Φασολος of other Greek writers. It is also written Faseolus; and in ancient manuscripts of Pliny Fassiolus. Φασολος, Phaselus or Faselus is also the name for a small swift-sailing boat; so called from its similitude to the pod of a kidney-bean; or derived, according to some, from the Hebrew Phasel, dolavit, sculpsit; as σκαφη, scapha, is from σκαπω, fodio. Vossius.)

Lin. gen. n. 866. Reich. n. 940. Schreb. n. 1180.

Tourn. t. 232. Juss. 356. Gärtn. t. 150.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leafed, two-lipped: upper lip emarginate; lower three-toothed.

COR. papilionaceous: banner heart-shaped, blunt, emarginate, reclined; the side bent back: wings ovate, the length of the banner, placed on long claws: keel narrow, rolled spirally contrary to the sun.

STAM. Filaments diadelphous, (simple and nine-cleft,) within the keel, spiral. Anthers ten, simple.

PIST. Germ oblong, compressed, villose. Style filiform, bent in spirally, pubescent above. Stigma blunt, thickish, villose.

PER. Legume long, straight, coriaceous, blunt with a point.

SEEDS kidney-form, oblong, compressed.

OBS. Many species have an outer two-leaved roundish calyx.

ESSENTIAL CHARACTER.

Keel with the stamens and styles spirally twisted.

SPECIES.

* Climbing.

1. Phaseolus vulgaris. Common Kidney-bean.

Lin. spec. 1016. Juss. 656. Reich. 3. 441. mat. med. 171. hort. cliff. 359. upf. 213. Gärtn. fruct. 2. 323. Retz. obs. 3. 38. n. 78. Lour. cochinch. 434. Lob. ic. 2. 59. Riv. tetr. t. 30. t. 29. f. 1, 2, 3.

Phaseoli sativi. Park. parad. t. 523. f. 2.

P. albus. Ger. 1038. 1. emac. 1212. 1.

P. fructu diverso vel parvo & nigro albis venis. Park. theat. 1056. f. 2.

Smilax hortensis. Bauh. hist. 2. Raii hist. 884.

—f. Phaseolus major. Bauh. pin. 339.

β. P. coccineus. Mill. dict. n. 6. Kniph. cent. 12. n. 75. Scarlet Kidney-bean.

P. puniceo flore. Corn. canad. 184. t. 185.

P. flore coccineo. Park. theat. 1056. 1. Ger. emac. 1215.

P. indicus, fl. cocc. f. puniceo. Mor. hist. 2. 69.

Stem twining, flowers racemed in pairs, bractes smaller than the calyx, legumes pendulous.

[2. Phaseolus lunatus. Scymitar-podded Kidney-bean.

Lin. spec. 1016. Juss. 656. Reich. 3. 442. Lour. cochinch. 434.

P. rufus. Jacqu. hort. 1. 13. t. 34. conf. vol. 3. p. 1.

Stem twining, legumes scymitar-shaped somewhat crescent-shaped even.

3. Phaseolus bipunctatus.

Lin. Juss. 646. Jacqu. hort. 1. t. 100.

Stem twining, legumes scymitar-shaped pubescent, seeds with two dots at the hilum or scar.

4. Phaseolus inamoenus.

Lin. spec. 1016. Juss. 656. Reich. 3. 442. hort. cliff. 359. Jacqu. hort. 1. t. 66.

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Stem twining, banner revolute of the same colour with the calyxes.]

5. Phaseolus farinosus.

Lin. spec. 1016. Reich. 3. 442. hort. upf. 214.

P. peregrinus, flore roseo, semine tomentoso. Niff. aff. 1730. p. 577. t. 42.

P. indicus, hederæ folio anguloso, semine oblongo lanuginoso. Raii suppl. 438. n. 26.

Stem twining, peduncles subcapitate, seeds four-cornered-cylindrical mealy.

[6. Phaseolus trilobus. Three-lobed Kidney-bean.

Ait. hort. kew. 3. 30.

Dolichos trilobus. Lin. spec. 1021. Reich. 3. 449. hort. cliff. 360. Burm. ind. 160. t. 50. f. 1.

P. maderatpatanus, fol. glabris trilobis, &c. Pluk. phyt. t. 214. f. 3.

Stem half twining decumbent smoothish, leaflets three-lobed, lobes ovate, stipules ovate, legumes cylindrical.]

7. Phaseolus vexillatus. Sweet-scented Kidney-bean.

Lin. spec. 1017. Juss. 656. Reich. 3. 442. Jacqu. hort. 2. t. 102.

P. flore odorato, vexillo amplo patula. Dill. elth. 313. t. 234. f. 202.

Stem twining, peduncles thicker than the petiole forming a head, wings somewhat sickle-shaped difform, legumes linear striat.

[8. Phaseolus helvolus.

Lin. spec. 1017. Juss. 656. Reich. 3. 443.

P. flore helvulo, alis amplis patulis. Dill. elth. 312. t. 233. f. 300.

Stem twining, flowers in heads, calyxes bracted, wings expanded very large, leaflets deltoid oblong.

9. Phaseolus semierectus. Dark-red-flowered Kidney-bean.

Lin. Juss. 656. Reich. 3. 443. mant. 100. amoen. 4. 347. Jacqu. ic. vol. 2. collect. 1. 134. Plum. spec. 8. Dill. elth. 312. t. 233. f. 301. Pluk. phyt. t. 214. f. 2.

Stem half twining, flowers in spikes, calyxes without bractes, wings expanded larger, leaflets ovate.]

10. Phaseolus alatus.

Lin. spec. 1017. Reich. 3. 444. Dill. elth. 314. t. 235. f. 303.

Stem twining, flowers in loose spikes, wings the length of the banner.

11. Phaseolus Caracalla. Twisted-flowered Kidney-bean, or Snail-flower.

Lin. spec. 1017. Juss. 656. Reich. 3. 444. Trew. rar. 14. t. 10.

P. indicus cochleato flore. Triumph. obs. 93. t. 94. Raii hist. 1890.

Stem twining, banner and keel spirally convoluted.

[12. Phaseolus aconitifolius.

Lin. Juss. 656. suppl. 325. Jacqu. obs. 3. 2. t. 52.

P. palmatus. Forsk. descr. 214. n. 68.

Stem twining, leaves subquincupartite.

13. Phaseolus hirtus.

Retz. obs. 3. 38. n. 76.

Stem half twining, legumes round; keel boined to the left.

14. Phaseolus tuberosus.

Lour. cochinch. 434.

Stem scandent, banner revolute; root tuberos fascicled.

15. Phaseolus tunkinensis.

Lour. cochinch. 435.

Stem twining very much branched, leaflets conical small thick, banner revolute of the same colour with the calyx.

** Upright.

16. Phaseolus nanus. Dwarf Kidney-bean.

Lin. spec. 1017. Reich. 3. 444. hort. upf. 213. amoen. 4. 284. Bauh. hist. 2. 358. Raii hist. 885. n. 4.

Smilax filiqua sursum rigente, f. Ph. parvus italicus. Bauh. pin. 339.

Stem upright even, bractes larger than the calyx, legumes pendulous compressed wrinkled.

17. Phaseolus radiatus.

Lin. spec. 1018. Juss. 656. Reich. 3. 444. aff. stockh. 1742. p. 202. t. 7. f. 2. hort. upf. 213.

fl. zeyl. n. 281. Thunb. jap. 278. Lour. cochinch. 435. Dill. elth. 315. t. 235. f. 304. Rumph. amb. 6. 386. t. 139. f. 2.

Stem

7 T

- Stem upright round, flowers in heads, legumes cylindric horizontal.*
18. *Phaseolus* Max. *Hairy-podded Kidney-bean.*
Lin. spec. 1018. *syft.* 657. *Reich.* 3. 444. *hort.*
cliff. 499. *fl. zeyl.* n. 280. *Gron. orient.* 217.
Hern. mex. 887.
Fructus niger coriandro similis. Bauh. pin. 413.
Cadelium. Rumph. amb. 5. 388. *t.* 140.
Stem upright straight angular hispid, legumes pendulous, rough-haired.
19. *Phaseolus* Mungo.
Lin. syft. 657. *Reich.* 3. 445. *mant.* 101. *Lour.*
cochinch. 435. *Pluk. alm.* 290.
Mungo. Garc. arom. l. 2. c. 21.
Stem flexuose round hirsute, legumes in heads rough-haired.
20. *Phaseolus* lathyroides.
Lin. spec. 1018. *Reich.* 3. 445. *Swartz obs.* 280.
Brown. jam. 291. 3. *Sloan. jam.* 1. 183. *t.* 116.
f. 1.
Stem upright, leaflets lanceolate.
21. *Phaseolus* sphærospermus.
Lin. spec. 1018. *Reich.* 3. 445. *Brown. jam.*
292. 8. Sloan. jam. 1. 184. *t.* 117. *f.* 1, 2, 3.
Pluk. alm. 290.
Stem upright, seeds globular dyed at the hilum.

DESCRIPTIONS, &c.

1. This is an annual plant, as are most of the other species. Stem more or less twining, but in some of the cultivated dwarf varieties scarce at all so, quite simple or unbranched. Leaves ternate, acuminate, rounded at the base, rough, on long petioles. Flowers axillary, in twin racemes, or else on twin petioles. Corolla white, yellow, purple or red. The banner has a callus, but a small one, and placed near the edge above the claw. There is a white nectariferous scale between the claw of the banner and the single stamen, bent upwards, and growing to the filament: besides this an obliquely bell-shaped, pellucid, striated nectary furrounds the pedicel of the germ within the connate filament: the size of this differs in the several varieties. The size of the bractes is an uncertain character*. Legume oblong, swelling a little at the seeds, when ripe one-celled. Seeds several, ovate or oblong kidney shaped, smooth and shining: they vary exceedingly in shape and size, but particularly in colour, being white, black, blue, red and variously spotted†.

The common Kidney-bean is a native of both Indies. It was commonly cultivated here in the time of Gerard (1597); but he does not speak of any dwarf varieties, only of such as "grow to a very great length, being sown near to long poles fastened hard by them, or hard by arbors or banquetting places; otherwise they lie flat on the ground."—Parkinson, in 1629, says that the variety with white flowers and seeds was then most usual in the gardens; and that "Kidney-beans boiled in water and stewed with butter, were esteemed more savory meat to many men's palates, than the common Garden Bean, and were a dish more oftentimes at rich men's tables than at the poor."

Kidney-beans are or were also called *Sperage-beans*; of some *Faselles* or *long Peason*, *French Beans*, *Garden Smilax*, and *Roman Beans*‡.

The varieties of the Kidney-bean are very numerous. Mr. Miller mentions only] the small White Dwarf, the Black Dwarf or Negro, and the Liver-coloured Bean, for early crops. The Battersea and Canterbury. The large Dutch, which grows very tall.

β. He regards the Scarlet-bean as a distinct species. Its twining stalks, if properly supported, will rise to the height of twelve or fourteen feet, the leaves are smaller than those of the common Garden-bean. The flowers grow in large spikes, are much bigger, and of a deep scarlet colour. The pods are large and rough; and the seeds are purple marked with black; sometimes pure white.

[Johnson informs us (1633), "that it was procured by Mr. Tradescant, and grew in his time in

"our gardens; that it is a large plant, not differing in manner of growth from the former Indian Kidney Beans, but that his flowers are large, many and of an elegant scarlet colour; whence it is vulgarly termed by our florists, the Scarlet Bean".

In Ray's time (1686) it was cultivated rather for the beauty and durability of the flowers than for the fruit; and ladies did not then disdain to put the flowers in their nosegays and garlands^b. Mr. Miller seems to have been the first who brought it into much repute as an esculent Kidney-bean; and I well remember his speaking much in praise of it more than fifty years since, and that he preferred it at his own table. The best sorts for the table, says he, are the Scarlet-blossom Bean, and a white Bean of the same size and shape, which is only a variety of it.

2. The lateral leaflets are twice as wide on the outer side as on the other. Flowers very small, green, with the wings white and concave, afterwards turning yellow, and the keel spiral^c.

The stem twines to the height of ten feet or more, and is branched. The three leaflets are even, sharp, and unequal. Peduncles many-flowered. Flowers yellow, with a spreading green banner, of the same colour with the calyx. Legume compressed, wide, curved a little, acuminate, smooth. Seeds orbiculate-reniform, shining, black streaked with white, large^d.

Native of the East Indies. It is eaten in Cochin-china, but is more esteemed for the beauty than flavour of the seeds.

Introduced in 1779, by Mr. William Roxburgh. It flowers here in June and July^e.

3. This very much resembles the *P. rufus*, agreeing with it in the flower, except that the banner is less green. Stems, leaves, and racemes a little hairy. Legume very slightly villose, and agreeing in shape and size with that of *P. inamoenus*, but more turgid, on account of the greater thickness of the seeds, which are few, white, subreniform, and marked on each side above the hile with a ferruginous speck. Leaflets ovate-acuminate; the interior lobe of the lateral ones twice as narrow as the others. Stipules, which are the same at stem and leaflets, small and subovate.

The seeds of this were brought from the Cape of Good Hope, and produced the plants in the stove of the Vienna garden.

4. Whole plant smooth: root annual: stem twining, subangular, and ten feet high: the intermediate leaflet oblong-lanceolate, attenuated into a point; in the lower part of the stem it is half a foot long or more: the lateral ones are in general shorter, and twice or thrice as wide at their internal base as at their external. The axillary racemes bear several ternate peduncles springing from the same place. Flowers inelegant, with a concave greenish banner, and long, obtuse concave wings, stretched out and whitish, as is the spirally-intorted keel. Legume oblong, compressed, acuminate, and bowed at the back. Seeds few, kidney-shaped, flat-compressed, blood-red on the circumference, white on the middle and lower part, and spotted with red points; and with a white hile. This blood-colour in the fresh seeds is scarlet.—Native, according to Linneus, of Africa^f.

5. Flowers rose-coloured; seeds downy, appearing as if covered with meal; leaves angular, like those of Ivy.—Native of the East Indies. Sherard had it from the Padua garden.

6. For the description see *Dolichos trilobus*, n. 20.—It was introduced in 1777, by Sir Joseph Banks; and flowers here in July^g.

7. Stipules loose at the base and bifid. Peduncles smooth, the other parts hairy. Flowers few, sessile, sweet-smelling. Bractes two, very small. Banner emarginate, wide, reflex, marked with lines on the inner surface: wings somewhat sickle-shaped, having a lobe at the base on the right side distinct from the base itself; there being no lobe on the left side, the flower is oblique: keel sickle-shaped, little oblique,

^a Ger. emac.^d Loureiro.^b Raii hist. 884.^c Hort. kew.^g Hort. kew.^e Linn. spec.^f Jacquin.^{*} Retzius[†] Gærtner.[‡] Gerard.

beaked, bifid at the tip. The plant is intermediate between this genus and *Dolichos*^h.

Stems five or six feet in height, the thickness of a straw. Peduncles very long, bearing three or four flowers on short pedicels; large, green before they open, afterwards whitish purple; as they fade the purple changes to pale violet, and finally to a dusky lurid colour, or yellowish brown; they do not last more than twenty-four hours: the banner is white or tinged with very pale purple, and has yellowish spots at the base, and slender streaks towards the circumference; keel small, curved in towards the banner, white or slightly tinged with purple; wings either rolled over each other, or bent in about the keel, of a darker purple colour. Legumes long, slender, brownish. Seeds small, blackish brown^l.

Native of the West Indies. Cultivated in 1732, by James Sherard, M.D. at Eltham^k: from seeds collected at the Havana, and sent under the name of *Triyollos*^l.

8. Stems a yard and half and more in height, slender, round, not exceeding a straw in size at bottom, of a brown or blackish purple colour, making few revolutions in twining. Petioles an inch long. Leaflets narrow, oblong, widening and as it were hastate at the base, smooth, the veins scarcely visible. Peduncles from the upper axils, very long, having two, narrow leaflets at the base, and at the top two or three flowers, without scent, the colour of pale red wine: banner shortish, not spreading, but bent towards the inner part; keel short and narrow, twisted into the banner; wings larger and spreading, marked with slender streaks. Legumes slender, round, not hirsute, blackish brown when ripe. Seeds small, turgid, of a blackish bay colour.

Native of Carolina, whence the seeds were sent by a merchant of London, of the name of Tryan, with other rare plants. It flowered in august, and the seeds ripened in september^m.

9. Stem upright, three feet high, twining only at top, round, somewhat streaked and pubescent. Leaflets naked, bluntish, somewhat mucronate, the length of the petiole. Stipules somewhat ensiform. Peduncles a foot in length, stiff, upright. Spike thinner, in pairs, sessile. Calyx cylindrical. Banner and keel paler; wings three times the size of the banner, convex, red, blueish at the base, converging; keel twistedⁿ.

According to Jacquin the perianth is cylindric, greenish, narrow, small, smooth and bilabiate. Banner greenish with a tinge of purple, and twice the length of the calyx. Wings blood-coloured, twice the length of the banner, roundish, concave, distant. Keel purple in the middle, white on each side, and on account of its convolution, shorter than the banner. Anthers yellow, oblong, and incumbent. Seeds several, oblong-reniform, smooth, brown, spotted with black. Legume linear, straight, sharp-pointed, and three or four inches long, brown, and rather roughish with decumbent hairs. Roots perfectly resembling those of other annual *Phaseoli*, and not in the least strumose; for which reason Jacquin omits the synonyms of Dillenius and Plumier, quoted by Linneus in the *Mantissa Plantarum*; where the root is said to be strumose^o.

Native of the West Indies. Introduced in 1781 by Mr. Francis Masson. It flowers in July^p.

10. Stems long, slender, green, round, striated, subhirsute; joints from two to three inches distant. Leaves like those of the common Kidney-bean, but smaller, finely hairy at their edges. Petioles an inch or an inch and half in length, thinly hairy. Peduncles from a hand to a span in length, round, smooth, striated, somewhat thicker than the stems. Flowers large, solitary or in pairs, without scent, at first purple, then violet: banner large, reflex, paler purple: wings broadish, stretched out, deeper purple; keel narrow, oblong, bent in towards the banner. Calycine seg-

ments four, the upper one larger than the rest. Pedicel slender, very short, purple. Legumes oblong, compressed, at first green, but brown and swelling more when ripe. Seeds twelve or more, small, depressed, shining, of a brownish red colour, with a white eye^q.

Dillenius does not mention its native place of growth, but Mr. Miller says that] the seeds were brought from Carolina.

11. This is a perennial plant with twining stalks rising to the height of twelve or fourteen feet; the leaves are shaped like those of the common Kidney-bean, but are smaller. The flowers are produced in slender spikes, they are of a purplish colour, and have an agreeable odour; they are succeeded by slender compressed pods, containing several oval compressed seeds.

Mr. Miller says it is a native of the Brazils. [According to Triumfetti, it was brought from Portugal to Italy, and it was not known from what country of India it came; it is more probable however that the Portuguese had it from Brasil than from the East Indies.—It was cultivated in 1690, in the Royal garden at Hampton Court; and flowers in august and september^r.

12. Stem herbaceous, striated. Leaves alternate, smooth, ternate. Petioles and nerves at the back hairy. Leaflets petioled, deeply divided into three narrow-oblong sharpish lobes, the lateral ones having commonly a shorter lobe on the outer side. Peduncles axillary, solitary, hairy, five-flowered. Flowers small, with a wide banner, disposed in a sort of raceme. Described from a dried specimen of Petiver's, communicated by Gronovius^s.

Native of the East Indies. Found in Tranquebar by Koenig. Also in Arabia by Forskahl.

13. Root annual. Stem angular, hispid, from one to three feet high, flexuose, weak, neither upright nor twining. Petioles long, hispid, compressed, channelled above, knobbed at the base. Stipules oblong, half-cordate, adnate, ciliate. Leaflets repand, acute, hispid on both sides; the lateral ones obliquely ovate, the end one ovate-lanceolate; under the former one pair, and under the latter another pair of awl-shaped, ciliate stipules: partial petioles thicker than the common, darker, not channelled. Peduncles axillary, from two to three inches long, hispid, in a sort of head, but it rarely happens that more than two of the flowers are fertile; each is knotted at the origin of the pedicels: these have stipules at the base resembling the leaflets. Under the flower there is a small, caducous, ciliate bracte; and two others, which are narrow, keeled, acuminate, ciliate, pressed close to the sides of the calyx, and of the same length with it. Flowers dirty yellow, the upper part especially of the banner being brownish. Calyx smooth. Banner broad-cordate, having on the right side within a yellow callus or bump impressed from without, and when folded together sickle-shaped. Wings yellow. Keel dirty yellow, less twisted than in the other species. Legumes spreading, cylindrical, hispid, scarcely torulose. Seeds subcylindrical, short green.—It grew from seeds sent from Constantinople by Celsing^t.

14. Stem shrubby, long, branched. Stipules two-horned, acute, spreading. Leaves ternate, large. Flowers wholly yellow in subterminating racemes. Calyx four-cleft; segments equal in length; the upper one blunt and emarginate. Legumes somewhat compressed, long, not esculent. The root is large and esculent.—Native of Cochinchina.

15. Stem annual, short. Leaves ternate: leaflets smooth and flat. Flowers white, in axillary racemes. Legume somewhat crescent-shaped, compressed, even, pendulous, containing three ovate seeds, pale variegated with red and eatable.—Native of Tunquin, and cultivated in Cochinchina^u.

16. This spreads out wide, and supports itself without any prop. Leaves ternate, large, soft and veined. Flowers white. Seeds white with the eye black. It

^h Linn. spec.

^l Dillenius.

^k Hort. kew.

ⁱ Dillenius.

^m Idem.

ⁿ Linn. mant.

^o Jacquin.

^p Hort. kew.

^q Dillenius.

^r Hort. kew.

^s Jacquin.

^t Retzius.

^u Loureiro.

is sown in great abundance in the fields of Italy in the month of May^{*}: but it is a native of the East Indies.

Retzius remarks, that the character taken from the relative size of the bractes is very uncertain; they being in some varieties larger, in others less than the calyx.

17. Stem annual, upright, two feet high, subcylindrical, grooved, hairy, branched. Leaves ternate, broad-lanceolate, hairy; stipules in pairs, acute; petioles long. Flowers dusky yellow, on a long upright common peduncle. Calyx four-cleft, acute, equal; the upper segment emarginate. Banner large, roundish, spreading, plaited and emarginate at the tip: wings shorter, broad-sickle-shaped, with a conical inflated lobe, prominent outwards: keel sickle-shaped, of a length between the banner and wings. Legumes narrow, straight, acuminate, hairy, brown. Seeds many, greenish-yellow, ovate, small[†]. Thunberg observes, that it varies with white, and with black seeds.

Native of Ceylon, Amboina, China, CochinChina and Japan.

18. Stem and leaves rigid. Flowers pale or greenish yellow. Legume thick, ending in a beak that is curved inwards. Seeds black, the size of Coriander. *Max* is the Spanish name.

Native of India. Cultivated in the Apothecaries botanic garden at Chelsea, in 1758. It flowers in June and July[‡].

19. Stem upright, scarcely scandent. The whole plant is covered with hairiness of a colour like red wine. The lateral leaflets are half-cordate on the outer side, lanceolate on the inner. Stipules of the leaves oval-oblong, adnate as far as the middle, naked, ciliate. Stipules of the leaflets lanceolate, narrowing into a bristle. Peduncles the length of the leaves, terminated by an ovate smooth receptacle, bearing sessile yellow flowers in a head[§].

Stem a foot and half high, branched. Leaflets roundish, somewhat acute both ways, hairy, soft, yellowish-green. Stipules bifid, acute. Common peduncle nearly equal to the petiole, ending in a three or four-flowered head. Calyx five-cleft, supported by two incurved, inflexed stipules, longer than the calyx. The keel putting forth a tubular little horn from one side, removes one of the wings, whilst the other wing, with the keel and stamens is twisted into a spiral. Legume round, slender, longish, acuminate. Seeds many, subovate, brownish green, esculent[¶].

Native of the East Indies, China and CochinChina.

20. Stem somewhat shrubby at bottom, from one to two feet high, branched, stiff, round, smooth, brown. Branches simple, upright, round, smooth. Leaves ternate: leaflets oblong, acuminate; the two lateral ones subsessile, entire, veined, smooth above, pubescent underneath. Petioles alternate, erect, stiff, channelled, angular, reddish. Stipules at the base of the petioles, opposite, acuminate: others at the base of the leaves. Peduncles long, fastigate, many-flowered, round, pubescent. Flowers in a sort of spike, alternate, mostly in pairs close together, blood-red: banner of a paler red; wings deep red, twice as large as the banner; keel whitish. Legume roundish, awl-shaped. Seeds roundish, separated, brown.

Native of Jamaica in moist sandy grounds[•]. Common in the Savannas about Spanish Town[†].

21. Stem about a foot high, branched. Petioles three or four inches long. The odd leaflet is an inch and half broad at the base, two inches and a half long, on a petiolule three quarters of an inch longer than the lateral leaflets, which are smaller; they are all very soft, and of a yellowish green colour. Peduncles axillary, strong, nine inches in length. Corolla white. Legumes three or four inches long, almost round and straight, clay-coloured. Seeds very many, almost round, white with a black eye, not so big as the smallest field pea. They are accounted the sweetest and best food of any of the Kidney-beans[•].—Native of both Indies.

[•] Matthioli.

[†] Linn. mant.

[‡] Loureiro.

[§] Loureiro.

[¶] Sloane.

[•] Hort. kew.

[†] Swartz.

[‡] Browne.

Ray has enumerated 119 species of *Phaseolus*, namely 31 in the first volume of his History, and 88 in his third volume or Supplement; besides some Brazilian sorts from Piso, and Ph. Caracalla, in the Appendix to his second volume. Doubtless many of these are varieties; and many do not belong to this genus; the genus *Dolichos* not being constituted in his time.]

PROPAGATION AND CULTURE.

Kidney-beans for the table.

The three sorts which are usually cultivated for early crops, are the small white Dwarf, the Dwarf black, which is called the Negro-bean, and the Liver-coloured Bean. The stalks of these never being very long, may be planted much nearer together than the larger growing kinds, and they require but little support; these are planted on hot-beds under frames, or in pots which are placed in stoves, to come early in the spring, for which purpose they are better adapted than any of the other; but they are not to be compared with some of the others for goodness; but as they may be had at a time when the others cannot be so well obtained, they are generally cultivated in gardens; and where there are not the conveniences of stoves or frames for raising them very early, they are planted in warm borders near hedges, walls, or pales, where they will be fit for use a fortnight earlier than the other sorts.

The next to these are the Battersea and Canterbury Kidney-beans; these do not ramble far, and producing their flowers near the root, bear plentifully for some time: the Battersea Bean is the forwarder of the two, but the other will continue bearing much longer; they are both better flavoured than any of the three former sorts, but when they begin to be large are very stringy and tough.

There are two or three sorts of Kidney-beans cultivated with erect stalks, which want no support, as they do not put out any twining stalks; these are much cultivated by the gardeners for that reason, as also for their producing a great plenty of pods; but they are inferior in goodness to all the other, especially that sort with black and white seeds, whose pods have a rank flavour, and, when boiled, become soft and mealy; so this should never be propagated by persons of taste.

The best sorts for the table are the scarlet Blossom-bean before-mentioned, and a white Bean of the same size and shape, which appears to be only a variety of the scarlet, as it differs in no other respect but the colour of the flowers and seeds, being equal in size and flavour. And next to these is the large Dutch Kidney-bean, which grows as tall as either of these, so must be supported by stakes, otherwise the stalks will trail upon the ground and spoil. The sort with scarlet flowers is preferable to this in goodness, and is also hardier; and although it will not come so early as some of the dwarf kinds, yet as it will continue bearing till the frost puts a stop to it in the autumn, it is much preferable to either of them; for the pods of this sort when old, are seldom stringy, and have a better flavour than the young pods of those sorts, and will boil greener; and where this is sown in the same situation and soil as the Battersea-bean, it will not be a fortnight later.

All the sorts of Kidney-beans are propagated by seeds which are too tender to be sown in the open air before the middle of April; for if the weather should be cold and wet after they are in the ground, they will soon rot; or if the morning frosts should happen after the plants come up, they will be destroyed; therefore the best way to have early Kidney-beans, where there is no conveniency of frames for raising them, is to sow the seeds in rows pretty close upon a moderate hot-bed, the latter end of March, or the beginning of April. If the heat of the bed is sufficient to bring up the plants, it will be enough; this bed should be arched over with hoops, that it may be covered with mats every night, or in bad weather. In this bed the plants may stand till they have put out their trifoliate leaves, then they should be carefully taken up, and transplanted

planted in warm borders near hedges, pales or walls. If the season proves dry at the time of removing them, the plants should be gently watered to forward their taking new root, and afterward they must be managed in the same way as those which are sown in the full ground. These transplanted Beans will not grow so strong as those which are not removed, nor will they continue so long in bearing, but they will come at least a fortnight earlier than those which are sown in the full ground.

The first crop intended for the full ground, should be put in about the middle of april; but these should have a warm situation and a dry soil, otherwise the seeds will rot in the ground; or if the weather should prove so favourable as to bring up the plants, yet there will be danger of their being killed by morning frosts, which frequently happen the beginning of may.

The second crop, which should be one of the three large sorts last mentioned, should be sown about the middle of may. These will come into bearing before the early kinds are over, and if they are of the scarlet sort, will continue fruitful till the frost destroys the plants in the autumn, and these will be good as long as they last. The manner of planting them is to draw shallow furrows with a hoe, at about three feet and a half distance from each other, into which you should drop the seeds about two inches asunder; then with the head of a rake draw the earth over them, so as to cover them about an inch deep.

If the season is favourable, the plants will begin to appear in about a week's time after sowing, and soon after will raise their heads upright; when the stems are advanced above ground, you should gently draw a little earth up to them, observing to do it when the ground is dry, which will preserve them from being injured by sharp winds; but you should be careful not to draw any of the earth over their seed-leaves, which would rot them, or at least greatly retard their growth. After this, they will require no farther care but to stick them when the plants begin to run, and to keep them clear from weeds until they produce fruit, when they should be carefully gathered two or three times a week; for if they are permitted to remain upon the plants a little too long, the Beans will be too large for eating, and the plants would be greatly weakened thereby.

The large sorts of Kidney-bean must be planted at a greater distance, row from row; for as these grow very tall, if the rows are not at a greater distance, the sun and air will be excluded from the middle rows, therefore these should not be less than four feet distance row from row; and when the plants are about four inches high, the stakes should be thrust into the ground by the side of the plants, to which they will fasten themselves, and climb to the height of eight or ten feet, and bear plenty of fruit from the ground upward. The Dutch and French preserve great quantities of the large Dutch Beans for winter use, which they stew, and make good with gravy and other sauces.

There are some persons who raise these in hot-beds, in order to have them early. The only care to be taken in the management of these plants when thus raised, is to allow them room, and give them as much air as can be conveniently when the weather is mild, as also to let them have but a moderate heat; for if the bed is over hot, they will either burn or be drawn up so weak as seldom to come to good.

The manner of making the hot-bed being the same as for Cucumbers, &c. need not be repeated in this place; but only observe, when the dung is equally levelled, to lay the earth about four or five inches thick, and let the great steam of the bed pass off before you sow the seeds. The time for doing this must be proportioned to the season when you would have the Beans for the table, but the surest time for a crop is about a week in february.

The manner of saving the seeds of these plants is to let a few rows of them remain ungathered in the height of the season; for if you gather from the plants for some time, and afterwards leave the remaining for seed, their pods will not be near so long and handsome, nor will the seed be so good. In autumn, when you

find they are ripe, you should in a dry season pull up the plants, and spread them abroad to dry; after which you may thresh out the seed, and preserve it in a dry place for use.

[For forward crops of dwarf Kidney-beans, the early white and negro sorts are the best and bear the longest. For the main crop, the speckled, Battersea and Canterbury dwarfs are to be preferred, these being plentiful bearers and of long continuance.

To have a regular supply of these from the middle or end of june to october, they should be sown from the middle of april to the middle or end of july, every fortnight or three weeks.

For the first crop the soil must be dry and light, the situation warm and sheltered, the drills drawn north and south. The other crops are better in the open quarters. When the weather is very dry, the Beans to be sown should be soaked some hours in water, or the drills may be well watered immediately before the Beans are put in.

The climbing sorts or runners are not fit for early crops, but principally for summer and autumn from july to michaelmas, or till frosts put an end to them. The first or second week in may is early enough to put in the first crop of these; and the second may be planted any time in june. Two crops will furnish an abundant and constant supply.

Dwarf Kidney-beans by artificial heat.

To have early Kidney-beans, they may be forwarded in a very moderate hot-bed at the end of march, and planted out, when they are an inch or two high, and the weather is favourable, in a warm border. They may be sown on the surface in the hot-bed, or in large pots; but it is best to put them in small pots, three in each pot, because they may be turned out for transplantation, with the ball of earth about their roots, and thus be scarcely sensible of their removal. They must however be gradually inured to bear the open air, by taking off the covering whenever the weather is mild, and exposing them by degrees; refreshing them frequently with water, when they cannot have the benefit of warm showers.

After they are transplanted they should be well watered to settle the earth to their roots; and it will much forward their growth, if they are covered occasionally with hand glasses, when the nights are cold.

After all, this crop will come into bearing only a fortnight sooner than plants sown in the natural ground.

But to produce Kidney-beans for the table in april and may, or perhaps towards the end of march, they must be raised and continued in a hot-bed, which must be made by the middle or end of february. When the heat and steam are abated, and the bed is covered six or eight inches thick with mould, sow the seeds of one of the small early dwarf sorts in drills fifteen or eighteen inches asunder, an inch deep, and two or three inches apart; give them air and refresh them with water in fine weather. When they are fully grown, if they press much against the glasses, raise them at bottom to give the plants room to grow freely.

Or they may be raised on a very moderate hot-bed in december or january; and removed, when of a proper size into another hot-bed made as directed for Cucumbers; only the dung need not be so thick, less heat being required. When this bed is of a moderate warmth, lift the plants out of the other with a trowel, leaving as much earth about their roots as you can, and plant them at fourteen inches distance row from row, and four inches plant from plant. Give them a moderate watering, but afterwards be sparing of it; shade the beds from noon till the sun is near off, and give them air whenever the weather is mild. The frames should be two feet high in the back, sloping to fifteen inches in front, and the bed should be four feet broad.

In hot-houses or stoves early Kidney-beans may be had at almost any time with ease, by raising them in pots or long narrow boxes. The best sorts for this purpose are the early white, liver-coloured or speckled dwarfs. The pots or boxes filled with rich light earth

may be placed upon the top of the wall which surrounds the bark-bed, or upon shelves in any convenient part of the house. When the seeds begin to sprout moisten the mould, and when they are grown up water them frequently; or at least three times a week. Where room is wanting, the seeds may be set in small pots, and transplanted into larger ones for fruiting.]

The seeds of the more tender sorts of *Phaseolus*, which are cultivated for curiosity or ornament, should be sown in a moderate hot-bed in the spring; and when the plants come up, they must be carefully transplanted into pots filled with light fresh earth, and plunged into a hot-bed to facilitate their taking root; after which they should be inured to bear the open air by degrees, and may be removed into it at the end of June or beginning of July, in a sheltered situation. As they advance in growth, the perennial sorts must be removed into larger pots.

Some that are less tender may be sown on a warm border at the end of April; and when the plants run up, they must be supported.

[*PHASEOLUS*. See *Abrus*, *Clitoria*, *Conarus*, *Cytisus*, *Dolichos*, *Glycine*, *Hedysarum*, *Mimosa*.

PHEASANT'S-EYE. See *Adonis*.]

PHELLANDRIUM. [(Φελλος ανδριον. *Suber hominis*. Linn.)

Lin. gen. n. 353. Reich. n. 383. Schreb. n. 485.

Tournef. t. 161. Juss. 221.

Class. 5. 2. Pentandria Digynia.

Nat. order of Umbellatæ or Umbelliferæ.

GENERIC CHARACTER.

CAL. Umbel universal manifold. *Partial* similar.

Involucre universal none: *partial* seven-leaved; *leaflets* acute, the length of the umbellet.

Perianth proper, five-toothed, permanent.

COR. universal almost uniform. *Florets* all fertile, in the disk smaller.

Proper unequal: *petals* five, acuminate, cordate-inflex.

STAM. Filaments five, capillary, longer than the corolla. *Antbers* roundish.

PIST. Germ inferior. *Styles* two awl-shaped, erect, permanent. *Stigmas* blunt.

PER. none. *Fruit* ovate, even, crowned with the perianth and pistils, bipartile.

SEEDS two, ovate, smooth.

ESSENTIAL CHARACTER.

Florets of the disk smaller. *Fruit* ovate, even, crowned with the perianth and pistil.

SPECIES.

1. *Phellandrium aquaticum*. *Common Water Hemlock*.

Lin. spec. 366. Reich. 1. 701. Willd. 1444. hort.

cliff. 100. fl. suec. n. 252. Hudf. angl. 122.

Wither. arr. ed. 3. 303. Lightf. scot. 163. Relb.

cant. n. 231. Sibth. oxon. n. 304. Woodv. med.

bot. 2. 140. t. 266. Hall. belv. n. 757. Scop.

carn. n. 363. Pollich pal. n. 293. Neck. gallob.

149. Leers herborn. n. 216. Gmel. fib. 1. 208.

it. 1. 162. Hoffm. germ. 102. Fl. dan. t. 1154.

Krock. fles. n. 440. Villars dauph. 2. 619. Allion.

pedem. n. 1328. Blackw. t. 570. Plenck, ic.

t. 210.

Phellandrium. Dod. pempt. 591. Riv. pent. t. 65.—

vel Cicutaria aquatica quorundam. Baub. hist. 3.

181. Raii syn. 215. Petiv. brit. t. 28. f. 4.

Ligusticum Phellandrium. Crantz. austr. 200. Roth.

germ. 1. 123. 2. 321.

Cicutaria palustris. Lob. obs. 424. 1. ic. 1. 735. 1.

Tabern. 783. Ger. 905. emac. 1063. Raii hist.

452.—tenuifolia. Baub. pin. 161. Park. theat.

933. 6. Mor hist. f. 9. t. 7. f. 7. row 1.

Foeniculum aquaticum. Murr. appar. med. 1. 267.

β. *Millefolium aquaticum. Matth. diosc. 2. 484.—*

umbellatum coriandri folio. Baub. pin. 216.

Baub. hist. 3. 2. 9. Raii syn. 216.

Ramifications of the leaves divaricated.

2. *Phellandrium Mutellina.*

Lin. spec. 366. Juss. 286. Reich. 1. 701. Willd.

1444. Hall. belv. n. 763. (Seseli). Scop. carn.

n. 362. Jacqu. vind. 223. austr. 1. t. 56. Gmel.

fib. 1. 212.

Ligusticum Mutellina. Crantz. austr. 198.

Meum alpinum umbella purpurascens. Baub. pin.

148. Hall. epusc. 288.

Mutellina. Baub. hist. 3. 66. Camer. epit. 8. Raii

hist. 453.

Meum alp. germanicum; Mutellina dictum. Park.

theat. 889. f. 5.

Daucus montanus. Clus. pann. 700.

Stem almost naked, leaves bipinnate.

DESCRIPTIONS, &c.

1. Root biennial. Radical fibres abundant, placed in whorls at the lower joints of the stem, which they support by rooting in the mud. Stem curved at bottom, and then upright, hollow and hydraulic, four inches in thickness, smooth, striated or slightly grooved, branched, distorted, three or four feet in height. Branches divaricating. Leaves very large, triply pinnate, bright green, smooth: pinnas multifid, ovate, gash-toothletted; pinnules semipinnate, the last lobules a little wider than the nerve, lanceolate, blunt: both pinnas and pinnules branching at obtuse angles with the nerves. Petioles arising from a sheath, fistular, not keeled. Sheaths wide, augmented by a white membrane, embracing the stem. Universal umbel drooping, composed of seven, eight or nine or more unequal rays: partial closer, with a many-leaved involucre; leaflets lanceolate, linear or bristle-shaped. Proper perianth very small. Corolla small, white: petals little unequal. Fruit crowned with the little five-toothed perianth, oblong, smooth, with five red streaks^f.

Native of most parts of Europe, by the side of rivers, ditches and ponds, where there is mud; flowering in June and July.

Linneus informs us, that the horses in Sweden, by eating this plant are seized with a kind of palsy; hence Withering and Sibthorp have named it *Horsebane*. This effect however is not to be ascribed to the plant, but to a coleopterous insect breeding in the stalks, which he therefore names *Curculio paraplēcticus*. In the winter, the roots and stem, dissected by the influence of the weather, afford a curious skeleton or net-work^g. The leaves are sometimes added to discutient cataplasms; and for this purpose Boerhaave speaks highly of it. The seeds are recommended in intermittents, and are said to be diuretic, antiseptic and expectorant. The dose is from one to three drams daily^b.

The seeds, when taken in large doses, produce a sensation of weight in the head, accompanied with giddiness. They manifest an aromatic acrid taste, approaching to that of Lovage. Distilled with water, they yield an essential oil, of a pale yellow colour, and a strong penetrating smell. One pound of the seeds affords an ounce of watery extract, but nearly double this quantity of spirituous extract, of which more than three drams consists of resinⁱ.

The efficacy of this plant rests chiefly on the testimonies of Ernestingius and Lange, by whom various cases of its successful use are published, especially in wounds and inveterate ulcers, and even in cancers; also in phthisis pulmonalis, asthma, dyspepsia and intermittent fevers^k.

Dr. Woodville rightly observes, that though the disorders here noticed are so dissimilar as to afford no satisfactory evidence of the medicinal qualities of these seeds, yet they appear to be well deserving of farther investigation.

β. In running streams the leaves become divided, like those of *Ranunculus aquatilis*, in the same situation. Dillenius remarked it between Woodstock and the Duke of Marlborough's bridge at Blenheim, in such abundance as to stop the course of the stream. Also in Hackney river^l. Sometimes, though rarely, according to the remark of Mr. Relhan, when the plant grows in an angle, out of the rapid course of the stream, it produces its flowers.

^f Krock, Haller, Pollich.

^g Linn. suec.

^b Lange, Withering.

ⁱ Ernestingius.

^k Woodville.

^l Ray syn. & Withering.

2. Root thick, branched, the head crowned with bristles. Stems a foot high or less. Leaves hardish, bright green, more in length than breadth; pinnules semipinnate, the ultimate segments flat, very sharp, simple, two-lobed and three-lobed. Petals commonly purple, unequal. Fruit semioval, large, surrounded with a sort of circle, with ridges so large as that it is almost winged^m.

Linneus remarks, that it has the leaves of *Cherophyllum*; and that the involucrets are of the same length with the umbellets. Scopoli—that in the Alps it is a small plant; but becomes three times as big in a garden; and has the fruit crowned with a considerable calyx, but not with a circle. Haller says, that it has a very aromatic smell:

Native of Siberia, Austria, Carniola and Switzerland. Haller informs us, that the goodness of the Alpine pastures is estimated by the abundance of this plant. I found it in flower, in august 1779, as I passed over the Col de Balme.

It was introduced here in 1774, by the Doctors Pitcairn and Fothergillⁿ.

PHILIPÆA. See *Desfont. fl. atlant.* 60.

PHELLOS. See *Quercus*.

PHELYPÆA f. PHÆLYPÆA. Browne. See *Capraria*.

Phelypæa lusitanica & orientalis. Tournef. See *Lathræa* & *Desfont.* 61.

P. sanguinea. See *Thunb. prodr. cap.* 1.]

PHILADELPHUS. (Φιλαδέλφος of Aristotle. From Ptolemy Philadelphus King of Egypt.)

Lin. gen. n. 614. *Reich. n.* 669. *Schreb. n.* 840.

Gertn. t. 35. *Juss.* 325. *Syringa.* Tournef. 389.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Hesperideæ*. Myrti, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, four or five-parted acuminate, permanent.

COR. Petals four or five; roundish, flat, large, spreading.

STAM. Filaments twenty or twenty-five, awl-shaped, the length of the calyx. Anthers erect, four-grooved.

PIST. Germ inferior. Style filiform, four or five-parted. Stigmas simple.

PER. Capsule ovate, acuminate at both ends, naked at the top by the calyx being barked, four or five-celled: partitions contrary.

SEEDS numerous; oblong, small, decumbent, arilled, fastened to the thickened edge of the partitions. Arils club-shaped, acuminate, toothletted at the base.

ESSENTIAL CHARACTER.

Cal. four or five-parted, superior. Pet. four or five.

Caps. four or five-celled, many-seeded.

SPECIES.

1. *Philadelphus coronarius*. Common *Syringa*.

Lin. spec. 671. *Reich.* 2. 473. *hort. cliff.* 188.

ups. 122. *Gertn. fruct.* 1. 173. *Hall. helv.*

n. 1100. *Dubam. arb.* 2. t. 83. *Kniph. cent.* 5.

n. 65. *Curt. magaz.* 391. *Villars dauph.* 3. 529.

Allion. pedem. n. 1071. *Krock. siles. n.* 745.

Syringa alba. Ger. 1213. f. 1. *emac.* 1399. f. 1.

Raii hist. 1763.—f. *Philadelphus Athenæi.* *Baub.*

pin. 398.—flore albo. *Baub. hist.* —f. *simplici.*

Park. theat. t. 1467. f. 4. 1468. 4. *Beß. hort.*

exst. vern. frut. t. 2. f. 3.

Frutex coronarius. *Clus. hist.* 1. 55. f. 1.

β. *Ph. nanus.* *Mill. dict. n.* 2. *Du Roi barbk.* 2. 6.

γ. *Ph. inodorus.* *Mill. dict. n.* 3.

Leaves somewhat toothed.

[2. *Philadelphus scoparius.* Myrtle-leaved *Syringa*.

Ait. hort. kew. 2. 156.

α. *Ph. linifolius.* Narrow-leaved *Syringa*.

Melaleuca scoparia. *Lin. suppl.* 343. *Forst. escul.*

78. *flor. austral. n.* 210.

Leptospermum scoparium. *Forst. gen.* 36.

New Zealand Tea-plant. *Cook's voy. vol.* 1. 100.

t. 22.

Leaves lanceolate.

β. *Ph. myrtifolius.* Myrtle-leaved *Syringa*.

Leaves ovate elliptic.

^m Haller.

ⁿ Hort. kew.

Leaves lanceolate quite entire rigid three-nerved, all the flowers five-cleft, calycine segments coloured deciduous.

3. *Philadelphus aromaticus.* Sweet-scented *Syringa*.

¹ *Ait. hort. kew.* 2. 156.

Leaves linear-lanceolate nerveless quite entire, all the flowers five-cleft, calycine segments coloured deciduous.

4. *Philadelphus laniger.*

Ait. hort. kew. 2. 156.

α. *Ph. canescens.* Hoary *Syringa*.

Leaves oval, villose hairs canescent.

β. *Ph. piliger.* Hairy *Syringa*.

Leaves lanceolate-oblong hairy suboblique reflex at the top.

Leaves oblong acute quite entire pubescent; calyxes woolly.]

DESCRIPTIONS, &c.

1. The common or white *Syringa* or Mock Orange is a shrub that sends up a great number of slender stalks from the root, seven or eight feet in height, having a gray bark, and putting forth several short branches from their side. Leaves ovate or ovate-lanceolate; those upon the young shoots three inches and a half long, and two broad in the middle, terminating in acute points, and having several indentures on their edges; they are rough and of a deep green on their upper side, and pale on their under; stand opposite upon very short foot-stalks, and have the taste of fresh Cucumbers. The flowers come out from the side, and at the end of the branches, in loose bunches, each on a short pedicel; they are white, and have a strong scent; which at some distance resembles that of Orange-flowers; but near, it is too powerful for most persons. The flowers appear at the end of may, and continue great part of june: [this year 1799, they did not open till towards the end of june.] This shrub seldom produces seeds that ripen in this country.

[The primary flower is five-cleft in the calyx, corolla, pistil and capsule; the rest are four-cleft^o. The style in the flowering calyx is four-cleft at the tip only, but in the seeding calyx it is cloven to the very base^p. The leaves are strongly nerved underneath, and are very irregularly toothed. In a large parcel of the flowers which I have before me, there is only one which has five petals, and the fifth is very narrow and small.

Native probably of the South of Europe, though no place is assigned in any of the local Floras where it is found really wild. Linneus says, but with a doubt, about Verona. Ray observed it near Mont Saleve in Savoy, far from any house, but did not dare to pronounce it wild there. Haller and Krock speak of it only as a denizon, and Allioni as of exotic origin. Villars says it is not indigenous of Dauphiné, though it is found in hedges far from habitations.—It was cultivated in 1597 by Gerarde^q.]

β. Dwarf *Syringa* seldom rises above three feet high. The leaves are shorter, more ovate, and little indented on their edges. The flowers come out singly from the side of the branches, and have a double or treble row of petals of the same size and form as the other, and the flowers have the same scent; but flowering very rarely, it is not much esteemed.

γ. *Philadelphus inodorus*, or Carolina *Syringa* rises with a shrubby stalk about sixteen feet high, sending out slender branches from the sides, opposite to each other. Leaves smooth, shaped like those of the Pear-tree, entire, opposite, on pretty long foot-stalks. The flowers are produced at the ends of the branches; they are large but without scent; each has four white oval petals spreading open, and a large calyx composed of four acute-pointed leaflets. Capsules oval, filled with small seeds.

[Humphry Marshall, in his American Grove, gives us no information concerning this shrub; having only copied Mr. Miller's description, by which it does not seem to differ materially from the common sort.

2. Stem arboreous, very much branched, almost upright, full of chinks, ash-coloured; branches diffused, oblique, subfastigate, round, leafless, the upper ones rod-like, leafy, herbaceous at the top, silky-

^p Linn.

^q Moench, *haff. n.* 401.

^r Hort. kew.

villose.

villose. Leaves alternate, scattered, subsessile, acute, spreading, flat, even, dotted, dark green above, pale underneath. Petioles scarcely any, flattish. Flowers solitary, terminating, sessile, white, the size of Cherry-blossoms. Bractes roundish, imbricate, concave, deciduous, surrounding and covering the calyx to the middle. Perianth hemispherical, growing to the germ; the margin quite entire and elevated: segments small, ovate, concave, alternate with the petals, white, on the outside red. Petals five, orbiculate, spreading very much, flattish, inserted by a very small claw into the inner margin of the calyx, and three times as long as the leaflets of it. Filaments twenty-four, erect, half the length of the petals, inserted in a single row into the edge of the calyx. Anthers twin, roundish. Germ hemispherical, umbilicated by the calyx, somewhat convex above. Style of the same length and in the same direction with the stamens, deciduous. Capsule excavated at top, five-freaked, five-celled, five-valved, gaping at top. Seeds linear, cylindric, very slender.

Native of New Zealand, where the fresh flowering shoots were used as tea by the sailors in Captain Cook's voyage. They found the infusion sweetly aromatic and fragrant, in a short time however it became very bitter. It was supposed to be serviceable in the sea scurvy^r.—It was introduced here in 1772, and flowers in June and July^s.

3. This also is a native of New Zealand, where it was found, with the preceding, by Sir Joseph Banks. It was introduced with that in 1772, and flowers in July and August.

4. Native of New South Wales. Introduced in 1774, by Tobias Furneaux, Esq. It flowers in June and July^s.]

PROPAGATION AND CULTURE.

1. Common Syringa is extremely hardy, and will thrive in almost any soil or situation, but will grow taller in light good ground, than in that which is stiff. It is usually propagated by suckers, which are sent from the roots in great plenty. These should be taken from the old plants in autumn, and planted in a nursery, to grow one or two years till they have obtained strength, and then they may be transplanted to the places where they are designed to remain. They are commonly disposed in plantations of flowering shrubs, among others of the same growth. [The Syringa mixes very well with the Lilacs, Gelder Rose and Laburnum; and is particularly valuable from its thriving under the shade of trees, and forming a blockade against low buildings, where persons have no objection to the powerful odour.

It may be increased by cuttings, planted in October in a moist shady border: and by layers, from young twigs put into the ground at the beginning of winter; these will be rooted by the autumn following.

The other species may be increased in the same ways, but are too tender to bear the open air in our climate.]

PHILLYREA. (Φιλλυρεα of Dioscorides: from *Phillyra*, mother of Chiron; whence Ovid calls him *Phyllirius*.)

Lin. gen. n. 19. Reich. n. 19. Schreb. n. 24. Tournef. t. 367. Vaill. art. gall. 1722. Juss. 106. Gertn. t. 92.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Sepiariae*. *Jasmineae*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular, four-toothed, very small, permanent.

COR. one-petalled, funnel-form: tube scarcely any: border four-parted, revolute, acute; segments ovate.

STAM. Filaments two, opposite, short. Anthers simple, erect.

PIST. Germ superior, roundish. Style simple, the length of the stamens. Stigma thickish.

PER. Berry ovate-globular, two-celled.

SEEDS solitary, flattish on one side, convex on the other, one of them frequently abortive.

^r Forster escul.

^s Hort. kew.

^t Idem:

ESSENTIAL CHARACTER.

Cal. four-toothed. Cor. four-cleft. Berry (or Drupe) two-celled. Seeds solitary.

SPECIES.

1. *Phillyrea media*. Lance-leaved *Phillyrea*.
Lin. spec. 10. *Reich.* 1. 18. *Willd.* 42. *hort. cliff.* 4. *upf.* 5. *Ait. kew.* 1. 11. *Gertn. fruct.* 2. 71.
 α . *P. ligustrifolia*. Privet-leaved *Phillyrea*.
Mill. dict. n. 4.
P. folio Ligustri. *Baub. pin.* 476.
P. III. Clus. hist. 1. 52. fig.
Leaves oblong-lanceolate.
 β . *Ph. virgata*. Long-branched *Phillyrea*.
Ait. kew. 1. 11.
Leaves lanceolate, branches erect rod-like.
 γ . *Ph. pendula*. Drooping *Phillyrea*.
Ait. kew. 1. 11.
Leaves lanceolate, branches divaricating-pendulous.
 δ . *Ph. oleæfolia*. Olive-leaved *Phillyrea*.
Mill. dict. n. 5. *Ait. kew.* 1. 11. *Pluk. phyt. t.* 310. f. 5.
Leaves oblong-lanceolate, branches somewhat erect.
 ϵ . *Ph. buxifolia*. Box-leaved *Phillyrea*.
Ait. kew. 1. 11.
Leaves oval-oblong bluntish.
Leaves oblong-lanceolate entire and serrate.
2. *Phillyrea angustifolia*. Narrow-leaved *Phillyrea*.
Lin. spec. 10. *Reich.* 1. 18. *Willd.* 43. *hort. cliff.* 4. *Kniph. orig. cent.* 10. n. 69. *Ger. prov.* 321. *Villars dauph.* 2. 6.
 α . *Ph. lanceolata*. Common narrow-leaved *Phillyrea*.
Ait. kew. 1. 11.
P. angust. prima. *Baub. pin.* 476. *Raii hist.* 1585. 1.
Ph. IV. Clus. hist. 1. 52. fig. *Camer. epit.* 90.
Leaves lanceolate, branches straight.
 β . *Ph. rosmarinifolia*. Rosemary-leaved *Phillyrea*.
Mill. dict. n. 7. *Ait. kew.* 1. 11.
P. angust. secunda. *Baub. pin.* 476.
P. V. Clus. hist. 1. 52.
Leaves lanceolate, branches straight.
 γ . *Ph. brachiata*. Dwarf *Phillyrea*.
Ait. kew. 1. 12.
Leaves oblong-lanceolate shorter, branches divaricating.
Leaves linear-lanceolate quite entire.
3. *Phillyrea latifolia*. Broad-leaved *Phillyrea*.
Lin. spec. 10. *Reich.* 1. 18. *Willd.* 43. *hort. cliff.* 4. *upf.* 4. *Ait. kew.* 1. 12. *Ger. prov.* 321. 2.
 α . *Ph. lævis*. Smooth broad-leaved *Phillyrea*.
Ait. kew. 1. 12.
P. latifolia. *Mill. dict.* n. 1.—*lævis*. *Baub. pin.* 476.
P. arbor. Lob. ic. 2. 132. *Baub. hist.* 1. 540. fig.
Leaves ovate flat obscurely serrate.
 β . *Ph. spinosa*. Prickly broad-leaved *Phillyrea*.
Mill. dict. n. 3. *Ait. kew.* 1. 12.
P. latifolia spinosa. *Baub. pin.* 476. *Raii hist.* 1586.—*triphyllus*. *Pluk. phyt. t.* 310. f. 4.
P. I. Clus. hist. 1. 51. fig.
Leaves ovate-oblong acute finely serrate flat.
 γ . *Ph. obliqua*. Ilex-leaved *Phillyrea*.
Ait. kew. 1. 12.
P. folio leviter serrato. *Baub. pin.* 476.
P. II. Clus. hist. 1. 52. fig. *Ger.* 1210. 3.
Leaves lanceolate-acute serrate bent obliquely.
Leaves ovate-oblong subcordate serrate.

DESCRIPTIONS, &c.

[The three species of *Phillyrea* are distinguished by the form and indentations of their leaves. In the first these are lanceolate inclining to oblong, ovate, or oval, of an intermediate breadth between the two others, whence its trivial name; they are sometimes serrate, sometimes the serratures are very few, and sometimes there are none. In the second, the leaves are narrower, of a linear form, inclining more or less to lanceolate, and quite entire about the edges. In the third, they are wider, of an ovate form, more or less inclining to oblong or lanceolate, and serrate.

These shrubs are natives of the Southern countries of Europe; are Evergreens, and frequently confounded with the *Alaternus*. That however has the leaves placed alternate on the branches, whereas in this they are opposite: that also has five stamens, and this has only two, to each flower.]

1. This rises to an equal height with the third sort, which is commonly called the True Phillyrea; but the branches are more diffused, and have a darker bark: the leaves are of a darker green, are more than two inches long, and almost an inch and half broad, a little serrate on their edges, opposite on short foot-stalks. Flowers axillary, in long bunches, of an herbaceous white colour.

Mr. Miller has two other species, which are varieties of this, namely the *Privet-leaved* and *Olive-leaved*. These are of humbler growth, seldom more than eight or ten feet high.

The branches of the *Privet-leaved* are weaker, and spread wider, and are covered with a light brown bark. The leaves are stiff, almost two inches long, and half an inch broad in the middle, drawing to a point at both ends, and sit close to the branches. Flowers in little axillary clusters, small and whiter.

In the *Olive-leaved*, the branches are stronger, and spread out wider; the bark is of a lighter colour; the leaves are stiff, smooth and entire, on very short foot-stalks, of a lucid green, and terminating in a point. Flowers in clusters, on pretty long peduncles, from the axils of the young branches, small and white.

[In Mr. Aiton's catalogue of the Royal garden at Kew, where this genus is very accurately detailed, two other varieties are added, namely the *Long-branched*, with long upright branches; and the *Drooping*, with the branches hanging down and straddling.

According to Gærtner, the fruit is a superior berried Drupe, of a black colour, and terminated by the globular stigma: the rind fleshy, but thin: the shell papery, very thin, white and two-celled. Seeds one in each cell, but one of them commonly abortive, ovate, slightly acuminate at top, convex on one side, flattish or angular on the other, somewhat wrinkled, of a rufescent bay colour, fastened to the partition.]

2. Stalk ten or twelve feet high, sending out opposite branches, covered with a brown bark spotted with white. Leaves smooth, stiff, narrow, entire, sessile, about an inch and half long, and half an inch broad in the middle, drawing to a point at both ends, of a light green and pointing upwards. The flowers come out in large clusters at each joint of the branches, sitting close like whorled flowers, and almost surrounding them; they are small and white.

Rosemary-leaved Phillyrea (n. 7. of Miller) is a variety of this. It is of humbler growth, seldom rising more than four or five feet high, sending out slender, opposite, straight, branches, sparsely disposed. Leaves dark green, stiff and entire; about an inch long, and not more than an eighth of an inch broad, sessile. Flowers small, white, in clusters from the side of the branches. Berries very small, rarely ripening in England.

[The Kew catalogue adds another variety under the name of *brachiata* or *Dwarf Phillyrea*.]

3. The true Phillyrea, so called to distinguish it from the *Alaternus*, which the gardeners call simply Phillyrea; or the *Smooth broad-leaved Phillyrea*, rises with a strong upright stem to the height of eighteen or twenty feet, dividing into several branches, covered with a smooth grayish bark. Leaves entire (or obscurely serrate), firm, of a light green, an inch and half long, and an inch broad, on short foot-stalks. Flowers axillary, on each side, of an herbaceous white colour, in small clusters; they come out in march, and being small make no great appearance.

Prickly broad-leaved Phillyrea is a variety of this. It is as high as the smooth one, and sends out several strong branches, which grow erect, and are covered with a gray bark. Leaves an inch and half long, and an inch broad, firm, of a lucid green, and serrate, each ferrature ending in a spine.

[Mr. Aiton adds another variety, under the name of *obliqua*, or *Ilex-leaved Phillyrea*.

These shrubs were cultivated very early in our gardens. Gerard says that he planted them at Barne Elmes near London, belonging to the right honourable the Earl of Essex, and that he had them growing in his own garden likewise.]

PROPAGATION AND CULTURE.

These shrubs are hardy enough to thrive in the open air in England, and are never injured except the winters are very severe, which sometimes causes their leaves to fall, and kills a few of the weaker branches, but these are repaired by new shoots the following summer; so that there are but few of the evergreen-trees which are hardier than these, or that deserve more to be cultivated for pleasure.

Formerly these were either planted against walls, to which they were trained to cover them; or if they were placed as standards, their branches were sheared either into balls or pyramids, like most of the evergreen-trees; so that when the former old taste of laying out gardens was exploded, the evergreens were generally banished; and for some years there were but few sorts cultivated, whereby several valuable kinds of evergreen-trees were almost entirely lost in England, and have been with difficulty retrieved since; in the manner which the evergreen trees and shrubs are now disposed in gardens, they have a very fine effect, especially during the winter season, when the other trees are destitute of leaves.

The first, third and prickly broad-leaved sorts are very proper to intermix with other evergreen-trees of the same growth, to form clumps in parks, or to plant round the borders of woods; which are filled with deciduous trees, where in the summer time, the dark shade of these evergreens will make a fine contrast with the brighter green leaves of the deciduous trees; and in winter, when the latter are destitute of leaves, they will have a fine effect, and will be a harbour for birds. These may be trained up to stems, so as to be out of the reach of cattle, therefore may be planted in open places, where, if they are fenced against cattle till they are grown up, they may be afterwards exposed.

The others, which are of humbler growth, must be confined to gardens or other inclosures, where they may be secured from cattle, hares, rabbits, &c. otherwise they will be soon destroyed.

These plants are propagated either from seeds or layers, but the latter being the most expeditious method in England, is chiefly preferred. The best time to lay them down is in autumn, when you should dig the ground round the stems of the plants intended to be layed, making it very loose; then making choice of a smooth part of the shoot, you should make a slit upward (in the manner as is practised in laying of Carnations) and then bend the branch gently down to the ground, making a hollow place with your hand to receive it; and having placed the part which was slit into the ground, so as that the slit may be open, you should fasten it down with a forked stick that it may remain steady, covering that part of the branch with earth about three inches thick, observing to keep the upper part erect. You must keep them clear from weeds the spring and summer following, which, if suffered to grow up amongst them, will prevent their taking root.

The autumn following most of these plants will be rooted, at which time they may be taken off, and carefully planted in a nursery, where they may be trained up three or four years in the manner you intend them to grow; during which time dig the ground between the rows, and cut about the roots of the plants every year, which will cause them to strike out strong fibres, so as to support a good ball of earth when they are removed; also support their stems with stakes, in order to make them straight, otherwise they are very apt to grow crooked and unsightly.

When the plants have been thus managed three or four years, transplant them into the places where they are designed to remain. The best time for this work is the end of september, or the beginning of october; but in removing them, dig round their roots, and cut off all downright or strong roots, which have shot out to a great distance, that you may the better preserve a ball of earth to each plant, otherwise they are subject to miscarry; and when you have placed them in their new quarters, lay some mulch upon the surface of the ground to prevent its drying. You should also

support the plants with stakes, until they have taken fast hold of the earth, to prevent their being turned out of the ground, or displaced by the winds, which will destroy the fibres that were newly put out, and greatly injure the plants. These trees delight in a middling soil, which is neither too wet and stiff, nor too dry, though the latter is to be preferred to the former, provided it be fresh.

Those sorts with small leaves are commonly two years before they take root when laid, therefore they should not be disturbed, for the raising them out of the ground greatly retards their rooting.

If these plants are propagated by seeds, they should be sown in the autumn soon after they are ripe, for when they are kept out of the ground till spring, they do not grow the first year. The seeds will do best if they are sown in pots or boxes filled with light loamy earth, and placed under a garden frame where they may be screened from hard frost, but always exposed to the open air in mild weather. If the seeds are sown early in the autumn, the plants will appear in the spring; but if they should not come up, the pots should be plunged into the ground in an east border, where they may only have the morning sun, in which situation they should remain the following summer: during which time they may be constantly kept clean from weeds, and in the autumn removed again under a frame for shelter in winter, and the spring following the plants will certainly come up, if the seeds were good. Towards the middle of april, the pots should be again plunged into the ground on an east border, to prevent the air from drying the earth through the pots, which is generally the case when the pots stand upon the ground; so that they must then be frequently watered, which should not be practised to these plants where it can be avoided. The michaelmas following the plants should be carefully taken out of the pots, and planted in a nursery-bed, covering the surface with old tan to keep out the frost; and if the winter prove severe, they should be covered with mats, afterwards they may be treated as the layers.

[PHILLYREA. See *Cassine*, *Ligustrum*, *Myrtus*.

PHILLYREASTRUM. See *Morinda*.

PHILYDRUM. (From *φίλος* and *ὕδωρ*, water-loving.)

Lin. gen. Schreb. n. 1703. p. 782. Gertn. t. 16. Banks.

Class. 1. 1. Monandria Monogynia.

GENERIC CHARACTER.

CAL. *Spathe* one-leaved, ovate, acuminate, longer than the corolla.

Perianth none.

COR. *Petals* four: two outer larger, ovate; two inner smaller by half, lanceolate.

STAM. *Filament* single, free, awl-shaped. *Anther* fastened on both sides to the filament above the middle; cells subglobular.

PIST. *Germ* superior, oblong. *Style*.

PER. *Capsule* oblong, obsoletely three-sided, three-celled, three-valved: *partitions* contrary.

SEEDS very numerous, irregularly shaped like saw-dust.

ESSENTIAL CHARACTER.

Spathe one-flowered. *Perianth* none. *Cor.* four-petalled, irregular. *Caps.* three-celled, many-seeded.

SPECIES.

1. *Philydrum lanuginosum*.

Gertn. fruct. 1. 62. t. 16. Lin. spec. ed. Willd. 17. *Garciana cochinchinensis*. Lour. cochinch. 15. ed. Willd. 20.

DESCRIPTION, &c.

Root perennial. Stem two feet high, herbaceous, quite simple, spongy, upright, round, woolly. Leaves awl-shaped, thick, woolly, upright. Racemes long, upright, terminating. Flowers peduncled, golden, supported by short acuminate hirsute spathes^a. Capsule superior, woolly, with the valves having the partition in the middle. Seeds extremely minute, subcylindric, rugged all about with irregular tubercles, of a dusky ferruginous colour, at top blunt, and as it were capped, at bottom lengthened out into a membranaceous, pale whitish, deeply concave umbilicus;

^a Willdenow and Loureiro.

they are fastened in a horizontal situation into the central thickened rim of the partitions^{*}.

Native of China and CochinChina in wet places. Loureiro sent it to Europe from the latter in the year 1774.

PHLEGMARIA. See *Lycopodium*.

PHLEUM. (Φλεον or φλεως of Theophrastus. Phleos of Pliny.)

Lin. gen. n. 77. Reich. n. 83. Schreb. n. 109.

Gertn. t. 1. Juss. 29. Fl. rust. t. 5. Engl. bot. t. 519.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. *Glume* one-flowered, two-valved, oblong, linear, compressed, gaping with two cusps at top: valves straight, concave, compressed, embracing, equal, truncated, mucronated at the top of the keel.

COR. two valved, shorter than the calyx: outer valve embracing the inner which is smaller.

Nectary two-leaved: leaflets ovate, concave, acute.

STAM. *Filaments* three, capillary, longer than the calyx.

Antthers oblong, forked.

PIST. *Germ* roundish. *Styles* two, capillary, reflex. *Stigmas* feathered.

PER. none. *Calyx* and *Corolla* inclosing the seed.

SEED single, roundish.

OBS. In *Ph. arenarium* and other species, the flowers are ovate-lanceolate.

ESSENTIAL CHARACTER.

Cal. two-valved, sessile, linear, truncated, with a two-cusped tip. *Cor.* inclosed.

SPECIES.

1. *Phleum pratense*. Meadow-Cat's-tail Grass.

Lin. spec. 87. syst. 107. Reich. 1. 162. fl. lapp.

n. 26. succ. n. 56. hort. cliff. 22. Hudf. angl. 25.

Wither. arr. ed. 3. 117. Relb. cant. n. 43. Sibth.

oxon. n. 104. Fl. rust. t. 5. Hall. belv. n. 1528.

Pollich pal. n. 62. Gunn. norv. n. 60. Leers

herborn. n. 46. t. 3. f. 1. Villars dauph. 2. 62.

Scop. carn. n. 74. Neck. gallob. 34. Krock. fles.

n. 102. Gmel. fib. 1. 89. n. 16. Desfont. atlant.

61. Schreb. gram. 102. t. 14. f. 1, 2. Mus.

rust. 5. t. 1. f. 1. Monti 49. ic. n. 52.

Gramen typhoides asperum primum. Baub. pin. 4. prodr. 10. 1. theat. 49. 1.

Gr. typh. maximum spica longissima. Baub. pin. 4.

Scheuch. gram. 60. t. 2. f. 5. a, b. Mor. hist. 3. 188.

f. 8. t. 4. f. 1, 2. row 3. Vaill. par. 83.

Gr. typh. majus. Ger. 10. f. 1. emac. 11. n. 1. Raii hist. 1267. 2. syn. 398. 1.

Gr. typhoides maximum. Park. theat. 1169. n. 1. 1170. f. 1.—item, medium f. vulgatissimum.

1170. 2.

Gr. cum cauda muris majoris longa, majus. Baub. hist. 2. 472. ic.

β. *Gr. typh. minus*. Ger. 10. n. & f. 2. emac. 11. n. 2. t. 12. Park. theat. 1170. n. & f. 3. Raii hist.

1267. 3. syn. 398. 2. Schreb. gram. 14. f. 3, 4, 5.

Fl. dan. t. 380. Leers, t. 3. f. 2.

Gr. typhoides asperum alterum. Baub. pin. 4. theat. 52. Mor. f. 3.

Gr. cum cauda muris minus. Baub. hist. 2. 472. 3. The smaller Cat's-tail Grass.

γ. *Gr. cum parva cauda muris, radice nodosa repens*. Baub. hist. Raii hist. 1267. 1.

Gr. nodosum. Hudf. angl. γ.—spica parva. Baub. pin. 2. prodr. 3. theat. 20. Ger. emac. 11. n. 3.

Spike cylindric, calyx ciliate awned, culm erect.

2. *Phleum alpinum*. Alpine Cat's-tail Grass.

Lin. spec. 88. syst. 108. Reich. 1. 163. Willd. 355.

fl. lapp. n. 25. succ. n. 57. Wither. arr. ed. 3.

119. Engl. bot. 519. Hall. belv. n. 1529. Fl.

dan. t. 213. Jacqu. vind. 12. Scop. carn. n. 75.

Villars dauph. 2. 62. Krock. fles. n. 100. t. 20. a.

Gr. typhoides alpinum, spica brevi densa & velut villosa. Scheuch. gram. 64. t. 3.

Spike ovate-cylindrical, awns about as long as the glumes.

* Gartner.

3. *Phleom Gerardi*.

Lin. spec. ed. Willd. 355. Ger. prov. 78. n. 4.

Allion. pedem. n. 2135. Jacqu. ic. rar. 2. t. 301.

Ph. capitatum. Scop. carn. n. 79.

Gr. montanum spicatum, tuberosa radice. Tournéf. inst. 519.

Spike roundish, glumes ciliate, culm simple, sheaths of the leaves ventricose.

4. *Phleum nodosum. Knobbed-rooted Cat's-tail Grass.*

Lin. spec. 88. fyst. 108. Reich. 1. 163. Willd. 355.

Wither. arr. ed. 3. 118. Sibth. oxon. n. 105?

Gartn. fruct. 1. 1. Hall. herb. 1530. Pollich

pal. n. 63. D'Affo arag. n. 50. Barrel. t. 22.

f. 1, 2. Petiv. 2. gram. ital. 4. 2. Mor. hist. row, 2. 1.

Gr. nodosum spica parva. Baub. pin. 2. prodr. 6. theat. 20.

Spike cylindrical, culm ascending, leaves oblique, root bulbose.

DESCRIPTIONS, &c.

1. Root perennial. Culms from one foot to two or three feet in height in moist meadows, but in dry soils much lower, upright, round, and smooth. Leaves lanceolate, pointed, rough on the upper surface and along the nerve: sheath streaked, smooth. Spike regularly cylindric, and blunt at the top, sometimes five or six inches long, but usually, in its wild state, much shorter: at first sight it bears some resemblance to that of Fox-tail Grass; but on examination it will be found very different in form, colour, &c. It is also rough, whereas that is smooth; and the two horns at the top of the truncate calyx, betray it immediately. The flowers are very close set on the spike. Peduncles very short, somewhat branched: pedicels scarcely perceptible, confluent at the base, two-flowered. Valves of the calyx with bristle-bearing dots, three-nerved, compressed, cusped; the keel fringed with white, spreading, flexuose bristles, alternately longer and shorter, the upper ones forked. Outer valve of the corolla five-nerved, naked, sharpish, crenulate. Nectaries ovate, acuminate, surrounding the germ at the base. Anthers first violet, then ash-coloured.

This grass varies much in size, and in the length of the spike: it has also a leafy spike, in common with many other Grasses, occasioned by the seeds germinating in wet weather without falling. Professor John Martyn observed it in this state, during the month of October, on the banks of the river Wandle near Wandsworth. A variety with a bulbous root is set down for a distinct species. This swelling of the root is a very equivocal character among Grasses, and *Ph. pratense* is much given to it; but Linneus's *Ph. nodosum* may probably be a distinct species.

Johnson, in his edition of Gerard's Herbal, says that it may be found with a bulbous root, by the bridge entering into Chelsey field, as one goeth from S. James to little Chelsey.

Meadow Cat's-tail Grass was much recommended about thirty years ago, under the name of *Timothy Grass*: and Mr. Wych is said to have brought it from Virginia in 1763. It received this quaint appellation from Mr. Timothy Hanson, who is said first to have brought the seeds of it from New York to Carolina. It had then a great character in North America, where it is called *Herd Grass*. Its reputation here was short-lived, and it has no one good property in which it is not excelled by Fox-tail Grass; but besides this it is harsh, and late in its appearance. It is proper only for moist lands; in a dry soil it makes a pitiful appearance.

Some foreign writers speak well of this grass; Leers says it is very grateful to horses—Krocker that both horses and kine are fond of it green and in hay—Villars that it affords excellent forage. Our writers are of a different opinion: Dr. Pulteney says, that notwithstanding the character which this grass acquired from the recommendation of Rocque, sheep dislike it, and cows or horses are not fond of it—Mr. Swayne, that it is a hard coarse grass, of little value for cattle—Mr. Curtis, that it is productive, but coarse and late, and

that it has no excellence which Fox-tail Grass does not possess in an equal degree.

In moist grounds, kept down very close by stock; it might however answer; with other coarse Grasses; such as *Tall Oat* and *Orchard Grass* (*Dactylis glomerata*.)

2. Root perennial, inclined to creeping; and a little tuberous. Stem mostly solitary, simple, ascending, a foot or more in height; leafy below; naked; smooth; striated, and very straight above. Leaves broadish, sharp-pointed, rough in the margin. Stipules very short, triangular and less abrupt than in the preceding: Sheaths of the upper leaves inflated, and longer than the leaves themselves. Spikes scarcely an inch long, ovate or nearly cylindrical, obtuse, tinged with dull purple, of which hue the straw and sheaths of the leaves mostly partake. Glumes of the calyx ciliated with long hairs, and a little divaricated; keel green: the awns which terminate them being almost, if not quite as long as the glumes, distinguish this species from *pratense*, in which they are very short. Corolla of two unequal valves, of which the largest is ribbed and bearded.

Native of the mountains of Lapland, Switzerland, &c. In Britain, it was first discovered near Garway Moor in Scotland; and probably may be found in similar situations in other parts of our island, since it makes a principal part of the turf in the most elevated pastures of Switzerland. It flowers with us at the end of July.

3. Root perennial, with an oblong bulb, transverse and woody as it grows old, rooting deeply with blackish fibres springing from the lower part of the transverse tuber. Culm a foot high, simple, straight, or procumbent at bottom, above almost naked. Root-leaves four or five, much narrower, and smooth. Stem-leaves about two, very short, distant, with sheaths much longer than the leaf, large, widened, the upper sheath extremely ventricose. Spike in the flowering plant naked, and remote from the upper leaf, ovate, close, villose. Florets sessile: calycine valves equal, keeled, villose, manifestly ciliate at the sides, whitish, variegated with green stains, having a short awn at the tip. One valve of the corolla very wide, truncate, putting forth from the back a little longer awn than is curved inwards: the other linear, very narrow, and scarcely visible. Filaments extremely slender. Pistil roundish. This Grass might be referred to *Alopecurus*, one valve of the corolla being scarcely discernible; the other convoluted and involving the genitals; but the truncate calyx determines it to be a species of *Phleum*, of which it has also the habit.

Native of the high mountains of Provence, Italy, Carniola, Styria, and of the Pyrenees.

4. According to Linneus this resembles *Ph. pratense*; but the root is bulbous; the culm not upright, but ascending, and covered by the sheaths of the leaves; which point in opposite directions, and are smooth, except at the edges; the spike is smooth, and the anthers are white.

Mr. Swayne remarks, that the lower joints of the culm swell into tubers, but the root is not bulbous. According to Dr. Withering, there are three or four bulbs on the culm, half an inch asunder; and two lanceolate scales to each bulbous joint; the culm is not only ascending but knee-bent; and the leaves are narrower than in the common Cat's-tail Grass.

Notwithstanding we are told by Hudson and Leers that this in a rich soil becomes *Ph. pratense*, I am not quite satisfied, says Dr. Withering, that these respectable authors may not have fallen into a mistake from having considered variety γ of the first species as the *Ph. nodosum* of Linneus: but that is a very common plant in England, whilst the true Linnean *nodosum* is rare.

The only specimen I have seen of *Ph. nodosum*, adds Dr. Withering, was sent by the Rev. Mr. Swayne, author of the *Gramina pascua*, a work extremely well calculated to spread a useful knowledge of the Grasses amongst the farmers, as well as to instruct the country

gentlemen in the best means of ameliorating our pasture lands. If my approbation could add any weight to so respectable a testimony to the usefulness of Mr. Swayne's work, I should be happy to give it. He found this Grass, on the top of a wall about six miles from Bath, on the Warminster road. I am doubtful whether some of the synonyms which I have given, belong to this, or to variety γ of *Phl. pratense*.

PROPAGATION AND CULTURE.

See GRASS.

PHLEUM. See *Alopecurus*, *Cynosurus*, *Phalaris*.—— *africanum*, *Loureiro*, a very different species from *Phleum pratense*.—— *arenarium*. See *Phalaris arenaria*.—— *cochinchenense*. Probably a species of *Paspalum*. *Willdenow*.—— *Schoenoides*. See *Cryptis*.]PHLOMIS. (*Φλωμος* of *Dioscorides*, *Linn.* In *Aristotle* *πλωμος*, in *Suidas* *φλωμος*, which is the same with *φλονος*, from *φλεγω*, *q. φλογος*.—*Φλωμις* and *φλονιτις*, the same with *ονωνις*. *Dioscor.* 3. 147. *φλονιδες* scales. *Lexicon*.)*Lin. gen.* n. 723. *Reich.* n. 781. *Schreb.* n. 978.*Tournef.* t. 82. *Juss.* 114. *Gartn.* t. 66.Class. 14. 1. *Didynamia Gymnospermia*.Nat. order of *Verticillatae* or *Labiatae*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, tubular, oblong, five-cornered, toothed, permanent. *Involucre* below the whorl.

COR. one-petalled, ringent: tube oblong: upper lip ovate, vaulted, incumbent, compressed, villose, obsoletely bifid: lower lip trifid: the middle segment larger, two-lobed, blunt; the side ones small, more acute.

STAM. Filaments four, concealed under the upper lip, of which two are longer. Anthers oblong.

PIST. Germ four-parted. Style the length and situation of the stamens. Stigma bifid, acute: the lower cleft longer.

PER. none. Calyx containing the seeds at the bottom.

SEEDS four, oblong, three-sided.

OBS. It differs from *Leonurus* by the want of points on the anthers.

The figure of the calyx and lips of the corolla varies.

ESSENTIAL CHARACTER.

Cal. angular. Cor. upper lip incumbent, compressed, villose.

SPECIES.

1. *Phlomis fruticosa*. Shrubby *Phlomis* or *Jerusalem Sage*. *Lin. spec.* 818. *Reich.* 3. 69. *hort. cliff.* 315. *ups.* 171. *Kniph. cent.* 1. n. 61. *Sabb. hort. rom.* 3. t. 15.

α. *Verbascum latis Salviæ foliis*. *Baub. pin.* 240. *Raii hist.* 511. *Ger. emac.* 767. f. 2.

P. angustifolia. *Mill. dict.* n. 2.Salvia fruticosa lutea latifolia. *Park. theat.* 52. f. 11.Verbascum sylvestre alterum. *Dod. pempt.* 146.Narrow-leaved shrubby *Phlomis*.

- β. P. latifolia. *Mill. dict.* n. 3.—capitata lutea grandiflora. *Dill. elth.* 316. t. 237. f. 306.

P. cretica frut. folio subrotundo flore luteo. *Tournef. cor.* 10. *Kniph. cent.* 3. n. 71.Broad-leaved shrubby *Phlomis*.

Leaves roundish tomentose crenate, involucre lanceolate, stem shrubby.

2. *Phlomis purpurea*. Sharp-leaved Purple *Phlomis*.

Lin. spec. ed. 1. 585. *syft. ed.* 10. 1101. *Smith spicil.* 6. t. 7.P. fruticosa lusitanica, flore purpurascens, foliis acutioribus. *Tournef. inst.* 178. *Barrel. ic.* 405.

Bractes lanceolate acute pungent, calyxes five-cornered acuminate, leaves underneath very closely woolly.

3. *Phlomis italica*. Blunt-leaved Purple *Phlomis*.

Lin. syft. ed. 10. 1102. *Smith spicil.* 6.P. purpurea. *Lin. spec. ed.* 2. 818.P. rotundifolia. *Mill. dict.* n. 13. fig. t. 202.P. fruticosa, flore purpureo, foliis rotundioribus. *Tournef. inst.* 178.Verbascum subrotundo Salviæ folio. *Baub. pin.* 240.Salvia fruticosa, Cisti folio haud incano, floribus purpureis. *Pluk. phyt.* t. 57. f. 6.

Bractes lanceolate obtuse unarmed, calyxes truncate pointed, leaves woolly on both sides.

4. *Phlomis Nissolii*.

Lin. spec. 819. *syft.* 539. *Reich.* 3. 70. *Mill. fig.* t. 204.P. orientalis, foliis auriculatis incanis, flore luteo. *Nissol.*

Root-leaves cordate-sagittate tomentose villose on both sides.

5. *Phlomis Lychnitis*: Sage-leaved *Phlomis*.

Lin. spec. 819. *Reich.* 3. 70. *Mill. fig.* t. 203.*Sauv. monsp.* 143. *Ger. prov.* 264. 2. *Villars**dauph.* 2. 393. *Clus. hist.* 2. 27. *D'Affo arag.*

n. 536.

Verbascum angustis Salviæ foliis. *Baub. pin.* 240.*Raii hist.* 511.V. sylvestre, fol. Salviæ tenuifoliae. *Lob. ic.* 558.—monspeliense, flore luteo hiant. *Baub. hist.* 3. 307.Salvia fruticosa lutea angustifolia. *Park. theat.* 51.

f. 10.

Stachys prælongo angustior; folio, flore luteo. *Barrel.**ic.* 1321.

Leaves lanceolate tomentose, floral leaves ovate, involucre bristle-shaped woolly.

6. *Phlomis laciniata*. Jagged-leaved *Phlomis*.

Lin. spec. 819. *Reich.* 3. 70.P. orientalis, foliis laciniatis. *Tournef. cor.* 10.

Leaves alternately pinnate, leaflets jagged, calyxes woolly.

7. *Phlomis famia*.

Lin. spec. 819. *Reich.* 3. 70. *hort. cliff.* 315.*Desfont. atlant.* 25.

Leaves ovate tomentose underneath, involucre awl-shaped strict three-parted.

8. *Phlomis Herba venti*. Rough-leaved *Phlomis*.

Lin. spec. 819. *Reich.* 3. 70. *hort. cliff.* 315. *ups.*171. *Pallas it.* 1. 154. *Ger. prov.* 264. 1.*Villars dauph.* 2. 393. *Sabb. hort.* 3. t. 17.

P. narbonensis Hormini folio, flore purpurascens.

Tournef. inst. 178. *Garid.* 360.Marrubium nigrum longifolium. *Baub. pin.* 230.Herba venti monspeliensis. *Baub. hist.* 3. 854.

Involucre bristle-shaped hispid, leaves ovate-oblong rugged, stem herbaceous.

9. *Phlomis tuberosa*. Tuberous *Phlomis*.

Lin. spec. 819. *Reich.* 3. 71. *hort. ups.* 171. *Gartn.**fruct.* 1. 319. *Gmel. it.* 2. *præf.* p. 6. *Pallas**it.* 1. 319. *Kniph. cent.* 4. n. 61. *Gmel. sib.* 3.241. n. 73. *Hall. comm. goett.* 1751. t. 11. *Amm.**ruth.* 49. n. 48.Galeopsis maxima, foliis Hormini. *Buxb. cent.* 1. 4. t. 6.

Involucre hispid awl-shaped, leaves cordate rugged, stem herbaceous.

- [10. *Phlomis zeylanica*. White *Phlomis*.

Lin. spec. 820. *syft.* 539. *Reich.* 3. 71. *fl. zeyl.*n. 227. (*Leonurus*). *Jacqu. ic.* *Pluk. phyt.* t. 118.f. 4. (*Cardiaca*).Herba admirationis. *Rumph. amb.* 6. 39. t. 16. f. 1.β. *Leonurus indicus*. *Lin. spec.* 817. *syft.* 539. *Reich.*

71.

Leaves lanceolate subserrate, heads terminating, calyxes eight-toothed.

11. *Phlomis caribæa*. West Indian *Phlomis*.

Jacqu. collect. 1. 154. *Ait. hort. kew.* 2. 309.P. martinicensis. *Swartz prodr.* 88.Clinopodium martinicense. *Jacqu. amer.* 173. t. 177. f. 75.

Leaves ovate-lanceolate villose, whorls roundish very close, involucre bristle-shaped hirsute, stem herbaceous.

12. *Phlomis urticifolia*. Nettle-leaved *Phlomis*.

Vahl symb. 3. 76.

Leaves ovate serrate canescent, involucre awl-shaped, calyxes obliquely truncate membranaceous nine-toothed.

13. *Phlomis indica*. East Indian *Phlomis*.

Lin. spec. 820. *syft.* 540. *Reich.* 3. 72.

Involucre linear, calyxes one-lipped oblique, leaves ovate hairy.

14. *Phlomis moluccoides*.

Vahl symb. 1. 42. t. 14. *Forsk. descr.* 107. (*Clinopodium*).

Leaves ovate, involucre bristle-shaped, the lower lip of the calyx rounded large membranaceous.

15. *Phlomis*

15. *Phlomis glabrata*.
Vahl symb. 1. 42.
Leaves ovate ferrate, lower lip of the calyx produced three-toothed, branches reversely hairy.
16. *Phlomis alba*.
Vahl symb. 1. 43. *Forst. descr.* 107.
Leaves ovate ferrate villose, calyxes five-toothed oblique.
17. *Phlomis biflora*.
Vahl symb. 3. 77. *Herm. zeyl.* 65. (*Lamium*). *Burm. zeyl.* 140. t. 63. f. 1. (*Leucas*).
Leaves ovate ferrate, calyxes solitary opposite ten-toothed.
18. *Phlomis nepetifolia*. *Cat-mint-leaved Phlomis*.
Lin. spec. 820. *syft.* 540. *Reich.* 3. 72. *suppl.* 274. *hort. cliff.* 312. (*Leonurus*). *Herm. lugdb.* 115. t. 117. (*Cardiaca*).
Leaves cordate acute ferrate subtomentose, calyxes six or eight-toothed, upper and lower tooth larger, stem herbaceous.
19. *Phlomis Leonurus*. *Narrow-leaved Phlomis, or Lion's-tail*.
Lin. spec. 820. *syft.* 540. *Reich.* 3. 72. *mant.* 412. *Berg. cap.* 151. *Knorr. del. hort.* 2. t. L. *Sabb. hort.* 3. t. 44. *Kniph. cent.* 2. n. 54.]
Leonurus africana. *Mill. dict. n.* 1. *Lin. hort. cliff.* 312.
L. capitis bonæ spei. *Brèyn. cent.* 171. t. 86. *Seba mus.* 1. 22. t. 14. f. 1.
Leaves lanceolate ferrate, calyxes ten-cornered ten-toothed pointless, stem shrubby.
20. *Phlomis Leonitis*. *Dwarf shrubby Phlomis*.
Lin. syft. 541. *Reich.* 3. 73. *mant.* 83.
Leonurus minor capitis bonæ spei. *Boerb. lugdb.* 1. 180. *Mill. fig. t.* 162. f. 1. *Dict. n.* 2.
Stachys africana frutescens, Melissæ foliis, floribus brevioribus phœniceis. *Mor. hist.* 3. 383.
Leaves ovate blunt subtomentose crenate, calyxes seven-toothed awned, stem shrubby.
- [21. *Phlomis chinensis*.
Retz. obs. 2. 19. n. 59.
Leaves ovate ferrate tomentose-silky, calyxes in whorls ten-toothed.
22. *Phlomis biloba*.
Desfont. atlant. 2. 25. t. 127.
Leaves ovate-oblong tomentose, from four to six flowers in a whorl, calyxes half-five-cleft, villose-wool-bearing, upper lip of the corollas two-parted.]

DESCRIPTIONS, &c.

1. Mr. Miller makes three species of this. The first has a pretty thick shrubby stalk, covered with a loose bark, rising five or six feet in height, and dividing into many irregular branches, which are four-cornered and woolly when young, and afterwards become woody: their joints are pretty far asunder; at each of these are placed two roundish leaves opposite, on short foot-stalks; they are woolly on their under side. The flowers come out in thick whorls round the stalks, and are yellow; they appear from June to August; but the seeds very rarely ripen here. It grows naturally in Spain and Sicily.

α. Narrow-leaved Shrubby *Phlomis* or Jerusalem Sage does not rise so high as the other; the branches are weaker; the leaves longer, narrower and rounder; the whorls of flowers smaller, but the flowers of the same shape and colour. These have been long propagated in the English gardens. [Gerarde cultivated them in 1597. He calls them *French Sage* and *Sage Mullein*.]

β. This has a shrubby stalk like the former, but much lower, seldom rising more than three feet and a half high, sending out branches on every side. Leaves hoary, broader than either of the former, of an oblong ovate form, on pretty long foot-stalks and whiter. Whorls large, with bigger flowers, the upper lip of which is very hairy.

[Dillenius describes the stems as from a foot to two feet in height, woody and upright; branches opposite, quadrangular, villose; leaves thick, at first hoary, but afterwards green on the upper surface; those on the flowering branches are green on both sides, on shorter and wider petioles, bluntly notched about the edge, but the notches scarcely visible, especially on the upper ones; the surface wrinkled and hirsute: the twigs

on which the flowers grow are commonly curved in and reclined: whorls on each shoot two or sometimes only one, terminating the uppermost branchlets, composed of several broadish, hirsute leaflets, and large flowers of a dusky yellow colour, in a wide head.

2. Stem rather shrubby, erect, branched, slightly quadrangular, covered with thick wool, especially the younger branches. Leaves opposite, ovate-oblong, obtuse, crenate, netted-veined, woolly on both sides; but most on the under one; the lowermost cut off at the base, but not heart-shaped; on long foot-stalks; the upper ones on shorter. Foot-stalks channelled, very woolly: the wool of the whole plant is formed like little stars, as in various species of this genus and several others. Stipules none. Whorls sessile in the axils of the upper leaves, consisting of six or eight flowers. Bractes several, as long as the calyx, somewhat imbricate, ending in a hard, sharp point, rigid, concave, three-nerved, externally woolly, but smooth on the inside. Flowers sessile, the same size with those of *P. fruticosa*, but pale purple. Calyx regular, a little swelling, five-cleft in the margin; segments sharp-pointed, erect: externally woolly, hairy at the angles and in the orifice. Corolla twice as long as the calyx: tube contracted in the middle: upper lip large, downy, hairy in the margin; lower lip nearly twice as long, hanging down, paler, veined, five-lobed; its outermost lobes acute, middle ones small and obtuse, odd one largest and notched at the tip. Seeds prismatic, dotted at the top, brown.—This plant has a soapy smell, like the preceding.

This is the true *Ph. purpurea*, intended by Linneus, in the first edition of *Species Plantarum*, but confounded in the second edition with another species, which is the next following.

Native of Spain. Barrelier found it in Valentia. Dr. Smith had it from the garden of John Coakley Lettson, M. D. It flowers in June.

3. The leaves are less distinctly veined on the under side, in this species, than in the real *P. purpurea*, and almost equally woolly on both sides, instead of being green on the upper; the lowermost are heart-shaped at the base. Bractes blunt, by no means pungent; half as long as the calyx, which is also remarkably obtuse.

Native of Italy and Portugal. Common in our gardens^b; and cultivated by Mr. Edward Morgan about 1661. It flowers from June to August^c.

4. Root-leaves deeply cordate, oblong, bluntish: floral-leaves ovate. Calyxes hirsute. Involucres none^d.]

Root perennial, as are also the lower leaves, which do not arise from the root immediately, but stand in clusters upon short trailing woolly branches; they are placed without order on very long downy foot-stalks; are heart-shaped, downy on both sides, four inches long, and two broad towards the base. Stalks annual, slender, a foot high. Leaves ovate-lanceolate, decreasing in size to the top, where they are not half an inch long. These stalks generally send out two side branches opposite, near the bottom, and from this division to the top, have thin whorls of yellow flowers, not closely joined together, but each flower stands separate. Calyxes ovate, very downy, and closely shut up. The flowers appear in June and July, but there are seldom any seeds produced in England. It grows naturally in the Archipelago, and also in Spain, from both which countries Mr. Miller received the seeds. [It was cultivated by him in 1759.

5. This has the habit of the first species, but the leaves are narrower; the corolla is scarcely bigger than the calyx. Involucres linear, crinite with long hairs^e.

Root hard, thick, twisted. Leaves oblong, russet-coloured, cottony. Flowers of a golden colour, handsome and very apparent^f. Bractes cordate, acuminate. The dry leaves are used for wicks^g; hence the trivial *Lychnitis*, and the Spanish *Candilera*.]

Root perennial. Root-leaves long, narrow, woolly, in tufts, enveloped at their base in a common covering, soft to the touch and procumbent. Stalks annual,

^b Smith.^c Hort. kew.^d Linn. spec. & syft.^e Linn. spec.^f Villars.^g D'Affo.

slender, near two feet long; their joints are far asunder; at each of these is a pair of ovate leaves, embracing the stalk with their base. The whorls of flowers are also encompassed by these leaves, and within them is a radiated bristly involucre, which covers the flowers. The lower leaves remain all the year.

Native of the South of France, Italy, Spain [and Portugal.—Cultivated in 1731, by Mr. Miller. It flowers from June to August^b.]

6. Root perennial. Stalk a foot and half high, decays in the autumn, but the lower leaves continue all the year. Stem-leaves of the same shape with the lower, but smaller. Flowers in whorls: calyx downy: corolla of a dusky purple colour: they appear in June, but the seeds do not ripen here. It was discovered by Tournefort in the Levant, whence he sent the seeds to the Royal garden at Paris. [It was cultivated in 1731, by Mr. Miller¹.]

7. Stem upright, hirsute, four-cornered, herbaceous. Leaves very large, petioled, cordate, crenate, sharpish; above greenish, with very short, scarcely visible villose hairs scattered about; beneath tomentose, hoary. Petioles hirsute. Whorls many-flowered, axillary and terminating. Bractes (involucre) numerous, rigid, mucronate, pungent, pubescent, the length of the calyx; which is pubescent, coriaceous, five-cleft, ten streaked, the streaks alternately larger and smaller; segments awl-shaped, mucronate: corolla violet-coloured, of the same size and shape with that of *P. fruticosa*, villose-tomentose^k.]

Root perennial. Root-leaves three inches long, and an inch and half broad at the base, ending in acute points; they are downy, and have five strong veins on their under sides. Stalks annual, a foot and half high: at each joint a pair of leaves of the same form, but smaller. Involucres cut into segments, and closely shut. This and the preceding, having been trusted to warm borders, were destroyed by the severe winter of 1740.

[It was discovered by Tournefort in the island of Samos; and Desfontaines has since found it in Barbary. Mr. Miller cultivated it in 1743.]

8. Root perennial: when large it sends up a great number of square stalks, covered with a hairy down, and having sessile leaves on them. Corolla bright purple.

[Root blackish. Leaves wide, crenate, dusky, and not very villose. Stems high and branched. Flowers red, dusky, and somewhat villose. A variety with yellow flowers is figured in Russell's Aleppo, t. 16.]

Native of the South of France; Miller adds Italy; Linneus, Persia and Tartary. D'Affo found it in Arragon.—It was cultivated in 1683, by Sutherland; and flowers from July to September¹.

9. Root tuberous. Teeth of the calyx spreading, hispid. Helmet of the corolla toothed^m. Seeds ovate-oblong, somewhat convex on one side, angular on the other, truncate above and hispid with white star-like bristles, acuminate below, smooth, ferruginous or deep chestnut colour: navel at the base of the seed simple^{*}.]

Stalks purple, four-cornered, five or six feet high. Leaves six inches long, three broad at the base, terminating in acute points, deeply crenate on their edges. Flowers of a pale purple colour and hairy: they appear in June and July, and the seeds ripen in September; soon after which the stalks decay; but the roots will abide many years.

[Native of Siberia. Cultivated in 1759 by Mr. Millerⁿ.]

10. Stem of the same stature with *Ph. Leonurus*, two feet high, upright, herbaceous, four-cornered, blunt. Leaves subtomentose, marked with lines, petioled, remotely subserrate, longer than the internodes. Whorls subterminating with an awl-shaped involucre. Calyx obliquely truncate downwards, obscurely seven-toothed; the uppermost tooth longer. Corolla white: upper lip hirsute, very short, vaulted, closed, entire; lower large, spreading, bifid; the intermediate segment wide, somewhat plaited; the middle scarcely

three-lobed. Anthers black; compressed, truncate. One stigma sessile above the style behind the tip; another lower, awl-shaped acute^o.

Native of the East Indies. Introduced in 1777, by John Gerard Koenig, M. D. It is a biennial plant; flowering from June to October^p.

11. Root branching. Stem four-cornered, more slender than a reed, soft and villose. Branches opposite, axillary, simple, almost erect, one longer than the other. Leaves ovate-lanceolate, bluntish, serrate, petioled; veined, soft and villose. Whorls at the leaves sessile, roundish, many-flowered, dense. Involucre and calyx hirsute. It is an annual plant, two feet high, upright, and without any scent^q.

Native of the West Indies. Introduced in 1781, by Mr. Francis Maffon. It flowers from July to September^r.

12. Stem herbaceous, upright, branched, villose when magnified; canescent. Leaves petioled, acute at the base, deeply and bluntly serrate, thin, villose when magnified, paler underneath, attenuated by a terminating serrature. Whorls many-flowered. Involucres the length of the calyx, keeled, hairy, ciliate, flexible, terminated by a whitish unarmed spinule. Flowers small. Calyxes angular: with the three upper teeth small, acute, almost equal, scarious at top. Helmet of the corolla extremely hirsute. It resembles *Ph. indica*; but the stem and leaves are canescent with very minute hairs, and not tomentose; the leaves have deep serratures, flat not wrinkled and tomentose underneath, with smaller calyxes.

Found in the East Indies by Koenig, and in Arabia by Forskahl^s.

13. Leaves ovate, serrate, attenuated at the base, petioled, clothed with soft hairs, green. Whorls towards the top two or three, thick, surrounded with erect, linear, keeled, villose involucres. Calyxes tubular, oblong, ten-cornered, at the exterior margin of the mouth produced into a three-toothed lip; at the back, where the margin is very short, are two very minute teeth. Corolla like that of *Leonurus Cardiaca*: helmet very hirsute, with white hairs, longer, hoary: lower lip trifid; the middle segment twice as long as the two others. It is very nearly allied to *Ph. zeylanica*. Native of the East Indies^t.

14. This is a shrub with villose branches. Leaves petioled, bluntly serrate, quite entire at the base, pubescent above, villose underneath, very soft, green. Petiole very softly villose, the length of the leaf. Whorls remote, fourteen-flowered. Involucres five or seven-parted, the same length with the tube of the calyx, villose. Calyx tubular, ten-grooved, villose, two-lipped: upper lip short, oblong, acute; lower three-lobed, lateral lobes short, the middle one four times as wide as the rest, rounded, membranaceous, netted-veined. Corolla under the upper segment of the calyx and twice as long: tube the same width with the tube of the calyx and villose: helmet very hirsute at the margin: lower lip three-lobed, the length of the helmet. Filaments the length of the corolla.

15. Stem herbaceous, upright, acutely angular, the angles and joints reverse-haired. Leaves petioled, spreading, bluntly serrate, quite entire at the base, somewhat hairy, acute. Whorls remote, six or eight-flowered. Involucres minute, four-parted, bristle-shaped, somewhat pungent, smooth, yellowish at top, four times shorter than the calyx; which is ten-streaked, smooth, nearly bell-shaped, oblique produced below into a three-toothed lip: teeth equal bristle-shaped, seven-toothed at top. Corolla as in the preceding.

16. Stem herbaceous, smooth, bluntly angular: branches hairy at top. Leaves blunt, having three or four serratures in the middle on each side, hairy: petiole shorter than the leaf. Whorls remote, ten or twelve-flowered. Involucres four-cleft: segments bristle-shaped, the length of the calyx: which is bell-shaped, pubescent: teeth awl-shaped, unarmed, the two upper ones larger. Corolla twice as long as the

^b Hort. kew. ⁱ Idem. ^k Desfontaines. ¹ Hort. kew.
^m Linn. spec. ^{*} Gartner. ^a Hort. kew.

^o Linn. syst. ^p Hort. kew. ^q Jacquin. ^r Hort. kew.
^s Vahl. ^t Linn. spec. & syst.

calyx: helmet very hirsute about the margin: lower lip three-lobed; the middle lobe produced, oblong.

These three species were found in Arabia by Forskahl.

17. Stem herbaceous, branched, slender, weak, slightly villose. Leaves petioled, bluntly ferrate, (ferratures four or five,) blunt, appearing thinly haired when examined by a magnifier, especially at the sides. Peduncles very short, solitary, opposite, one-flowered. Bractes two, very small, at the base of the calyx; which is streaked and ten-toothed. Helmet of the corolla hairy, extremely hirsute on the margin.—Native of the East Indies^a.

18. Stem simple, upright, quadrangular, blunt. Leaves deeply and somewhat bluntly ferrate, green. Petioles the length of the leaves. Whorls few towards the top, globular, many-flowered. Calyx somewhat hairy, cylindrical, with a spiny and very sharp border, the upper tooth twice as large as the rest, and from four to six small teeth. Corolla villose, of the same appearance and colour with that of *Ph. Leonurus*, but one-third only of the size: upper lip roundish, long, emarginate; lower short, trifid, even. Involucre awl-shaped, reflex. Filaments cohering in pairs. Stigmas two, filiform, the upper shorter by half than the under^a.

It is an annual plant, native of the East Indies; flowering here in september and october. Sir Joseph Banks introduced it in 1778^b.

19. This is a very handsome plant when it is in flower. Corolla of a tawny or golden colour and shining like silk: upper lip long, tomentose, ciliate, quite entire; lower lip short, naked, membranaceous, the lateral segments reflex, dry, the intermediate one trifid, emarginate in the middle. Filaments snow-white. Anthers two-lobed, yellow, having globular meal sprinkled over them at the base only^a.]

It rises with a shrubby stalk seven or eight feet high, sending out several branches, which are four-cornered. Leaves about three inches long, and half an inch broad, hairy on their upper side, and veined on their under. The branches have each two or three sessile whorls of flowers towards the ends. There is a variety of it with variegated leaves.

[Native of the Cape of Good Hope. Cultivated in 1712, in the botanic garden at Chelsea. It flowers from october to december^a.

20. It bears much resemblance and is nearly allied to the preceding; but the leaves are ovate, not lanceolate, and more tomentose. It differs materially from *Leonurus*, by its awned calyxes. It agrees more with *Phlomis nepetifolia*, but differs from that in having a shrubby stalk; small, blunt, more compact leaves; and the neck of the calyx rough-haired. The corollas agree in all the three species^b.]

Stalk shrubby, square, three feet high. Branches four-cornered, in pairs. Leaves rough on their upper side, veined and pale green on their under. Corolla neither so long, nor so deep coloured as in the preceding.

Boerhaave and Miller frequently received the seeds from the Cape of Good Hope, where it grows naturally.—[It appears from the herbariums in the British Museum, that it was cultivated in 1713, by the Dutchess of Beaufort. It flowers in june and july^c.

21. Stem shrubby, with four-cornered hispid branches. Leaves ovate and subcordate, petioled. Whorls five or six-flowered, axillary; the flowers pedicelled. Calyx funnel-form, ten-streaked, with ten awned teeth. Corolla white, with the upper lip compressed, hirsute on the outside, especially about the margin; lower three-lobed, almost naked.—Native of China^d.

22. Stems herbaceous, upright, branched, villose-woolly, with blunt corners. Lower leaves petioled; upper sessile, ovate-oblong or sometimes ovate, wrinkled, scarcely crenate, canescent, with branched and very short villose hairs. Whorls distinct. Flowers

sessile or on very short pedicels. Bractes linear-filiform, the length of the calyx, covered with long close canescent villose hairs. Calyx oblong, round; segments linear, acute. Corolla the size of that in the eighth species, purple, villose-tomentose on the outside: upper lip bowed, compressed, often deeply two-parted; lower three-lobed, the two lateral lobes short, small, the middle one very large, ovate, blunt, grooved. It is a very beautiful species, and quite distinct from the rest.—Native of the kingdom of Algiers^e.]

PROPAGATION AND CULTURE.

1. This was formerly kept in pots, and housed in winter with other exotic plants; but of late years it has been planted in the open air, where it is seldom injured by cold, unless in very severe winters; so it is intermixed with other shrubs of the same growth in shrubberies, where it adds to the variety; for as these shrubs retain their hoary woolly leaves all the year, they make a good appearance in winter; and their yellow flowers, which continue great part of the summer, being intermixed with their hoary leaves, have a good effect.

These shrubs should have a dry soil and a warm sheltered situation, otherwise they will not live in the open air. They may be planted among Cistuses of all the different sorts, the shrubby Moon-trefoil, evergreen Cytisus, Wormwood-tree, and some other exotic shrubs of the same countries, which require a warm situation and a dry soil, being too tender for open plantations which are exposed to strong cold winds; and as they are not of long duration, they are better when separated from trees and shrubs which continue many years; for these rarely live above twelve or fourteen years in dry ground, and not more than half so long in cold moist land, or where they are not well sheltered.

They are propagated by cuttings, which if planted in a bed of light earth in april, just before the plants begin to shoot, and covered with mats to screen them from the sun every day, as also to observe when the ground is dry to give them water gently, they will get good roots in about two months or ten weeks, when they may be carefully taken up, and transplanted into a nursery, where they may remain one year, and then be transplanted to the places where they are designed to stand, for these plants will not bear transplanting at a greater age.

2. 3. May be propagated and treated in the same way, only the latter is more impatient of cold: [indeed both are destroyed by severe frost in the open border, and therefore must have some protection there occasionally, or a plant may be kept in the greenhouse to guard against accidents.]

4. 5. May be propagated by slips in the spring. They require a dry soil and warm situation: [with the same care recommended for the two preceding sorts in severe frost.]

6. 7. These are propagated by offsets from the root, which it sends out very sparingly; and very sharp winters sometimes kill the plants in open borders.

8. This may be increased by parting the roots in autumn, when the stalks begin to decay, that the plants may get root before the frost comes on; but it should not be parted oftener than every third or fourth year, if it be expected to have many flowers. It is hardy, and may be planted in exposed places, but not in moist ground.

9. Sow the seeds upon an east border in the spring; keep the plants clean from weeds, and in the autumn transplant them where they are to remain; the following summer they will produce flowers and seeds. This sort is very hardy, and will thrive in almost any soil or situation.

[10 to 18. Being natives of hot countries, must be kept in the bark stove. Several of them are annuals, and can only be propagated by seeds procured from the countries where they grow.]

19. 20. These are increased by cuttings planted in july; after the plants have been so long exposed to the

^e Desfontaines.

^a Vahl.

^b Linn. syst.

^c Hort. kew.

^d Linn. mant. & syst.

^e Hort. kew.

^f Linn. mant.

^g Hort. kew.

^h Retzius.

open air as to harden the shoots, they will take root very freely. Plant them in a loamy border with an eastern aspect, and if they are covered closely with a bell or hand glass to exclude the air, and are shaded from the sun, it will forward their putting out roots; but when they begin to shoot, raise the glasses to prevent their drawing up weak, and by degrees expose them to the open air. As soon as they have taken good root take them up, and plant each in a separate pot, filled with soft loamy earth, and placed in the shade, till the plants have taken new root; then remove them to a sheltered situation, where they may remain till October, when they must be removed into the green-house, and afterwards treated as the Myrtle and other hardy green house plants; observing to water the 19th sort plentifully.

All the species are ornamental plants, when properly disposed in gardens and plantations; there is generally a succession of flowers on them for two or three months, and their hoary leaves, intermixed with plants whose leaves are green, make a good contrast.

PHLOMIS. See *Ballota*.

PHLOX (of Pliny. *Φλοξ* of Theophrastus. *Flamma*.)
Lin. gen. n. 214. *Reich. n.* 229. *Schreb. n.* 284.
Gärtn. t. 62. *Juss.* 136. *Lychnidea*. *Dill. elib.* 166.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Rotacea*. *Polemonia*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, cylindrical, ten-cornered, five-toothed, acute, permanent.

COR. one-petalled, salver-shaped. *Tube* cylindrical, longer than the calyx, narrower below, curved in. *Border* flat, five-parted: *segments* equal, blunt, shorter than the tube.

STAM. *Filaments* five, within the tube of the corolla, two longer, one shorter. *Antbers* in the throat of the corolla.

PIST. *Germ* conical. *Style* filiform, the length of the stamens. *Stigma* trifid, acute.

PER. *Capsule* ovate, three-cornered, three-celled, three-valved.

SEEDS solitary, ovate.

ESSENTIAL CHARACTER.

Cor. salver-shaped. *Filam.* unequal. *Stigma* trifid.
 Cal. prismatical. *Caps.* three-celled, one-seeded.

SPECIES.

1. *Phlox paniculata*. *Panicled Lychnidea*.
Lin. spec. 216. *Reich.* 1. 431. *Willd.* 839. *Mill.*
fig. t. 205. *f.* 2.

Lychnidea folio falicino. *Dill. elib.* 205. *t.* 166. *f.* 203.

Leaves lanceolate flat rugged at the edge, stem even, corymbs panicled; segments of the corolla rounded.

2. *Phlox undulata*. *Waved-leaved Lychnidea*.

Ait. hort. kew. 1. 205.

Leaves oblong-lanceolate somewhat waved rugged on the edge, stem even, corymbs panicled, segments of the corolla somewhat retuse.

3. *Phlox suaveolens*. *White-flowered Lychnidea*.

Ait. hort. kew. 1. 206.

Leaves ovate-lanceolate even all over, stem very smooth, raceme panicled.

4. *Phlox maculata*. *Spotted-stalked Lychnidea*.

Lin. spec. 216. *yst.* 199. *Reich.* 1. 431. *Willd.* 840. *mant.* 335. *Kalm. it.* 3. 153. *Jacqu. hort.* 2. 58. *t.* 127. *Gärtn. fruct.* 299.

Leaves oblong-lanceolate smooth, stem somewhat rugged, raceme corymbed.

5. *Phlox pilosa*. *Hairy-leaved Lychnidea*.

Lin. spec. 216. *Reich.* 1. 431. *Willd.* 840. *Raii suppl.* 490. (*Lychnoides*). *Pluk. phyt. t.* 98. *f.* 1. (*Lychnidea*).

Leaves lanceolate villose, stem upright, corymb terminating.

6. *Phlox carolina*. *Carolina Lychnidea*.

Lin. spec. 216. *Reich.* 1. 432. *Willd.* 841. *Mart. dec.* 1. 10.

Leaves lanceolate even, stem rugged, corymbs subfastigiate.

7. *Phlox glaberrima*. *Smooth Lychnidea*.

Lin. spec. 217. *Reich.* 1. 432. *Willd.* 841. *hort. cliff.* 63. *Gron. virg.* 21. *Kalm. it.* 3. 153.

Lychnidea folio melampyri. *Dill. elib.* 203. *t.* 166. *f.* 202.

Leaves linear-lanceolate smooth, stem upright, corymb terminating.

8. *Phlox divaricata*. *Early-flowering Lychnidea*.

Lin. spec. 217. *Reich.* 1. 432. *Willd.* 841. *Mill. fig.* 137. *t.* 205. *f.* 1. *Curt. magaz.* 163.

Leaves broad-lanceolate, the upper ones alternate, stem bifid, peduncles in pairs.

9. *Phlox ovata*. *Ovate-leaved Lychnidea*.

Lin. spec. 217. *Reich.* 1. 433. *Willd.* 842. *Pluk. mant. t.* 348. *f.* 4. (*Lychnidea*).

Leaves ovate, flowers solitary.

[10. *Phlox subulata*. *Awl-leaved Lychnidea*.

Lin. spec. 217. *Reich.* 1. 433. *Willd.* 842. *Curt. magaz.* 411. *Pluk. phyt. t.* 98. *f.* 2. (*Lychnidea*).

Leaves awl shaped hirsute, flowers opposite.

11. *Phlox sibirica*. *Siberian Lychnidea*.

Lin. spec. 217. *yst.* 800. *Reich.* 1. 433. *Willd.* 842. *amoen.* 2. 342. *Gmel. sib.* 4. 87. *t.* 46. *f.* 2.

Leaves linear villose; peduncles in threes.

12. *Phlox setacea*. *Bristle-leaved Lychnidea*.

Lin. spec. 217. *Reich.* 1. 433. *Willd.* 842. *Curt. magaz.* 415. *Pluk. phyt. t.* 98. *f.* 3. (*Lychnidea*).

Leaves bristle-shaped smooth, flowers solitary.]

DESCRIPTIONS, &c.

1. Stalk smooth, of a light green, about two feet high, sending out a few side branches. Leaves near three inches long, and one broad in the middle, of dark green and sessile. Flowers in a terminating corymb, composed of many smaller bunches, which have each a distinct footstalk, and support a great number of flowers, which stand on short slender pedicels. Calyx short, cut almost to the bottom into five narrow acute segments. Corolla pale purple, appearing late in July, and often followed by seeds which ripen in autumn.

[It is a large, lofty plant. Stem obtuse. Leaves broad-lanceolate; the margin roughened with very minute scattered prickles. Corymbs clustered into an umbel, with very numerous flowers, pubescent in the tube^f.

Native of North America. Cultivated in 1732, by James Sherard, M. D. It flowers in August and September^g.

2. Flowers blue. Native of North America. Cultivated in 1759 by Mr. Miller. It flowers in July and August^h.

3. Flowers white, moderately sweet-scented. Native of North America. Introduced about 1766, by Peter Collinson, Esq. It flowers in July and Augustⁱ.]

4. Stalks upright, of a purplish colour, closely covered with white spots, and about three feet high. Leaves about three inches long and one broad at their base, ending in acute points. Towards the upper part of the stalks are small branches opposite, each terminated by a small bunch of flowers; but on the top of the principal stalk is a long loose spike of flowers, composed of small bunches from the axils at each joint; each cluster having one common peduncle near an inch long, but the pedicels are short. The flowers are of a bright purple colour, and appear late in July; if the season be temperate, or the soil moist, they will continue in beauty great part of August, but rarely perfect seeds in England.

[Stem a foot high, round, somewhat rugged, purple with green dots. Leaves rugged about the edge, spreading, sessile, alternate except the lowest, which are opposite. Raceme terminating, with alternate peduncled corymbs, separated by leaflets. Calyx five-cornered. Corolla violet^k. Capsule ovate, with a diaphanous membranaceous calyx, marked with five green ribs, smooth: partitions growing to the axis, contrary to the valves, and separating from them, but not from the axis, when ripe. Seed one in each cell, elliptic, plano-convex, with a raised streak on the

^f Linn. spec.

^g Hort. kew.

^h Idem.

ⁱ Idem.

^k Linn. mant.

plane part, brown, the surface irregular as it were gnawn¹.

Native of North America. Cultivated in 1759, by Mr. Miller. It flowers in august^m.]

5. Stalks about a foot high. Leaves narrow lanceolate, ending in acute points, sessile, a little hairy. Calyx cut into acute segments almost to the bottom. Tube of the corolla slender and pretty long, cut at top into five ovate spreading segments. Flowers light purple, appearing at the end of june, but seldom followed by seeds in England.—Native of North America. [Cultivated by Mr. Miller in 1759.]

6. This resembles the next species, but the stem is three times as high, and somewhat rugged. Leaves wider, and ovate-lanceolate. Corymb consisting of numerous flowers, with several peduncles from the uppermost axils of the leaves, erect and fastigate into a sort of corymb. Tube of the corolla evenⁿ.]

Stems near two feet high. Leaves stiff, shining, sessile, entire, with the edges reflexed. The upper part of the stem has generally two slender side branches, and is terminated by a head of flowers growing in whorls, but the whorls are so near, as to appear one corymb. Calyx short, deeply cut into five acute segments. Tube of the corolla long, cut at top into five roundish spreading segments. The corolla is of a deeper purple than that of the next species, and the flowers appear a fortnight later. It grows naturally in Carolina; [was cultivated here before 1728; and flowers from july to september^o.]

7. Stalks near a foot and half high, dividing into three or four small branches towards the top, each terminated by a corymb of flowers. Lower leaves opposite, three inches long, and near half an inch broad at the base, ending in long acute points, smooth and sessile; the upper ones are alternate. Tube of the corolla twice the length of the calyx; segments of the border roundish, spreading, of a light purple colour. The flowers appear in june, but unless the season proves warm are not succeeded by seeds in England.

[Native of North America. Cultivated in 1731, by Mr. Miller. It flowers from june to august^p.]

8. Stems almost upright, simple and then divided into two branches. Leaves opposite on a simple stem in five oppositions, softish, rugged; the upper ones alternate. Flowers from the partings of the stem and the axils of the alternate leaves, two together on separate pedicels. Calyx five-parted. Corollas pale blue, with a crooked tube^q.]

Stalks slender, and apt to incline to the ground if they are not supported; they divide into several small spreading branches. The lower part of the stalks have broad-lanceolate leaves, alternate and sessile: on the branches they are narrower and opposite. The flowers grow in loose bunches at the ends of the branches: they have short calyxes, cut into five narrow, acute segments; the tube of the corolla is long and slender; the segments are broad and obcordate, of a light blue colour. The flowers appear at the end of may or the beginning of june, but are rarely succeeded by seeds in England.

It grows naturally in North America; [and was cultivated in 1783, by Mr. Miller^r. According to the Kew catalogue, it flowers from april to june. Mr. Curtis says it flowers in may, with the yellow Alyssum; that it is neither of so long duration, nor so ornamental as some of the other species; that it seldom exceeds a foot in height, and on this account may be regarded as a suitable rock-plant.]

9. Stalks two or three, slender, about nine inches high. Leaves rough, hairy, an inch and half long, and three quarters of an inch broad in the middle, opposite, on very short foot-stalks. The flowers come out singly at the top of the stalk, have very slender tubes, with a border of five roundish, spreading segments. They are of a light purple colour, and appear in july, but are not followed by seeds in England.

Native of Maryland, and other parts of North America. [Cultivated by Mr. Miller in 1759.]

10. If this plant be left to itself, the stems trail on the ground, the young shoots are of a reddish hue; and slightly villose; the leaves are edged with hairs, opposite, recurved, and rather fleshy, producing others from their axils; becoming as the plant grows old of a brownish colour, which renders the plant in some degree unsightly. Flowers from one to three or four in an umbel, drooping before they expand: calyxes villose; corolla pale purple or flesh colour; with an eye of dark but brilliant purple, disposed in a star-like form^s: the lobes are emarginate; and the tube twice as long as the calyx.

Native of Virginia^t. The flowers appear at the beginning of may; they are extremely pretty but delicate, requiring shelter during the period of their flowering; which is shorter than in most of the other species^u.

11. Lobes of the corolla rounded, entire. Calyxes of the same length with the tube of the corolla. Stems from two inches to a hand in height. Leaves linear, hairy below, succulent, bright green. From the uppermost axils peduncles from two to four, about an inch long, hirsute, each bearing one purple flower (varying to white with purple streaks), with from four to six segments, which are rounded and often emarginate.—Native of Siberia^v.

12. The stalks, when supported, rise to the height of about a foot; but, if left to themselves, trail upon the ground: they are thickly covered with leaves, which are longer, and for the most part finer and more hairy than those of *subulata*; and in the month of may the whole plant forms a highly ornamental bush of purple flowers. It was brought from Carolina, by Mr. John Frazer, in 1788^w.

All these beautiful plants are natives of North America, except the eleventh, which is indigenous of the north of Asia. They are herbaceous perennials, and most of them tolerably hardy.]

PROPAGATION AND CULTURE.

These plants delight in a moist rich soil, not too stiff, in which they will grow tall, and produce much larger bunches of flowers than in dry ground; for when the soil is poor and dry, they frequently die in summer, unless they are duly watered.

They are generally propagated by parting their roots, because they do not often produce seeds in England. The best time for this is in autumn, when their stalks begin to decay. These roots should not be divided into small heads, if they are expected to flower well the following summer; nor should they be parted oftener than every other year, because when they are often removed and parted, it will greatly weaken the roots, so that they will send out but few stalks, and those will be so weak as not to rise their usual height, and the bunches of flowers will be much smaller.

When the roots are transplanted and parted, it will be a good way to lay some old tan, or other mulch, upon the surface of the ground about their roots, to prevent the frost from penetrating the ground; for as they will have put out new fibres before winter, the frost when it is severe often kills the fibres, whereby the plants suffer greatly, and are sometimes destroyed.

The first, sixth, and seventh sorts, propagate pretty fast by their spreading roots, but the others increase but slowly this way, therefore the best method to propagate them is by cuttings; and if these with the fourth sort are desired in plenty, they may be easily obtained by this method. The best time to plant the cuttings, is about the end of april or the beginning of may, when the shoots from the roots are about two inches high; these should be cut off close to the ground, and their tops should be shortened; then they must be planted on a border of light loamy earth, and shaded from the sun until they have taken root; or if they are planted pretty close together, and covered with bell or hand-glasses, shading them every day from the sun,

¹ Gartner. ^m Hort. kew. ⁿ Linn. spec. ^o Hort. kew.
^p Idem. ^q Linn. spec. ^r Hort. kew.

^s Curtis. ^t Linn. spec. ^u Curtis.
^v Linn. spec. & Gmel. ^w Curtis.

they will put out roots in five or six weeks; but when they begin to shoot, the glasses should be gradually raised to admit the free air to them, otherwise they will draw up weak and soon spoil: as soon as they are well rooted, the glasses should be taken off, and the plants inured to the open air; then they should be soon after removed into a bed of good soil, planting them about six inches distance every way, observing to shade them from the sun, and water them duly till they have taken new root; after which, if they are kept clean from weeds, they will require no other care till autumn, when they should be transplanted into the borders of the flower-garden, where they are designed to remain.

If some of these plants are put into pots, and sheltered under a hot-bed frame in winter, they will flower strong the following summer; and these may be placed in court-yards, or other places near the habitation, when they are in beauty, and being mixed with other flowers will be very ornamental.

[10. This sort should be frequently renewed by cuttings, which strike readily. It may be suffered to grow either in its natural procumbent way, or be made to appear to more advantage by training it to a stick.

12. This species, like most of the others, is easily raised from cuttings, which should be struck early in the spring, to make them become flowering plants the next season. To have this plant in perfection, it is necessary to renew it thus yearly, old plants being less productive of flowers, and less perfect in their foliage.

In mild winters, this species like many other plants from Carolina, will live abroad; but requires the shelter of a frame, rather than more tender treatment in severe frost.

PHOENIX. (Φοινῖξ of Theophrastus and Dioscorides. So named from the red colour of the spathe; supposed to be derived from φονος, which sometimes signifies blood.)

Lin. gen. n. 1224. Reich. n. 1339. Schreb. n. 1694.

Kämpf. 2. Gärtn. 9. Juss. 38. Elate. Mus.

cliff. 12. Katouindel. Hort. mal. 3. 23.

Appendix Palmæ. (Dioecia Triandria.)

Nat. order of Palmæ or Palms.

GENERIC CHARACTER.

* Male Flowers.

CAL. Spathe universal one-valved. Spadix branched.

Perianth three-parted, very small, permanent.

COR. Petals three, concave, ovate, somewhat oblong.

STAM. Filaments three, very short. Anthers linear, four-cornered, the length of the corolla.

* Female Flowers on a different plant, or on the same spadix.

CAL. as in the Male.

PIST. Germ roundish. Style awl-shaped, short. Stigma acute.

PER. Drupe ovate, one-celled.

SEED single, bony, subovate, with a longitudinal groove.

ESSENTIAL CHARACTER.

Cal. three-parted. Cor. three-petalled.

MALE. Stam. three.

FEM. Pist. one. Drupe ovate.

SPECIES.

1. Phoenix dactylifera. Date Palm-tree.

Lin. spec. 1658. syst. 985. Reich. 4. 634. mat. med.

232. hort. cliff. 482. upf. 306. fl. zeyl. n. 390.

Palma. Bauh. hist. 1. 351. Dod. pempt. 819. Raii

hist. 1352. Ger. 1333. emac. 1517.

P. vulgaris. Park. theat. 1545. 1. t. 1546. f. 1, 2.]

P. major. Bauh. pin. 506.

P. dactylifera. Mill. dict. n. 1. [—major vulgaris.

Jonst. dendr. Sloan. jam. 2. 111. Brown. jam.

344. 8.

P. hortenensis mas & femina. Kämpf. amoen. 688. t. 1, 2.

f. 1, 2.—exot. 668. 686. t. 1, 2. f. 2, 16, 11.

Dactylis Palma. Blackw. t. 202.

Fronds pinnate, leaves folded together ensiform.

2. Phoenix farinifera.

Roxb. corom. 3. 53. t. 74.

Fronds pinnate: leaves narrower more pointed.]

DESCRIPTIONS, &c.

1. This rises to a great height in the warm countries; the stalks are generally full of rugged knots, which are the vestiges of the decayed leaves, for the trunks of these trees are not solid like other trees, but the centre is filled with pith, round which is a tough bark full of strong fibres while young, but as the trees grow old, this bark hardens and becomes woody; to this bark the leaves are closely joined, and in the centre rise erect, being closely folded or plaited together, but after they are advanced above the sheath which surrounds them, they expand very wide on every side the stem, and, as the older leaves decay, the stalk advances in height. The leaves of these trees, when grown to a size for bearing fruit, are six or eight feet long, and may be termed branches; (for the trees have no other) these have narrow long leaves (or pinnæ) set on alternately their whole length. The small leaves or lobes are towards the base three feet long, and little more than one inch broad; they are closely folded together when they first appear, and are wrapped round by brown fibres or threads, which fall off as the leaves advance, making way for them to expand; these never open flat, but are hollow like the keel of a boat, with a sharp ridge on their back; they are very stiff, and, when young, of a bright green, ending with a sharp black spine. These trees have male flowers on different plants from those which produce the fruit, and there is a necessity for some of the male trees to grow near the female trees to render them fruitful; or, at least, to impregnate the germ, without which the stones, which are taken out of the fruit, will not grow. Most of the old authors, who have mentioned these trees, affirm, that unless the female or fruit-bearing Palm-trees have the assistance of the male, they are barren; therefore in such places where there are no male trees near the female, the inhabitants cut off the bunches of male flowers when they are just opened, and carry them to the female trees, placing them on the branches near the female flowers to impregnate them; which, they all agree, has the desired effect, rendering the trees fruitful, which would otherwise have been barren. Pere Labat in his account of America, mentions a single tree of this kind, growing near a convent in the island of Martinico, which produced a great quantity of fruit, which came to maturity enough for eating; but, as there was no other tree of this kind in the island they were desirous to propagate it, and accordingly planted great numbers of the stones for several years, but not one of them grew; therefore after having made several trials without success, they were obliged to send to Africa, where these plants grew in plenty, for some of the fruit; the stones of which they planted, and raised many of the plants. He then conjectures, that the single tree before-mentioned, might be probably so far impregnated by some neighbouring Palm-trees of other species, as to render it capable of ripening the fruit, but not sufficient to make the seeds prolific.

The flowers of both sexes come out in very long bunches from the trunk between the leaves, and are covered with a spathe, (or sheath) which opens and withers; those of the male have six short stamina, with narrow four-cornered anthers filled with farina. The female flowers have no stamina, but have a roundish germ, which afterwards becomes an oval berry, with a thick pulp inclosing a hard oblong stone, with a deep furrow running longitudinally. The bunches of fruit are sometimes very large.

[The fruit of this tree makes a great part of the diet of the inhabitants of Arabia and part of Persia^a. In Upper Egypt many families subsist almost entirely upon it. They make a conserve of it with sugar; and even grind the hard stones in their hand-mills for their camels. In Barbary they turn handsome beads for pater nosters of these stones^a. The Date is said to strengthen the stomach and intestines, to stop loosenesses and promote expectoration, for which purpose it is given in pectoral decoctions. It is also recommended in the piles given in red wine^b.

^a Curtis.

^a Ives.

^a Hasselquist.

^b Long, jam. 742.

From the leaves of the tree they make baskets or bags in Barbary. In Egypt they make fly-flaps of them, and bruises to clean their sofas or cloaths. The hard boughs are used as fences to their gardens, and cages to carry their fowls to market. The trunk is split for the same purposes, and is even used in small buildings. It serves likewise for firing. The threads of the web-like integument between the boughs make ropes and the rigging of smaller vessels^c.

The juice of the Date-tree is procured, by cutting off the head or crown of the more vigorous plant, and scoping the top of the trunk into the shape of a basin; where the sap, in ascending lodges itself, at the rate of three or four quarts a day, during the first week or fortnight; after which the quantity daily diminishes, and at the end of six weeks or two months the tree becomes dry, and serves for timber or fire-wood. This liquor, which has a more luscious sweetness than honey, is of the consistence of a thin syrup, but quickly becomes tart and ropy, acquiring an intoxicating quality, and giving, upon distillation an agreeable spirit or *Araky*, which is the general name for all hot liquors extracted by the Alembick^d.

Native of the Levant, &c. Cultivated by Mr. Miller in 1731^e.

2. The little trunk this has is only about one, or at most two feet high, and so entirely enveloped in the leaves that it is never seen, the whole appearing like a large round bush. Leaves pinnate, as in the preceding, and nearly as large: leaflets longer, narrower, more pointed, and of a much deeper green. Spathe axillary, one-valved; inside concave, fitting the trunk or base of the leaf immediately within it: this concavity is bordered by two sharp edges, outside convex, there splitting longitudinally, leathery, smooth, withering. Spadix erect, much branched: branches simple, spreading in every direction; eight to twelve inches long. Filaments six, inserted into a fleshy globular receptacle: anthers oblong, erect. Petals in the female flowers orbicular, equal, rigid, calyx-like, lasting. Berry (or drupe) shining black, size of a large Kidney-bean; the pulp sweet and mealy, but in small quantity. Seed cartilaginous, of the same shape with the berry, grooved longitudinally, pretty smooth, brown on the outside, light-grayish white within: on the middle of the back a small elevation, under which is an oblong pit containing the embryo.

Native of Coromandel, in dry barren ground, chiefly on sandy lands at a small distance from the sea. It flowers in January and February; and the fruit is ripe in May. This the natives eat as gathered from the bush, without any preparation.

The leaflets are wrought into mats; the common petioles are split into three or four, and used for making ordinary baskets of various kinds; but they are not so proper for this purpose as the Bamboo.

The small trunk, when divested of its leaves, and the strong brown fibrous web that surrounds the trunk at their insertions, is generally fifteen or eighteen inches long, and six in diameter, at the thickest part; its exterior or woody part consists of white fibres matted together, which envelope a large quantity of a farinaceous substance, used as food by the natives in times of scarcity; but to separate this from the fibres, the trunk is split into six or eight pieces, then dried, beaten in woody mortars, and afterwards sifted: the rest of the preparation consists in boiling the meal into a thick gruel, or as it is called in India, congee. It seems to be much less nutritive than Sago, and is less palatable, being considerably bitter when boiled; but probably by more care in the preparation, or by varying the mode, it might be improved. It certainly deserves attention, for during the end of 1790, and beginning of 1791, it saved many lives, Rice being very dear, and at times not to be had^f.

Loureiro has a dwarf Phoenix or Date Palm, which he names *Pb. pusilla*, and characterizes by its having six stamens, and a dwarf trunk. He describes the trunk as two feet high, thick and rugged. Fronds six feet

long, unarmed, pinnate, reclined: leaflets long, awl-shaped, plaited, smooth. Universal spathe many-valved. Spadix upright, short, corymbed. Calyx of both flowers three-parted and very short. Petals three, ovate-oblong, curved, spreading. Filaments, in the male flowers none, but six oblong anthers, equal to the corolla. Style in the female flowers short, with a simple stigma. Drupe ovate, four lines in length, fleshy, black, smooth, sweet; with a single, oblong, solid, horny nucleus, having a longitudinal groove on one side, and a small circle on the other.

Native of Cochinchina, on mountains six leagues from Huæa the capital of Cochinchina, in rocky places near streams^g.

Loureiro refers to *Burm. zeyl.* 183. *Herm. parad.* 361. and *Kæmpf. amoen.* 667.

It seems in most respects not to differ from that described above from Coromandel.]

PROPAGATION AND CULTURE.

These plants may be easily produced from the seeds taken out of the fruit, (provided they are fresh) sown in pots filled with light rich earth, and plunged into a moderate hot-bed of tanner's-bark, which should be kept in a moderate temperature of heat, and the earth frequently refreshed with water.

When the plants are come up, they should be each planted into a separate small pot filled with the same light rich earth, and plunged into a hot-bed again, observing to refresh them with water, as also to let them have air in proportion to the warmth of the season, and the bed in which they are placed. During the summer they should remain in the same hot-bed, but in the beginning of August let them have a great share of air to harden them against the approach of winter; for if they are too much forced, they will be so tender as not to be preserved through the winter without much difficulty, especially if you have not the convenience of a bark-stove to keep them in.

The beginning of October remove the plants into the stove, placing them where they may have a moderate share of heat (these being somewhat tenderer, while young, than after they have acquired some strength;) though indeed they may be sometimes preserved alive in a cooler situation, yet their progress would be so much retarded, as not to recover their vigour the succeeding summer. Nor is it worth the trouble of raising these plants from seeds, where a person has not the convenience of a stove to forward their growth; for where this is wanting, they will not grow to any tolerable size in twenty years.

Whenever these plants are removed, (which should be done once a year) be very careful not to cut or injure their large roots, which is very hurtful to them; but clear off all the small fibres which are inclinable to mouldiness, for if these are left on, they will in time decay, and hinder the fresh fibres from coming out, which will greatly retard the growth of the plants.

The soil in which these plants should be placed, must be composed in the following manner, viz. half of light fresh earth taken from a pasture ground, the other half sea-sand, and rotten dung or tanner's bark in equal proportion; these should be carefully mixed, and laid in a heap three or four months at least before it is used, but should be often turned over to prevent the growth of weeds and to sweeten the earth.

You should also observe to allow them pots proportionable to the sizes of the plants; but you must never let them be too large, which is of worse consequence than if they are too small. During the summer season they should be frequently refreshed with water, but you must be careful not to give it in too great quantities; and in winter they must be now and then refreshed, especially if they are placed in a warm stove, otherwise they will require very little water at that season.

These plants are very slow growers, even in their native countries, notwithstanding they arrive to a great magnitude; for it has been often observed by several of the old inhabitants of those countries, that the

^c Hasselquist.

^d Shaw, 142.

^e Hort. kew.

^f Roxburgh.

^g Loureiro.

plants of some of these kinds have not advanced two feet in height in ten years; so that when they are brought into these countries, it cannot be expected they should advance very fast, especially where there is not due care taken to preserve them warm in winter. But however slow of growth these plants are in their native countries, yet they may be with us greatly forwarded, by placing the pots in a hot-bed of tanner's bark, which should be renewed as often as is necessary, and the plants always preserved therein both winter and summer, observing to shift them into larger pots as they advance in growth, as also to supply them with water properly, with which management I have had several of them come on very fast; for I observe the roots of these plants are very apt to root into the bark, if their pots remain a considerable time without shifting, where they meet with a general warmth, and the moisture arising from the fermentation of the bark preserves their fibres plump and vigorous; but although the leaves grow tall in a few years with this management, yet it is long before the plants come to have any stems. There are plants in the Chelsea garden, whose leaves are seven feet long, which were raised from seeds more than twenty years ago, and their stems are not two feet high, some of which have produced small bunches of male flowers.

[PHOENIX. See *Andropogon* and *Poa*.

PHORMIUM. (*Φορμιον* is the name of a plant in Aristotle's history of animals, of which they made mats. Forster has given this name to a plant of New Zealand, used for the like purpose.)

Lin. gen. Schreb. n. 578. p. 799. Forst. gen. t. 24.

Juss. 52. Chlamydia. Banks. Gertn. t. 18.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronarieæ*. *Asphodeli*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. Petals six, ascending obliquely, converging into a tube, oblong, connate at the base, unequal: three outer acute; more raised on the back; three inner longer, rounded at the top, concave.

STAM. Filaments six, filiform, ascending, longer than the corolla. Anthers erect, subtriangular.

PIST. Germ bluntly three-sided. Style filiform, ascending, a little shorter than the stamens. Stigma simple.

PER. Capsule oblong, three-sided, the angles grooved, acuminate, three-celled, three-valved.

SEEDS very many, oblong, compressed.

ESSENTIAL CHARACTER.

Cal. none. Cor. six-petalled, the three inner petals longer. Caps. oblong, three-sided. Seeds oblong, compressed.

SPECIES.

1. *Phormium tenax*. New Zealand Flax-plant.

Lin. syst. 336. suppl. 204. Forst. flor. austral. n. 153.

Cook voy. 2. 96. t. 23. J. Miller ic. t. 2.

Chlamydia tenacissima. Gertn. fruct. 1. 71.

DESCRIPTION, &c.

Leaves many. Inflorescence branched. Flowers of the Hyacinth. Capsule superior, twisted, attenuated outwards: valves bearing the partition in the middle; on the outside of a smoky or blackish colour, very finely striated; within polished, shining, pale bay colour. Seeds bracted, surrounded by a membranaceous margin, wrinkled, dark, shining, incumbent, fastened in a double row to the inner margin of the partitions^b.

Native of New Zealand, Norfolk island, and other islands in the Southern ocean.

The inhabitants of New Zealand make a thread of the leaves, with which the women weave a variety of fine matting for cloathing and other uses. Many other plants of the Liliaceous tribe might be applied to the same purposes^c. It is now manufactured in Norfolk island: canvas and other coarse linen cloth having been wove with the thread^k.

Phormium Aloides, *bulbiferum* and *Hyacinthoides*. See *Lachenalia*.

PHRAGMITES. See *Arundo*.

^b Gertner.

^c Linn. suppl.

^k Collins's New South Wales.

PHRYMA.

Lin. gen. n. 738. Reich. n. 796. Schreb. n. 994.

Gertn. t. 75. Juss. 117. Leptostachya. Mitch.

11.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Personatæ*. *Labiata*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, cylindric, gibbous above at the base, striated, with a two-lipped mouth: upper lip narrow, longer; with three, awl-shaped, converging teeth; lower lip blunt, bifid.

COR. one-petalled, ringent: tube the length of the calyx: upper lip shorter, subovate, emarginate, straight: lower lip larger, more spreading, trifid, the middle segment more produced.

STAM. Filaments four, two on each side, the upper ones shorter. Anthers roundish, converging, in the throat of the corolla.

PIST. Germ oblong. Style filiform, the length of the stamens. Stigma blunt.

PER. none. Calyx unchanged, grooved, converging.

SEED single, oblong, roundish, grooved on one side: (ovate, drawn to a point at top, obscurely five-cornered. G.

ESSENTIAL CHARACTER.

Seed one.

SPECIES.

1. *Phryma Leptostachya*.

Lin. spec. 838. syst. 548. Reich. 3. 103. suppl. 277.

amoen. 3. 19. Gertn. fruct. 363. Pluk. amalib.

t. 380. f. 5. Gron. virg. 92. (Verbena.)

Leptostachya. Mich. gen. 9.

Leaves ovate serrate petioled, calyx one-leaved, five-cleft.

2. *Phryma dehiscens*.

Lin. syst. 548. suppl. 277.

Calyxes finally opening longitudinally.

DESCRIPTIONS, &c.

1. Stem a foot high, obtusely quadrangular, smoothish, brachiate. Leaves opposite, acute, somewhat rugged, grossly ferrate. Spikes terminating, solitary. Flowers opposite, remote. Bractes by threes, awl shaped: the lower of the same length with the calyx; the lateral ones erect, short. Flowers horizontal, as they fade immediately drooping. Calyx cylindrical, striated, hard: upper lip purple on the outside. Corolla white, the form of *Dodartia*, but small^l. Allied to *Verbena*^m.

The calyx, which is closed, bent down, pyramidal-awl-shaped, five-grooved and unequally five-toothed, serves for a pericarp: three bristly-shaped recurved teeth, and two others that are membranaceous and straight shut up the mouth. There is but one seed, and that of a brown-bay colourⁿ.—Native of North America.

2. Stems suffruticose at the base: branches opposite, few, upright. Leaves opposite, subpetioled, wedge-shaped, rounded above, equal in length and breadth, nine-toothed, thickish. Racemes terminating, solitary, quite simple, upright, with very short pedicels. Bractes minute, awl-shaped, solitary. Calyx five-grooved, truncate, five-toothed. Corolla like that of *Vervain*: border five-cleft, small, almost equal; with rounded segments. Seed filling up the calyx and bursting it, compressed a little, subcylindric, compressed-wedge-shaped at the base, two-celled. The calyx and corolla are regular in this; and as the fruit ripens, the calyx bursts longitudinally, exposing the seed naked, almost as in *Lytbrum Cuphea*. This plant is associated with the preceding, till it is better known; though it has a different appearance. Thunberg found it at the Cape of Good Hope^o.

PHRYNIUM. (*Φρυνιον*, a kind of shrub. From *φρυγος*, a species of frog.)

Lin. syst. ed. Willd. 17. Swartz obs. 123. sub

Pontederia. Phyllodes. Loureiro, 13. 16.

Class. 1. 1. Monandria Monogynia.

GENERIC CHARACTER.

CAL. Spathes many, acute, imbricate, many-flowered.

Perianth three-leaved: leaflets awl-shaped, erect, equal.

^l Linn. spec.

^m Linn. suppl.

ⁿ Gertner.

^o Linn. suppl.

COR. tubular: border seven-cleft; the three outer segments acute, almost equal, reflex: the four inner obtuse, erect, unequal.

Nectary long, channelled, erect. (The four inner segments belong properly to this.)

STAM. Filament one, awl-shaped, short, growing to the side of the nectary at bottom. Anther oblong, irregular, emitting little balls of pollen distinguishable by the naked eye.

PIST. Germ ovate-three-cornered, inferior. Style thick, short, rather longer than the stamen. Stigma concave, inclined towards the anther.

PER. Capsule obtusely triangular, three-celled:

SEED. Nuts three, ovate, smooth.

ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. three equal, growing to the long channelled tube of the nectary. Nect. tube filiform, border four-parted. Caps. three-celled. Nuts three.

SPECIES.

1. Phrynium capitatum.

Lin. spec. ed. Willd. 17.

Phyllodes Placentaria. Lour. cochinch. 13. ed. Willd. 17.

Pontederia ovata. Lin. spec. 412. Reich. 2. 13.

Naru-kila. Rheed. mal. 11. 67. t. 34. Raii suppl. 573.

DESCRIPTION, &c.

Perennial, stemless, five feet high; on four fifths of it are very straight, round, regular shining petioles. Leaves a foot long, ovate-oblong, sharp, quite entire, flat, obliquely grooved, smooth, coriaceous. Flowers white, collected into a large, sessile, hemispherical cyme, bursting out below the middle of the gaping petiole, (from which circumstance Loureiro named it *Phyllodes*.) Involucre two-leaved, collecting together partial, many-flowered spathes. The root tubercled with fibres, horizontal, creeping. The germ is commonly abortive.

Native of Malabar, China and Cochinchina, in shady wet places.

It differs entirely from *Pontederia*, with which Linneus associated it; and approaches to *Thalia* so near that it may perhaps be a species of that genus. According to Willdenow it is most nearly allied to *Marranta*, differing from it only in the seven-cleft border of the corolla, and the long channelled tube of the nectary.

The leaves are used for wrapping up cakes, &c. in the oven, whence Loureiro's trivial name of *placentaria*: when tender, and not yet unfolded, they infuse them in spirit of rice or sugar diluted with three times its quantity of water, to make vinegar.

PHYLICA. (*Φύλλον* is the name of an evergreen shrub in *Theophrastus*.)

Lin. gen. n. 266. Reich. n. 285. Schreb. n. 359.

Gärtn. t. 24. Juss. 381.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Dumosee*. *Rhamni*, Juss.

GENERIC CHARACTER.

CAL. Common Receptacle of the fructifications collecting the flowers into a disk.

Perianth proper one-leaved, five-cleft, turbinate, mouth villose, permanent.

COR. none. Scalelets five, acuminate, one at the base of each division of the calyx, converging.

STAM. Filaments five, very small, inserted under the scalelet. Anthers simple.

PIST. Germ at the bottom of the corolla. Style simple. Stigma obtuse.

PER. Capsule roundish, three-grained, three-celled, three-valved, crowned.

SEEDS solitary, roundish, gibbous on one side, angular on the other.

ESSENTIAL CHARACTER.

Perianth five-parted, turbinate. Pet. none, but five scales defending the stamens. Caps. trilocular, inferior.

^p Loureiro.

^s Swartz.

^t Loureiro.

SPECIES.

1. *Phylica ericoides*. Heath-leaved *Phylica*.

Lin. spec. 283. Reich. 1. 546. Willd. 1108. hort. cliff. 70. Gärtn. fruct. 1. 114. Berg. cap. 49. Thunb. prodr. 44. Fabric. heimst. 233. Kniph. cent. 1. n. 62. Curt. magaz. 224. Comm. hort. 2. 1. t. 1. (*Alaternoides*.)

Leaves linear in whorls.

[2. *Phylica lanceolata*. Lance-leaved *Phylica*.

Lin. spec. ed. Willd. 1108. Thunb. prodr. 44.

Leaves scattered lanceolate tomentose underneath, heads terminating hirsute.

3. *Phylica bicolor*. Two-coloured *Phylica*.

Lin. syst. 235. Reich. 1. 547. Willd. 1108. mant. 208.

P. strigosa. Thunb. prodr. 44?

Leaves linear pubescent, common calyxes shorter than the corolla.

4. *Phylica capitata*. Downy *Phylica*.

Lin. spec. ed. Willd. 1109. Thunb. prodr. 45. Burm. afr. 121. t. 44. f. 3.

P. pubescens. Ait. kew. 1. 268?

Leaves linear-lanceolate villose, bractes woolly, heads terminating.

5. *Phylica eriophoros*. Pale-flowered *Phylica*.

Lin. spec. ed. Willd. 1109. Ait. kew. 1. 268. Berg. cap. 52. Thunb. prodr. 44. Pluk. amaltb. t. 445. f. 1. (*Elichrysum*.)

Leaves linear somewhat hairy tomentose underneath rolled back at the edge, heads terminating, flowers tomentose.]

6. *Phylica plumosa*. Woolly-leaved *Phylica*.

Lin. spec. 283. syst. 235. Reich. 1. 547. Willd. 1109. Gärtn. fruct. 1. 115. Thunb. prodr. 45. Seba thes. 1. 38. t. 23. f. 4, 5. (*Ricinus*). Pluk. mant. t. 342. f. 3. (*Chamaelea*). Comm. pralud. 63. t. 13. (*Alaternoides*.)

Leaves linear-awl-shaped: the uppermost hirsute.

[7. *Phylica villosa*. Villose-leaved *Phylica*.

Lin. spec. ed. Willd. 1109. Thunb. prodr. 44.

Leaves linear the upper ones villose, flowers in racemes.

8. *Phylica imberbis*. Beardless *Phylica*.

Lin. syst. 235. Reich. 1. 547. Willd. 1109. mant. 209. Berg. cap. 51. Thunb. prodr. 44. Breyn. cent. 18. t. 7. (*Sanamundæ*). Seba mus. 2. t. 49. f. 5. (*Erica*.)

Leaves linear obtuse rugged, flowers terminating pubescent.

9. *Phylica stipularis*. Stipuled *Phylica*.

Lin. syst. 235. Reich. 1. 548. Willd. 1110. mant. 208. Thunb. prodr. 44. Ait. kew. 3. 488. Burm. afr. 117. t. 43. f. 2. (*Chamaelea*.)

Leaves linear stipuled, flowers five-horned.

10. *Phylica pinifolia*. Pine-leaved *Phylica*.

Lin. syst. 235. Willd. 1110. suppl. 153. Vahl symb. 3. 41. Thunb. prodr. 44.

Beckea africana. Burm. prodr. 12.

Leaves acerose flat on both sides very smooth, flowers panicle-racemed.

11. *Phylica cordata*. Heart-leaved *Phylica*.

Lin. spec. 283. Reich. 1. 549. Willd. 1111. Comm. rar. 62. t. 12.

Leaves cordate-ovate spreading, stem proliferous.

12. *Phylica dioica*. Dioecous *Phylica*.

Lin. syst. 235. Reich. 1. 548. Willd. 1111. mant. 342.

Leaves cordate, flowers dioecous.]

13. *Phylica buxifolia*. Box-leaved *Phylica*.

Lin. spec. 283. Reich. 1. 548. Willd. 1111. Kniph. cent. 2. n. 56. Burm. afr. 119. t. 44. f. 1. Herm. afr. 6. (*Chamaelea*.)

Leaves ovate scattered and by threes tomentose underneath.

[14. *Phylica spicata*. Spiked *Phylica*.

Lin. syst. 235. Willd. 1111. suppl. 153. Ait. kew. 1. 269. Thunb. prodr. 45.

Leaves oblong cordate acuminate tomentose underneath, spikes cylindrical, flowers the length of the bractes.

15. *Phylica callosa*. Callous-leaved *Phylica*.

Lin. syst. 235. Willd. 1112. suppl. 153. Ait. kew. 1. 269. Thunb. prodr. 45.

Leaves oblong cordate acuminate hairy tomentose underneath, flowers in a sort of head.

16. *Phylica paniculata*. *Panicled Phylica*.
Lin. spec. ed. Willd. 1112.
Leaves ovate mucronate smooth above shining tomentose underneath, racemes leafy panicled.
17. *Phylica imbricata*. *Imbricate Phylica*.
Lin. spec. ed. Willd. 1112. Thunb. prodr. 45.
Leaves cordate-ovate smooth, flowers in racemes.
18. *Phylica racemosa*. *Racemed Phylica*.
Lin. syst. 235. Willd. 1112. mant. 209. Thunb. prodr. 45.
Beckea cordata. Burm. prodr. 12.
Leaves ovate smooth, flowers simple panicle-racemed.
19. *Phylica parviflora*. *Small-flowered Phylica*.
Lin. syst. 235. Willd. 1113. mant. 209. Berg. cap. 48. Thunb. prodr. 44.
Leaves awl-shaped acute rugged somewhat hairy, branches panicle-many-flowered.
20. *Phylica secunda*.
Thunb. prodr. 44.
Leaves linear mucronate smooth, heads terminating hirsute.]

DESCRIPTIONS, &c.

1. This is a low bushy plant, seldom rising more than three feet high; the stalks are shrubby and irregular, dividing into many spreading branches, subdividing into smaller ones. The young branches are closely beset with short, narrow, acute-pointed, sessile leaves, of a dark green, and continuing all the year. At the end of every shoot, the flowers are produced in small clusters fitting close to the leaves; they are of a pure white, begin to appear in the autumn, continue in beauty all winter, and decay in spring. [Capsule ovate-globular, crowned with the permanent, white, villose, acutely-five-toothed calyx: skin membranaceous, slightly striated, black; shells cartilaginous, thin, convex on one side, angular on the other, opening elastically by the inner angle. Seed one in each cell, fastened to the bottom of it, of an oblong spheroidal form, ferruginous, shining, having a thick fungous white umbilicus at the base^s.]

It grows naturally at the Cape of Good Hope, whence it was first brought to the gardens in Holland: but it also occupies large tracts of ground about Lisbon, in the same manner as many lands in England are with heath.

[It was cultivated in 1731, by Mr. Miller^t. The flowers are slightly odoriferous^u.

2. Found at the Cape of Good Hope by Thunberg.

3. Stem determinately branched: branches rod-like, rufescent, white-pubescent. Leaves scattered, lanceolate-linear, like those of the Yew-tree, revolute at the edge, spreading, subpubescent, white-tomentose underneath. Heads terminating, solitary. Common calyx shorter than the corolla, netted-veined, with lanceolate scales having a red keel, with hairs on the outside the colour of red wine. The corolla has white hairs. The stigma is blunt^x.

4. This, as well as the preceding is a native of the Cape of Good Hope. If it be the same with the *pubescens* of the Kew catalogue, it was introduced by Masson in 1774; and flowers here from february to april.

5. This also is a native of the Cape, and was introduced at the same time by Masson. It flowers in november^y.]

6. This has an erect shrubby stalk, which rises near three feet high, covered with a purplish bark, and here and there some white down upon it. Leaves narrow, short, acute-pointed, sessile, alternate on every side, thick, nerved, dark green on their upper surface, but hoary on their under. Flowers collected in small heads at the end of the branches, white, woolly, fringed on their borders, cut into six acute segments at top. [Capsule subterminal, rounded-three-cornered, ferruginous, smooth, terminated at top by a widish area with three rises, surrounded by a membranaceous, very narrow, toothless margin, from the fall of the calyx. Grains or divisions of the capsules a little larger than in the first sort. Seeds elliptic, deep chestnut-coloured,

^s Gartner. ^t Hort. kew. ^u Curtis. ^x Linn. mant.
^y Hort. kew.

smooth but not shining: navel fungose, white, widely surrounding the base of the seed^z.

Cultivated by Mr. Miller in 1759. It flowers from march to may^a.

7. Native, as the rest are, of the Cape of Good Hope. Found there by Thunberg.

8. Leaves compressed a little, rugged with minute dots, somewhat hirsute, spreading, subpetioled, with a tomentose groove underneath. Flowers solitary, sessile, the size of a pea. Calyx with ciliate leaflets^b.

9. Stem proliferous, naked or somewhat rugged from the fallen leaves. Leaves scattered, awl-shaped, roundish, bluntish, even, spreading, channelled underneath or with revolute margins. Stipules in pairs, awl-shaped, very small. Heads of flowers with a many-leaved calyx of naked, obovate, two-parted scales, interwoven with wool. Corollas funnel-form with a short tube; segments of the border five, linear, long, woolly-white on the outside. Stamens in the throat: style very short, with three globular stigmas.—It differs from *P. ericoides*, by the horn-shaped segments of the corolla, longer than the yellow corolla itself^c.

Introduced from the Cape in 1786, by Masson^d.

10. Plant a fathom in height, with scattered branches, bifid or by threes at top, round elongated, smooth, purple, raceme-panicled with flowering branchlets at top. Leaves sessile, an inch and more in length, frequent, almost like those of the Spruce Fir, blunt, even, quite entire, veinless, flexible, pale at the base. Inflorescence much resembling that of *Pb. racemosa*. Spikes from the upper axils, and the topmost twigs, sometimes an inch and half in length, slender. Flowers sessile, alternate, approximating, simple. Bractes linear, the lower ones longer than the flowers; also three scales, ovate, ferruginous, concave, blunt, shorter than the flower, at the base of each. Bottom of the corolla villose. Petals five, white, linear, blunt, without any nectary. Germ turbinate, ferruginous^e.

11. This differs from *Pb. buxifolia*, in having the leaves not ovate but cordate, drawn to a very fine point at the tip. The stem is proliferous, and the heads are not lateral^f.

12. Scales of the calyx rough with glaucous-gray hairs. Corolla with white hairs. It varies with revolute-linear leaves.—Found at the Cape by Burman^g.]

13. This rises with a shrubby erect stalk five or six feet high, when old covered with a rough purplish bark, but the younger branches have a woolly down. Leaves thick, the size of those of the Box-tree, veined, smooth and of a lucid green on their upper side, but hoary on their under; they have short foot-stalks, and stand without order on the branches. The flowers are collected in small heads at the ends of the branches; they are of an herbaceous colour and make no great appearance.

[It was cultivated in 1759, by Mr. Miller, and flowers during a great part of the year^h.

14. This differs from all the rest by its inflorescence, or head of flowers elongated into a villose spikeⁱ. Introduced in 1774 by Masson. It flowers in november and december^k.

15. This is a very distinct species from *Pb. cordata*, with which it agrees in the form of the leaves^l. Introduced with the preceding by Masson. It flowers in march and april^m.

16. This approaches to *Pb. callosa*, but differs from it in not having the leaves rugged above, and the flowers racemed and panicledⁿ.

17. Found at the Cape by Thunberg.

18. Stem five feet high, shrubby, with determinate, rufescent, subpubescent branches. Leaves alternate, clustered, sessile, acute, quite entire, like those of *Penæa mucronata*. Panicle terminating, composed of spikes: flowers alternate, sessile, simple, small, within a cordate bracte. Calyx inferior, three-leaved, the length of the germ. Corolla superior, five-parted: petals ovate, flat, even, white. Stamens the length of the

^z Gartner. ^a Hort. kew. ^b Linn. mant. ^c Idem.
^d Hort. kew. ^e Vahl. ^f Linn. spec. ^g Linn. mant.
^h Hort. kew. ⁱ Linn. suppl. ^k Hort. kew.
^l Linn. suppl. ^m Hort. kew. ⁿ Willdenow.

corolla. Germ turbinate between the calyx and corolla. Perhaps it may be of a distinct genus^o.

19. This shrub grows to the height of two feet, and is very like the first species; but the branches are many-flowered, and the flowers smaller^o.

20. Found by Thunberg at the Cape of Good Hope, where all the other species are natives.]

PROPAGATION AND CULTURE.

As these shrubs do not produce seeds in England, they are propagated by cuttings. There are two seasons for planting these; the end of march, before the plants begin to shoot, and the beginning of august. In the first season plant them in pots, and plunge them into a very moderate hot-bed, covering them close with bell or hand-glasses, shading them in the middle of the day, and refreshing them gently with water: they will put out roots in two months; then inure them to the open air, and when they have obtained strength, take them carefully out of those pots, and plant each in a separate small pot, filled with soft loamy earth, placing them in a shady situation until they have taken new root; when they may be removed to a more sheltered place, there to remain to autumn.

In the second season, plant the cuttings in pots, which may be either plunged into an old hot-bed or in the ground, covering them close as before, and treating them in the same way: when they put out roots it will be too late to transplant them, and they must remain in the same pots until spring. If these are placed under a hot-bed frame in autumn, where they may be protected from frost, and exposed to the open air in mild weather, they will succeed better than when they are more tenderly treated.

These shrubs being too tender to thrive in the open air in England, must be kept in pots, and housed in winter: but they require no artificial heat. In summer they may be placed abroad in a sheltered situation. As they flower in winter, they make a good appearance in the green-house or dry stove at that season. The first sort will live through the winter, when mild, in a warm sheltered situation, but is always destroyed by severe frost.

[PHYLLICA. See *Brunia* and *Rhamnus Alaternus*.

PHYLLACHNE. (From *φυλλον* a leaf, and *αχνη* a glume; because it has both leaves and perianth like a glume or chaff.)

Lin. gen. Schreb. n. 1490. suppl. n. 1427. p. 62.

Forst. gen. t. 58. Juss. 422.

Class. 22. 1. Dioecia Monandria.

GENERIC CHARACTER.

* Male Flowers.

CAL. Perianth three-leaved, superior: leaflets very small, awl-shaped.

COR. one-petalled: tube gradually widening and spreading: border five-cleft, spreading; segments oblong, blunt, the length of the tube.

STAM. Filament single, capillary, erect, the length of the corolla, with a gland on each side at the base. Anther globular, three-grooved.

PIST. Rudiment of a germ. Style and Stigma none.

* Female Flowers, on a different plant.

CAL. and COR. as in the Male.

PIST. Germ turbinate, inferior. Style filiform, straight, the length of the corolla, with a gland on each side of the base. Stigma capitate, four-cornered; with four tubercles, the two upper ones larger.

PER. Berry? inferior, one-celled, many-seeded.

SEEDS numerous, ovate-oblong, very small, fastened to the receptacle.

ESSENTIAL CHARACTER.

Cal. three-leaved, superior. Cor. funnel-form.

FEM. Stigma four-cornered. Caps. inferior, many-seeded.

SPECIES.

1. *Phyllachne uliginosa*.

Forst. gen. 116. Lin. suppl. 412.

DESCRIPTION, &c.

It is a very small mossy plant, growing in tufts, like the common *Polytrichum*. Stems closely approximating, covered with imbricate leaves, proliferous into

^o Linn. mant.

^o Idem.

two or three branchlets. Leaves small, awl-shaped, crenulate with a cartilaginous margin. Flowers terminating, sessile, white. It is a pretty plant, having the structure of a Moss all over, but adorned with flowers of a very different kind.

Native of Terra del Fuego, where it was found by Sparrmann^o.

Commerçon, who named it *Stibas*, describes the corolla as being sometimes six or seven-cleft; and the flowers as monoecous, with a single stamen on one side, and a single pistil on the other^o.]

PHYLLANTHUS. (*Phyllanthus* of Pliny. From *φυλλον* a leaf, and *ανθος* a flower. The flower growing out of the leaf.)

Lin. gen. n. 1050. Reich. n. 1142. Schreb. n. 1412:

Gartn. t. 108. Juss. 386. Emblica. Gartn. t. 108.

Class. 21. 3. Monoecia Triandria.

Nat. order of *Tricoccae*. *Euphorbiæ*, Juss.

GENERIC CHARACTER.

* Males.

CAL. Perianth one-leaved, six-parted, bell-shaped, coloured: segments ovate, spreading, blunt, permanent.

COR. none, except the calyx be called so.

STAM. Filaments three, shorter than the calyx, approximating at the base, distant at the tips. Anthers twin.

* Females.

CAL. Perianth as in the males.

COR. none.—Nectary a rim of twelve angles, surrounding the germ.

PIST. Germ roundish, obtusely three-cornered. Styles three, spreading, bifid. Stigmas blunt.

PER. Capsule roundish, three-grooved, three-celled: cells bivalve.

SEEDS solitary, roundish.

ESSENTIAL CHARACTER.

MALE. Cal. six-parted, bell-shaped. Cor. none:

FEM. Cal. six-parted. Cor. none. Styles three, bifid. Caps. three-celled. Seeds solitary.

SPECIES.

[1. *Phyllanthus grandifolia*. Great-leaved *Phyllanthus*.

Lin. spec. 1392. Reich. 4. 121. hort. cliff. 440.

Leaves ovate blunt quite entire, stem arborescent.

2. *Phyllanthus nutans*. Pendulous-flowered *Phyllanthus*.

Swartz prodr. 27.

Tilia racemosa, folio longiore subtus albicante, &c. Sloan. jam. 2. 19. t. 158. f. 3. Raii hist. 3. dendr. 88.

Shrubby, leaves alternate oval glaucous underneath, racemes terminating leafy nodding.

3. *Phyllanthus mimosoides*. Mimosa-like *Phyllanthus*.

Swartz prodr. 27.

Stem shrubby, branches rod-like, leaves pinnate floriferous.

4. *Phyllanthus Conami*.

Swartz prodr. 28.

Conami brasiliensis. Aubl. guian. 926. t. 354:

Stem shrubby very much branched, branches diffuse, leaves petioled roundish attenuated but bluntish at the tip, peduncles fascicled axillary.]

5. *Phyllanthus Niruri*. Annual *Phyllanthus*.

Lin. spec. 1392. Reich. 4. 121. fl. zeyl. n. 331.

hort. ups. 282. cliff. 440. Swartz obs. 354. Thunb. jap. 56. Pluk. phyt. t. 183. f. 5.

Urinaria indica erecta vulgaris. Burm. zeyl. 230. t. 93. f. 2.

Herba mœroris alba. Rumph. amb. 6. 41. t. 17. f. 1.

Niruri barbadense, &c. Mart. cent. t. 9.

Kirganeli. Rheed. mal. 10. 29. t. 15.

Leaves pinnate floriferous, flowers peduncled, stem herbaceous erect.

[6. *Phyllanthus Urinaria*.

Lin. spec. 1393. Reich. 4. 122. fl. zeyl. n. 332.

Lour. cochinch. 554. ed. Willd. 677. Pluk. phyt. t. 183. f. 6.

Herba mœroris rubra. Rumph. amb. 6. 41. t. 17. f. 2.

Trieru-Kirganeli. Rheed. mal. 10. 8. t. 16. Raii dendr. 29.

Leaves pinnate floriferous, flowers sessile, stem herbaceous, procumbent.

^o Linn. suppl.

^o Jussieu.

7. *Phyllanthus bacciformis*.
Lin. syst. 847. *Reich.* 4. 122. *mant.* 294. *suppl.* 415. *Swartz obs.* 355.
Leaves pinnate with six leaflets, female flower terminating.
8. *Phyllanthus racemosus*.
Lin. syst. 847. *suppl.* 415.
Leaves pinnate flowering in a raceme at the tip, fruit berried juiceless, stem suffruticose.]
9. *Phyllanthus Emblica*. *Shrubby Phyllanthus*.
Lin. spec. 1393. *Reich.* 4. 123. *fl. zeyl.* n. 333. *mat. med.* 199. *Swartz obs.* 355. *Lour. cochinch.* 553. *ed. Willd.* 677.
Myrobalanus in Java. Bont. jav. l. 6. c. 24. f. p. 110.
M. Emblica. Baub. pin. 445. *Rumph. amb.* 7. 1. t. 1. *Blackw. t.* 400.
Emblica officinalis. Gærtn. fruct. 2. 122.
Nellika. Zan. hist. 159. t. 61.
Nelli-camarum. Rheed. mal. 1. 69. t. 38. *Raii hist.* 1156.
Leaves pinnate floriferous, stem arboreous, fruit berried.
- [10. *Phyllanthus maderaspatensis*.
Lin. spec. 1393. *Reich.* 4. 123. *Gærtn. fruct.* 2. 125.
Nirouri maderaspat. fennæ folio longiore. Petiv. gaz.
Leaves alternate wedge-shaped mucronate.
11. *Phyllanthus virgata*.
Forst. austral. n. 341.
Leaves simple alternate linear mucronate, peduncles axillary solitary one-flowered, stem shrubby.

DESCRIPTIONS, &c.

1. Native of America.
2. Branches slender, covered with a light-coloured reddish-brown smooth bark, divided into twigs set with leaves at one-third of an inch distance from each other, two inches long and one inch and a half broad, with one middle and several transverse ribs of a purple colour; petioles ten inches long^s.—Native of Jamaica.
3. Native of Antigua.
4. Native of the West Indies.
5. Root filiform, long, white. Stem about a foot high, branched, erect, roundish, even. Leaves alternate, distant, often only terminating. Petioles filiform, bearing both leaves and flowers. Pinnas from eight to twelve pairs, alternate, oblong, entire, small, smooth. Petiolets very short. Stipules very minute, in pairs, at the base of the pinnas, coloured. Flowers on very short peduncles, axillary, nodding, under the leaves. Males and females mixed, but solitary. Calyxes of both five-leaved; leaflets ovate, in the males pale. These have one, columnar, round filament, and three twin contiguous anthers, with five glands at the base of the filament. Capsule six-valved, marked with three lines. Seeds six, oblong, angular¹.]

According to Miller, it is an annual plant, with an herbaceous stalk a foot and half high. The leaflets contract every evening, turning their under side outwards. The flowers are produced on the under side of the leaves along the midrib, and turn downwards. It usually flowers here from June to October. The seeds ripen in succession, and are cast out of the capsules, when ripe, with so much force, as to be thrown to a considerable distance. It is very common in Barbadoes, [in the mountainous swamps of Jamaica, on the banks of rivers in Hispaniola; in the East Indies^u, and Japan^x. It was cultivated in 1692, in the Royal Garden at Hampton Court^y.

6. Stem herbaceous, annual, one foot high, manifold, diffused, subprocumbent, hispid. Leaves many-paired: leaflets ovate-lanceolate, hairy, brownish-green, opposite. Flowers heaped, axillary, subsessile. Stamens three. Styles three, bifid. Capsule three-cornered, three-valved, three-grained. The whole herb is milky; the stem, leaves and calyx reddish^z. The leaves are erect in this, not horizontal as in the preceding; the stem subpubescent, not smooth as in that^a.

It has the trivial name from its diuretic quality;

^s Sloane. ^t Swartz. ^u Idem. ^x Thunberg.
^y Hort. kew. ^z Loureiro. ^a Linn.

and is a native of the East Indies, China about Canton, Cochinchina, and the eastern coast of Africa^b.

7. Stem half a foot high, quite simple, ascending, angular, even. Leaves alternate: leaflets alternate, oval, blunt, mucronate, on very short petiolets, somewhat fleshy, even, veinless, twice as big as those of *Ph. Niruri*. Stipules in threes; two of them semi-cordate, acuminate, in pairs, the third or middle one under the petiole, awl-shaped, running down into the angular stem. Stipules at the leaflets two, acute. Male flowers a few, from each axil of the leaves, pendulous, minute; on one-flowered, capillary pedicels. Perianth of six, ovate-subulate, equal leaflets: (according to Swartz, six-parted.) Filaments three, very short, approximating, with the anthers somewhat oblong; (but Swartz observes; that there is only a single filament, with three twin anthers, so united as to appear like one that is six-grooved, or discharging its pollen by six grooves. Female flower solitary, terminating the compound leaves or common peduncle; it is on a longer peduncle than the male, and ten times bigger than that, or the size of the flower of *Uva Ursi*, and therefore singular. Perianth as in the male. Nectary ovate, three times as large as the calyx, with the mouth gashed. Capsule six-valved, elastic, and containing six seeds.

It is an annual plant, native of Tranquebar, where it was found by Koenig^c. See after n. 11.

8. This very much resembles the other species, but the leaves are simply pinnate; the leaflets alternate, linear, acute, smaller at the tip, where the petiole terminates in a contracted little raceme.—Native of Ceylon. Koenig^d.]

9. This rises in Malabar with a tree-like stem to the height of twelve or fourteen feet, but in England not more than half that height, sending out from the side many patulous branches. The leaves have very narrow leaflets.

[According to Loureiro, the common height is eight feet, with diffused branches. Leaves alternately pinnate, with many oblong-ovate, quite entire, smooth leaflets. Berry small, somewhat pear-shaped, fleshy, subacid, eatable, three-celled, two-seeded. Calyx of both flowers somewhat wheel-shaped, six-cleft; segments blunt, thick. Filaments none: anthers three, placed on the angles of a three-cornered receptacle. Flowers scattered. Germ three-cornered. Style none. Stigmas three, bifid.

Swartz observes, that the filament, in the male flower, is very short and columnar: the three anthers minute and coalescent.—See after n. 11.

Native of the East Indies, Cochinchina and China, in which latter country, as Loureiro remarks, the berry is juiceless.—It was cultivated by Mr. Miller in 1768^e.

10. Calyx of the female flower six-toothed, blunt; of the male five-toothed: these latter have five small petals, and three stamens^h. Capsule orbicular, depressed, contained at the base in a six-leaved calyx, a little wider than itself, having six very obscure swellings, tricoccus. The cocci are papery, not separating from the epidermis, two-valved, opening with a spring. Receptacle central, filiform, short. In each cell two seeds, which are three-sided, dotted, ferruginousⁱ.—Native of the East Indies.

11. Native of the Society islands^k.

Gartner separates *Ph. Emblica* from the other species, because it has not only a drupaceous fruit, but an embryo that is not spiral. He names it *Emblica officinalis*, and describes the fruit to be a drupaceous capsule, globular, depressed, six-grooved, tricoccus; with a leathery-fleshy, thick, smoothish rind. Shell stony, obovate, hexangular, mucronate at the tip, composed of three bony cocci, having on one side a raised dorsal ridge, commonly (but not always) crested with bundles of woody fibres; on the other they are angular; they are half-two-valved, and open with a spring from the base. Receptacle central, columnar, three-sided. Seeds in each cell two, three-sided, bowed on

^b Loureiro. ^c Linn. mant. ^d Linn. suppl.
^e Hort. kew. ^h Reichard from Forsk. ægypt. 6. 159.
ⁱ Gartner. ^k Forster.

one side, with flat planes on the other converging to an acute angle, smooth, bay-coloured, hard: navel simple, small, in the middle of the belly of the seed. Cover three-fold: outer membranaceous; middle crustaceous, hard, brittle; inner membranaceous, ferruginous. Albumen fleshy, friable, pale. Embryo almost the length of the albumen, inverted, milky: cotyledons leafy, cordate-lanceolate, with the edges reflexed towards the back of the seed and slightly bowed: radicle roundish, superior.

Gærtner adds another species, which he names *Emblia grandis*, and suspects to be the *Ph. bacciformis* of Linneus. The fruit is a largish globular drupe, very obscurely three-grooved, smooth, by age becoming brown or the colour of smoke, tricoccus: rind thin, coriaceous. Cocculi bony, on the back very thick and convex, but on the sides thin and converging to an angle, two-valved. Receptacle obscure below, but above three-forked; with roundish arms, curved upwards, but running down in their proper grooves between the sides of the cocculi to the crust of the rind, in which their fibres are ultimately dispersed. Seeds solitary, biggish, thick, gibbous on one side and as it were keeled on the back, slightly convex on the other, with a streak along the middle of the belly; in other parts smooth, bay-coloured, perforated with a small hole under the tip: outer cover crustaceous; inner membranaceous, with a wide ferruginous wart at the base: albumen thick, oily, whitish: embryo inverted, snow-white: cotyledons cordate-elliptic, leafy, flat: radicle small, superior. Retzius has three other species from the East Indies—*simplex*, *stellata*, and *rhannoides*.]

PROPAGATION AND CULTURE.

These plants may be propagated by seeds, when they can be procured from the countries where they grow naturally. They must be sown on a hot-bed, and when the plants are sufficiently grown up, each should be planted in a small pot filled with light earth, and plunged into a hot-bed of tanner's bark; shading and watering them until they have taken good root: after this, they must remain constantly in the bark-stove, and be treated in the same manner with plants from hot countries.

[PHYLLANTHUS AMERICANA. See *Cactus*.

———— Epiphyllanthus. See *Xylophylla*.

———— speciosus. See *Xylophylla*.]

PHYLLIS. (One of the poetical names, like Amaryllis, Hyacinthus, &c.)

Lin. gen. n. 323. Reich. n. 353. Schreb. n. 454.

Gærtner. t. 25. Juss. 198. Bupleuroides. Boerb.

Class. 5. 2. Pentandria Digynia.

Nat. order of *Stellatae*. *Rubiaceae*, Juss.

GENERIC CHARACTER.

CAL. Umbel none (but a panicle.)

Perianth very small, superior, two-leaved, obsolete.

COR. Petals five, lanceolate, obtuse, revolute, scarcely connected at the base.

STAM. Filaments five, shorter than the corolla, capillary, flaccid. Anthers simple, oblong.

PIST. Germ inferior. Style none. Stigmas two, awl-shaped, pubescent, reflex.

PER. none. Fruit turbinate-oblong, blunt, angular.

SEEDS two, parallel, convex and angular on one side, flat on the other, wider at top.

OBS. Stigmas as in Grasses, Elm, Tetragonia.

ESSENTIAL CHARACTER.

Stigmas hispid. Fruifications scattered. (Cal. two-leaved, obsolete. Cor. five-petalled. Seeds two.)

SPECIES.

1. Phyllis Nobla. *Bastard Hare's-ear*.

Lin. spec. 335. Reich. 1. 647. Willd. 1354. hort.

cliff. 87. upf. 57. Kniph. cent. 5. n. 66. Gærtner.

fruct. 1. 123.

Valerianella canariensis frutescens, Simpla nobla dicta.

Dill. elth. 405. t. 299. f. 386.

Bupleuroides quæ Arbor umbellifera. Walth. hort.

11. — quæ Simpla nobla Canariensium. Boerb.

lugdb. 1. 72.

Stipules toothed.

DESCRIPTION, &c.

This plant rises with a soft shrubby stalk about two or three feet high, which is seldom thicker than a man's finger, of an herbaceous colour, and full of joints. These send out several small side branches towards the top, garnished with spear-shaped leaves near four inches long, and almost two broad in the middle, drawing to a point at each end; they are of a lucid green on their upper side, but pale on their under, having a strong whitish midrib, with several deep veins running from it to the sides; the leaves are for the most part placed by threes round the branches, to which they fit close. The flowers are produced at the end of the branches, in loose panicles; they are small, of an herbaceous colour at their first appearance, but before they fade, change to a brown or worn-out purple, and are cut into five parts to their base, where they are connected, and fall off without separating. These segments are reflexed so as to cover the germ, which is situated under the flower, and afterwards becomes a short, turbinated, obtuse, angular fruit, which splits in two parts when ripe, each containing one seed, flat on the inside, convex on the outside and angular.

[Gærtner calls the fruit a capsule. It is inferior, crustaceous, obovate, rhomb or lenticular-compressed, two-celled, bipartite: the crust on the back and sides is coriaceous and thick, but on the belly membranaceous, subdiaphanous and white. Seed in each cell one, obovate, smooth, of a rusty-red colour, convex on one side, flat on the other or very slightly concave; fastened by the base. The seeds being of a different colour from the crust that covers them, entirely distinct and easily separating from it; Gærtner agrees with Adanson in considering the seeds as included in a pericarp, rather than as being naked, with Linneus.

According to Fabricius, this plant recedes entirely from the *Umbellatae*, in having an arborescent stem, simple leaves opposite or often by threes, and the flowers in a dichotomous panicle. The structure of the germ and seed however show it to be of that order.

Native of the Canary islands. Cultivated in 1699 by the Dutchess of Beaufort. It flowers in June and July.

PROPAGATION AND CULTURE.

It is propagated by seeds, which must be sown on a bed of fresh light earth towards the end of March, and the plants will come up by the beginning of May; when they are fit to transplant, they should be put into separate pots, and placed in a shady situation until they have taken root; after which time they should be placed in a sheltered situation, where they may have the morning sun, and in the summer will require to be frequently watered. In winter they must be sheltered from the frost, but require to have as much free air as possible in mild weather; the second year the plants will flower, if therefore in the spring some of the plants are shaken out of the pots and put into the full ground, they will perfect their seeds much better than those which remain in the pots.

As these plants seldom continue in health above four or five years, it will be proper to raise a supply of young plants to succeed them.

The plants retain their leaves all the year, which being large and of a shining green, make a handsome appearance in winter, in which the beauty of it consists, for the flowers have none.

[PHYLLIS. See *Acrostichum*.

Phyllitidi affinis. See *Marcgraavia*.

Phyllitidi, &c. folio. See *Arum*.

PHYLLITIS. See *Acrostichum*, *Asplenium*, *Hemionitis*, *Polypodium*, *Pteris*, *Trichomanes*.

PHYLLOCHNOIS. See *Ajuga*.

PHYLLON and PHYLLUM. See *Mercurialis*.]

PHYSALIS. (Φυσάλις of Dioscorides, from φυσά a bladder: the calyx being much inflated.)

Lin. gen. n. 250. Reich. n. 267. Schreb. n. 336

Gærtner. t. 131. Juss. 126. Alkekengi. Tournef. t. 64.

¹ Giseke præledt. Linn. 512.

^m Hort. kew.

P H Y

Class. 5. 1. Pentandria Monogynia.
Nat. order of *Luridæ*. *Solanææ*, Juss.

GENERIC CHARACTER.

- CAL. *Perianth* one-leafed, ventricose, half-five-cleft, small, five-cornered, with acuminate segments, permanent.
COR. one-petalled, wheel-shaped: *tube* very short: *border* half-five-cleft, large, plaited: *segments* wide, acute.
STAM. *Filaments* five, awl-shaped, very small, converging. *Anthers* erect, converging.
PIST. *Germ* roundish. *Style* filiform, generally longer than the stamens. *Stigma* blunt.
PER. *Berry* subglobular, two-celled, small, within a very large, inflated, closed, five-cornered, coloured calyx. *Receptacle* kidney-form, doubled.
SEEDS very many, kidney-form, compressed.

ESSENTIAL CHARACTER.

Cor. wheel-shaped. Stam. converging. Berry within an inflated calyx, two-celled.

SPECIES.

* Perennial.

1. *Physalis somnifera*. Clustered Winter Cherry.
Lin. spec. 261. *Reich.* 1. 506. *Willd.* 1019.
hort. cliff. 62. *Gærtn. fruct.* 2. 239. *Cavan.*
ic. 2. 2. t. 103. *Lour. cochinch.* 132. *Desfont.*
atlant. 192.
Solanum somniferum. *Camer. epit.* 815. *Matth.* 755.
Clus. hist. 2. 85. *Dod. pempt.* 455. *Lob. ic.* 263.
Ger. emac. 339. f. 2. *Park. theat.* 345. n. 3. 346.
f. 3.
S. somn. verticillatum. *Baub. pin.* 166.
S. verticillatum. *Baub. hist. Raii hist.* 682.
S. vesicarium coralloides. *Barrel. ic. t.* 149.
Stem shrubby, branches straight, flowers clustered.
- [2. *Physalis aristata*. Bearded Winter Cherry.
Ait. hort. kew. 1. 244. *Lin. spec. ed. Willd.* 1020.
Stem shrubby, leaves oblong entire smooth, branches pe-
tioles and peduncles lanuginose, calycine toothlets
awned.]
3. *Physalis flexuosa*.
Lin. spec. 261. *Reich.* 1. 507. *Willd.* 1020.
Baccifera indica, &c. *Raii hist.* 1632.
Pevetti. *Rheed. mal.* 4. 113. t. 55.
Stem shrubby, branches flexuose, flowers clustered.
4. *Physalis arborefcens*.
Lin. spec. 261. *Reich.* 1. 507. *Willd.* 1020. *Thunb.*
prodr. 37? *Mill. fig. t.* 206. f. 2.
Stem shrubby, leaves ovate hairy, flowers solitary, corollas
revolute.
5. *Physalis curassavica*. Curassavian Winter Cherry.
Lin. spec. 261. *Reich.* 1. 507. *Willd.* 1020. *vir.*
cliff. 16. *hort. cliff.* 62.
Solanum vesicarium curass. &c. *Mor. hist.* 3. 527.
n. 26. *Pluk. phyt. t.* 111. f. 5.
Stem shrubby, leaves ovate tomentose.
- [6. *Physalis tomentosa*. Downy Winter Cherry.
Lin. spec. ed. Willd. 1021. *Thunb. prodr.* 37.
Stem shrubby tomentose, leaves elliptic-oblong tomentose,
flowers lateral aggregate.]
7. *Physalis viscosa*. Clammy Winter Cherry.
Lin. spec. 261. *fyst.* 222. *Reich.* 1. 507. *Willd.*
1021. *hort. cliff.* 496. *Gron. virg.* 24. *Jacqu.*
hort. 2. 64. t. 136.
Alkekengi bonariense repens, *bacca turbinata viscosa*.
Dill. elth. 11. t. 10. f. 10.
Leaves in pairs repand blunt subtomentose, stem herba-
ceous panicled at top.
8. *Physalis pensylvanica*. Pennsylvanian Winter Cherry.
Lin. spec. 1670. *Reich.* 1. 508. *Willd.* 1021.
Alkekengi virginianum perenne majus, *flore luteo*
amplo, *fructu minimo*. *Rand æt. angl.* 399.
Leaves ovate subrepand blunt almost naked, flowers in
pairs, stem herbaceous.
9. *Physalis Alkekengi*. Common Winter Cherry.
Lin. spec. 262. *Reich.* 1. 508. *Willd.* 1022. *mot.*
med. 65. *hort. cliff.* 62. *ups.* 49. *vir. cliff.* 16.
Gærtn. fruct. 2. 238. *Hall. belv. n.* 577. *Hoffm.*
germ. 78. *Roth. germ.* 1. 96. 2. 246. *Pollich*
pal. n. 227. *Lour. cochinch.* 133. *Gmel. it.* 1.
158. *Blackw. t.* 161. *Knorr. del.* 1. t. I. 4.

P H Y

- Sabb. hort.* 2. t. 63. *Ludw. æt. t.* 151. *Plenck.*
ic. t. 124. *Woodv. med. bot.* 2. 33. t. 224.
P. Halicacabum. *Scop. carn. n.* 286.
Solanum vesicarium. *Baub. pin.* 166. *Dod. pempt.*
454.
S. halicacabum. *Ger.* 271. f. 1. *emac.* 342. f. 1.—
vulgare. *Baub. hist. Raii hist.* 681.—f. *Alkekengi*
vulgare. *Park. theat.* 462. 1. 463. f. 1.
Leaves in pairs entire acute, stem herbaceous somewhat
branched at bottom.
- [10. *Physalis peruviana*. Peruvian Winter Cherry.
Lin. spec. 1670. *fyst.* 222. *Reich.* 1. 509. *Willd.*
1022.
Pubescent, leaves cordate quite entire.]
* Annual.
11. *Physalis angulata*. Tooth-leaved Winter Cherry.
Lin. spec. 262. *Reich.* 1. 509. *Willd.* 1022. *hort.*
cliff. 62. *ups.* 50. *fl. zeyl. n.* 97. *Kniph. cent.* 7.
n. 72. *Lour. cochinch.* 132.
Halicacabum f. Solanum indicum. *Cam. hort.* 70.
t. 17.
H. indicum rectum. *Park. theat.* 462. n. 3.
Solanum vesicarium indicum. *Baub. pin.* 166. *Raii*
hist. 681.—*annuum indicum erectum*. *Mor. hist.* 3.
f. 13. t. 3. *ord.* 2. f. 22.
Alkekengi ind. glabrum, *chenopodii folio*. *Dill. elth.*
13. t. 12. f. 12.
β. *A. ind. glabr. capfici folio*. *Dill. elth.* 12. t. 11.
f. 11.
Very much branched, branches angular smooth, leaves
ovate toothed.
12. *Physalis pubescens*. Woolly Winter Cherry.
Lin. spec. 262. *fyst.* 222. *Reich.* 1. 509. *Willd.*
1023. *hort. cliff.* 62. *Lour. cochinch.* 133.
P. ramosa. *Mill. dict. n.* 9.
Alkekengi virginianum fructu luteo. *Fewill. peruv.*
3. 5. t. 1. n.
Halicacabum f. Alk. virginense. *Park. theat.* 462. 2.
Raii hist. 681.
Solanum vesicarium virginianum procumbens annuum,
folio lanuginoso. *Mor. hist.* 3. 527. f. 13. t. 3. f. 24.
Very much branched, leaves villose-viscid cordate, flowers
pendulous, fruiting calyxes roundish-globular angular.
- [13. *Physalis prostrata*. Trailing blue-flowered Winter
Cherry.
Lin. spec. ed. Willd. 1024. *L'Herit. stirp. nov.* 43.
t. 22. *Jacqu. ic. rar.* 1. t. 38. *collect.* 1. 99.
Ait. kew. 1. 245. *Lamarck encycl.* 2. 103.
P. limensis. *Retz. obs.* 5. 22.
Very much branched, stem procumbent round hirsute,
leaves somewhat fleshy.
14. *Physalis barbadensis*. Barbadoes Winter Cherry.
Lin. fyst. 222. *ed. Willd.* 1023. *Jacqu. ic. rar.* 1.
t. 39. *misc.* 2. 359. *Retz. obs.* 3. 26.
Very much branched, leaves ovate-cordate pubescent, flow-
ers pendulous, fruiting calyxes ovate-acuminate an-
gular.
15. *Physalis chenopodifolia*. Goose-foot-leaved Winter
Cherry.
Lin. spec. ed. Willd. 1023.
Very much branched, leaves smooth ovate acuminate an-
gular-toothed, calyxes even the size of the fruit glo-
bular.]
16. *Physalis minima*. Small Winter Cherry.
Lin. spec. 263. *fyst.* 222. *Reich.* 1. 509. *Willd.*
1024. *hort. cliff.* 62.
Solanum vesicarium indicum minimum. *Herm. lugdb.*
569. t. 571.
Pee-inota-inodien. *Rheed. mal.* 10. t. 140. f. 71.
Very much branched, fruiting peduncles longer than the
villose leaf.
- [17. *Physalis pruinosa*. Hairy annual Winter Cherry.
Lin. spec. 263. *fyst.* 222. *Reich.* 1. 510. *Willd.*
1024.
Alkekengi barbadense nanum alliarie folio. *Dill. elth.*
12. t. 9. f. 9.
Very much branched, leaves villose, peduncles strict.]
- DESCRIPTIONS, &c.
1. This rises with a shrubby stalk near three feet
high, dividing into several branches which grow erect,
and are covered with a woolly down. Leaves ovate-
lanceolate, almost three inches long, and an inch and a
half

half broad in the middle, downy and on short petioles. Flowers small, of an herbaceous white colour, sitting very close to the branches; and succeeded by small berries nearly of the same size as the common Winter Cherry, and red when ripe.

[Branches flexuose, with short very close villose hairs. Leaves quite entire, the lower blunt, the upper sharp. Flowers glomerate, axillary, subsessile. Calyx pubescent, five-cornered, when the fruit is ripe ovate-pyramidal, five-toothed; teeth sharp. Corolla pale yellow, villose, twice as long as the calyx: tube very short: segments acute spreading^a. According to Gærtner, the calyx has ten angles, the alternate angles standing out less. Berry spherical, scarlet, very shining, pulpy. Seeds biggish, dotted, pale yellow^c. Fruit of *Physalis*, but flower of *Atropa*; herb of *A. frutescens*, which it resembles so much, that it can scarcely be separated from that genus^b.

Native of Spain, Sicily, Candia, Barbary, Zanguebar on the coast of Africa, and Mexico in America.

Cultivated in 1596 by Gerarde. It flowers in July and August.

2. Native of the Canary islands, where it was found by Masson. Introduced in 1779^a.

3. Habit and stature of the first species; flowers in like manner scattered at the axils of the leaves; the calyxes also grow out and involve the berry: but it differs manifestly in having the flowers smaller, the branches very flexuose, and hence the leaves disposed as it were in a double row, inserted into the outer angles of the flexure.—Native of the East Indies^a.]

It rises to the height of five or six feet, sending out long flexuose branches covered with a gray bark. Leaves oblong-ovate, often placed opposite, sometimes by threes round the branches, to which they fit close. Flowers in clusters at the base of the petioles, small, of an herbaceous yellow colour: they are succeeded by round purplish berries having ten cells, each including one seed. It flowers in July and August, but unless the season is warm, the berries do not ripen in England.

4. Stalk shrubby, ten or twelve feet high, dividing towards the top into several small branches, covered with a gray hairy bark. Leaves on the lower part alternate; but towards the end of the branches opposite. Lower leaves from three to four inches long, and two broad in the middle, drawing to a point at both ends; they are of a pale green and are downy. Flowers from the axils towards the end of the branches, one, or two at the same joint opposite, on short nodding peduncles; they are small, of a pale dirty yellow colour, with purple bottoms. Berries small, spherical, red, inclosed in an oval, dark-purple bladder.

It flowers in June and July, but unless the season proves warm, no berries succeed. Discovered by Dr. Houstoun at Campeachy, whence he sent the seeds to England. [It must therefore have been cultivated by Mr. Miller before 1733. Willdenow suggests that the *Ph. arborescens* of Thunberg is probably a different species.]

5. Root perennial, creeping. Stalks several, slender, about a foot high, becoming somewhat woody, but seldom lasting above two years. Leaves alternate, on short foot-stalks; they are about two inches long, and an inch and half broad. Flowers axillary towards the top, on short slender peduncles. Petals small, sulphur-coloured with dark-purple bottoms: they appear in July and August, but are rarely succeeded by berries in England.

Native of Curassao in the West Indies. [Cultivated in 1699, by Viscount Falkland^a.

6. Found at the Cape of Good Hope by Thunberg.]

7. Root creeping, sending up a great number of smooth stalks, about a foot high, dividing towards the top into small spreading branches. Leaves heart-shaped or ovate, about three inches long, and two broad near their base, entire, rough to the touch, of a pale yellowish green, alternate, on pretty long foot-

stalks. Flowers towards the top, axillary, on long slender peduncles, of a dirty yellow colour with purple bottoms. They appear in June and July, and are succeeded by viscous berries about the size of the common sort, of an herbaceous yellow colour, inclosed in a light-green swelling bladder.

[Native of America. Cultivated in 1732 by James Sherard, M. D.^a

8. Stems many, procumbent or erect, scarcely a foot in height, somewhat flexuose, roundish or obscurely angular, on the top at the flowers branched, having an obscure down scattered over them. Leaves alternate, like those of *Boerhaavia*, ovate, blunt, serrate-repand, almost naked above, obscurely tomentose underneath, next the flowers in pairs. Petioles shorter by half than the leaves. Peduncles at the axils of the branches, solitary, a little longer than the petioles. Calyx subcylindric, subangular, retuse at the base. Corolla yellow, darker at bottom. Stamens yellow. Berry globular, small, the size of a pea, red^a.]

Root not creeping. Stalks two feet long, spreading on the ground if not supported. Leaves three inches long, and two inches and a half broad, alternate on very long foot-stalks, pale green, having several acute indentures on their edges. Flowers axillary on very short peduncles, larger than those of the common sort, and of a pale yellow colour. They are succeeded by very small yellowish berries, which ripen in the autumn, when the season proves warm.

[Native of North America. Cultivated in 1726 by Mr. Miller. It flowers from July to September^a.]

9. Roots perennial, and creeping to a great distance. They shoot up many stalks in the spring a foot high or more. Leaves of various shapes, some angular and obtuse, others oblong and acute-pointed, of a dark green, on long foot-stalks. Flowers axillary, on slender peduncles, white, appearing in July. Berry round, the size of a small Cherry, inclosed in the inflated calyx which turns of a deep red in the autumn [succulent, very smooth, shining, red: skin membranaceous, very thin: pulp soft, red: partition very narrow, membranaceous. Receptacle central, solid, globular, fleshy, excavated, cohering with the inside of the berry by means of the partition. Seeds very numerous, covered with little raised points, yellowish or rufescent^a.

Native of the South of Europe, Germany, China, Cochinchina, &c.—Cultivated here in 1597^a.

The berries of *Alkekengi*, commonly called with us Winter Cherries, were well known to the ancients, and are described by Dioscorides, under the name of *Στρογγυλον αλικακαβον*. They have an acidulous and not unpleasant taste, followed by a slight bitterness, which they are said to derive from the investing calyx.

Though esteemed detergent and aperient, their fruit is chiefly recommended as a diuretic in suppression of urine, and for removing of obstructions occasioned by gravel or mucous. From six to twelve Cherries, or an ounce of the expressed juice, is given as a dose: there seems however to be no danger from a much larger quantity; for in some parts of Germany the country people eat them by handfuls, and in Spain and Switzerland, they frequently supply the place of other eatable fruits. Ray says, that a gouty person prevented the returns of the disorder, by taking eight of these berries at each change of the moon. Instances of their good effects are related in dropsical and calculous complaints, but at present they are wholly disregarded with us^a.

10. Plant very much resembling *Datura Metel*. Stem (in the stove) perennial, lofty, divaricating, very finely pubescent and extremely soft, as are also the leaves. Flowers solitary, pendulous, yellow, with five dusky spots at bottom, visible on both sides, and the throat hirsute.

Native of South America: found about Lima by Alstroemer^b. Introduced about 1772. It flowers from April to October^c.—*Physalis peruviana* of Miller is *Atropa physaloides*.]

^a Hort. kew.

^b Linn. spec.

^c Hort. kew.

^d Gærtner.

^e Hort. kew.

^f Woodville.

^g Linn. spec. & syst.

^h Hort. kew.

ⁱ Desfontaines.

^j Gærtner.

^k Linn.

^l Hort. kew.

^m Linn. spec.

ⁿ Hort. kew.

11. This is seldom a foot high. Leaves of a deep green, on long foot-stalks. Flowers small, white, on short peduncles. Berries small, green when ripe.

[Stem straight, the thickness of the little finger, three-cornered below, four-cornered above, as are also the branches, which come out obliquely from top to bottom, in alternate order, and are thicker at the base. Lower leaves wider and rounder than those about the middle of the stem, and these larger than those of the branches, deeply toothed or jagged, like those of common Goose-foot, smooth. Flowers five-cornered, of an extremely pale yellow colour, with spots of a darker yellow at the base: stamens short, purple, with oblong anthers of a dusky blue colour. Calyx of the fruit swelling, pendulous, oblong at first, but rounder afterwards, green frequently streaked with dark purple at the angles, which are so little apparent in this species, that the bladder seems to be roundish. The fruit, when ripe, fills the bladder and bursts it. The stem and leaves smell disagreeably when handled^d.

Native of both Indies, CochinChina and Japan. In the Eltham garden, where it was cultivated before 1732, it came up among earth that was brought with other plants from Carolina.

6. Dillenius has figured another *Alkekengi* which Linneus supposes to be a variety of the preceding, although the leaves are in a manner entire. Stem eighteen inches high and more, the thickness of the little finger at bottom, purplish green, smooth, three-sided, but the upper branches four-sided. Leaves resembling those of *Capsicum*, thin, smooth but not shining, the midrib whitish, paler underneath. Flowers small, five-cornered, very pale yellow, with five dusky yellow spots at the bottom. In other respects this agrees with the preceding; as also in its disagreeable scent. The only differences are, that the flowers and bladders are a little smaller, shorter and less produced, and the leaves always entire. The seeds of this were gathered by Dr. Sherard in Holland, and introduced into his garden at Eltham.]

12. This branches out very wide close to the ground, and the branches frequently lie upon it; they are angular and full of joints, dividing again into smaller branches. Leaves on pretty long foot-stalks, about three inches long and almost two broad, having several acute indentures on their edges. Flowers produced on the side of the branches upon short, slender, nodding peduncles; they are of an herbaceous yellow colour with dark bottoms, and are succeeded by large, swelling bladders, of a light green, inclosing berries as large as common Cherries, which are yellowish when ripe. It flowers in July, and the berries ripen in autumn.

[Linneus remarks, that the spots on the corolla are dusky, not pale; the peduncles nodding, not drooping; the berries globular, filling the calyx.

Native of America, especially Virginia. Also of CochinChina, according to Loureiro.—Cultivated in 1739, by Mr. Miller^e.

13. Stem herbaceous, branched from the bottom, brittle, a foot high. Branches and branchlets numerous, alternate, flexuose. Lower leaves opposite, stem-leaves alternate, branch-leaves in pairs one less than the other, petioled, spreading, cordate, the upper ones unequal at the base, bluntish, repand-subangular, villose underneath, brittle, bright green, flat, two inches long and upwards, and from eighteen to twenty-one lines in breadth. Petioles rounded on one side, flattish on the other, channelled below, the length of the leaf. Flowers axillary, solitary or in pairs, peduncled, fragrant, fugacious, an inch in width. Corollas violet, with a whitish eye, and radiating lines of a darker violet. Peduncles round, villose; of the flower short, upright; of the fruit lengthened, reflex, still shorter than the petiole.

Native of Peru; found in the sands near Lima by Dombey, who sent the seeds to the Paris garden in 1780^f. It was introduced here in 1782, by Mons. Thouin^g.

^d Dillenius.

^e Hort. kew.

^g Hort. kew.

^f L'Heritier.

Mons. L'Heritier remarks, that on account of its funnel-form corolla and distant stamens it might be referred to *Atropa*; but the bladdery calyx involving the berry determines it to this genus.

14. Stem slightly pubescent, pellucid, pale green tinged here and there with red, branchlets slightly channelled. Leaves cordate, with the lobes of the base placed spirally on each other, but little toothed. Calyx oblong, very long-pointed, pubescent; when in fruit conic-prismatic, excavated-flat at the base. Corolla yellow with purple spots and anthers. Its purple anthers, unclammy leaves, want of hoariness, flowering peduncles nodding and not very long, distinguish this from *Pb. pruinosa*^h. Retzius refers the *Alkekengi barbadense nanum* of Dillenius to this species. See *Pb. pruinosa*.

According to Jacquin, the stem is round, about the thickness of a reed, villose, upright, with many divaricating branches. Leaves acute, toothed, soft, somewhat villose on both sides, but not viscid, on long petioles. Peduncles short. Flowers drooping. Corolla pale yellow, with five fuliginous spots at the base. Fruits pendulous, deciduous. Fruiting calyx ovate, acuminate, smooth, veined, acutely five-cornered, ash-coloured. Berry roundish, shining, very smooth, pale green, much less than the calyx, acid.—Native of Barbadoes.

15. This is sufficiently distinct from the other species, by the berries being of the same size with the calyxⁱ.—See species 11 and 12. The native place is not known.

16. This is a small spreading plant, with oblong hairs at the axils of the branches.—Native of the East Indies^k.]

Stems seldom above a foot high. Leaves ovate, of a deep green, on long foot-stalks. Flowers small, white, on short peduncles. Berries small, green when ripe.

[Native of the East Indies. Cultivated by Mr. Miller in 1759. It flowers in July and August^l.

17. This has the appearance of the preceding species, n. 9. 10. 11. but the anthers are yellow, not blue; the branches round, flat above and villose; the leaves villose-viscid; the axils of the ramifications germinant with a green sort of frosting. Flowering peduncles long, erect, strict. Flowers drooping. Calyxes with a flat base. Berries subterbinate.

Native of America^m. Mr. Miller cultivated it in 1726. It flowers in July and Augustⁿ.

Forster has another species, a native of the Society islands, which he names *Physalis flaccida*, but he does not give any description or specific character of it^o.

Mr. Miller has the following species not noticed by Linneus:]

1. *Physalis virginiana*.

Mill. dict. n. 4. fig. t. 206. f. 1.

Stem herbaceous, leaves ovate-lanceolate acutely toothed.

Root perennial, composed of strong fibres, from which arise two or three hairy stalks nine or ten inches high, dividing into several branches. Leaves pale green and hairy, two inches and a half long, and an inch and half broad, placed alternately on short foot-stalks. The flowers come out from the side of the branches, at the base of the petioles, which are long and slender. The corolla has a very short tube, but is larger than in most of the species, sulphur-coloured with a dark purple bottom. The flowers appear in July, and in warm seasons are succeeded by oval yellowish berries, which ripen in the autumn. The seeds were sent from Philadelphia by Dr. Benfil, who found the plant growing there naturally.

2. *Physalis patula*.

Mill. dict. n. 12.

Very much branched patulous, branches angular, smooth, leaves lanceolate pinnate-toothed.

This is a low annual plant. Leaves downy, with deep indentures on their edges, which are opposite, and regular like a pinnate leaf. Flowers small and white. Fruit small, yellowish when ripe.

^h Retzius.

^m Linn.

ⁱ Willdenow.

ⁿ Hort. kew.

^k Linn.

^o Flor. austral. n. 506.

^l Hort. kew.

3. *Physalis villosa*.

Mill. dict. n. 13.

Alkekengi americanum annuum ramosissimum villosum, fructu rotundo ex luteo virecente. Houst. Mfs. Very much branched, branches villose, leaves ovate acuminate serrate-toothed.

This is an annual plant, with a very branching hairy stalk. Flowers small, of a pale yellow colour. Fruit round, as large as a Cherry, and of a yellowish green when ripe.

4. *Physalis cordata*.

Mill. dict. n. 14.

Alkekengi americanum annuum, Lamii folio, fructu cordato. Houst. Mfs.

Stem erect branched, leaves ovate serrate toothed, petioles and peduncles very long.

This is an annual plant, near two feet high. The leaves change to a purplish colour in the autumn. Flowers small and white. Berries almost as large as Heart-Cherries, and of that shape, yellowish green with some purple stripes.

5. *Physalis maxima*.

Mill. dict. n. 15.

Alkekengi americanum annuum maximum viscosum. Houst. Mfs.

Stem erect branched, leaves ovate-lanceolate viscid, fruit very large heart-shaped.

This also is an annual plant, with a smooth stalk near three feet high. Leaves on long foot-stalks. Flowers small, pale yellow. Fruit pale yellow when ripe.

All these were found at Vera Cruz by Dr. Houstoun.

6. *Physalis peruviana*.

For which see *Atropa physaloides*.

PROPAGATION AND CULTURE.

1. Sow the seeds on a bed of light earth the beginning of april: when the plants are two or three inches high take them up carefully, and plant each in a small pot filled with kitchen-garden mould, placing them in the shade till they have taken new root; then remove them to a sheltered situation till the beginning of october; at which time remove them into the greenhouse, watering them sparingly in winter. They will continue several years, if they are not too tenderly treated.

3. Sow the seeds on a moderate hot-bed, and when the plants have four leaves, transplant them on a fresh hot-bed, shading them till they have taken new root; then admit fresh air to them every day in warm weather. When they are three or four inches high, take them up carefully, and plant each in a small pot, filled with light loamy earth, placing them in a frame upon an old hot-bed, and shading them till they have taken new root; then gradually inure them to the open air, into which they may be removed in july, and being placed in a warm situation, they may remain there till the end of september. The first winter place them in a moderate stove; but when they have obtained strength, they will live through the winter in a good greenhouse.

4. Sow the seeds in the same manner, and treat the plants as directed for the preceding; except that not being so hardy, they must be kept in a moderate stove in winter; but in the middle of summer they should be placed in the open air, in a sheltered situation, for about three months; for if they are constantly kept in the stove, they will draw up weak, and not flower. It may also be increased by cuttings, planted in pots during the spring and summer months, and plunged into a gentle hot-bed.

5. 7. Part the roots in the spring: place the plants under a hot-bed frame, or other moderate warmth in winter, and during the months of july, august and september, in a warm situation in the open air.

8. Sow the seeds upon a warm border at the end of march; when the plants come up, thin them where they are too close, and keep them clean from weeds till autumn, when they should be transplanted to the places where they are to remain, which should be in a warm situation, where they will live through the winter in mild seasons.

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9. This sort is easily propagated, either by seeds or by parting the roots; the latter, being the most expeditious method, is generally practised, any time after the stalks decay, till they begin to shoot in the spring: it loves a shady situation, and should be confined, otherwise the roots will ramble to a great distance. Its only beauty is in autumn, when the fruit is ripe.

11, &c. The annual sorts are propagated by seeds sown on a moderate hot-bed, and when the plants come up and are a little advanced, they should be planted on a fresh hot-bed to bring them forward, and treated in the same way as the *Capficum*. When they are grown strong, and are hardened to bear the open air, they may be transplanted with balls of earth to their roots into a warm border, observing to water and shade them till they have taken root, after which, they will require no other care but to keep them clean from weeds.

12. If the seeds are permitted to scatter, the plants will come up in the spring, and require no other care but to thin them, and keep them clean from weeds; or if the seeds be sown in the spring on a common border, the plants will rise very well, and need no other care.

[PHYSIC-NUT. See *Jatropha*.

PHYTENOIDES. See *Scoparia*.

PHYTEUMA (of Pliny. *Φυτεύμα* of Dioscorides. From *φυτεω* gigno; or, according to others, from *φυτον*, a plant.)

Lin. gen. n. 220. Reich. n. 236. Schreb. n. 292.

Gertn. t. 30. Juss. 165. Rapunculus. Tourn. t. 38.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanaceæ. Campanulaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, five-parted, acute, from erect-spreading, superior.

COR. one-petalled, wheel-shaped, spreading, five-parted: segments linear, acute, recurved.

STAM. Filaments five, shorter than the corolla. Anthers oblong.

PIST. Germ inferior. Style filiform, the length of the corolla, recurved. Stigma bifid or trifid, oblong, revolute.

PER. Capsule roundish, two-celled or three-celled, opening on both sides by a lateral hole.

SEEDS very many, small, roundish.

ESSENTIAL CHARACTER.

Cor. wheel-shaped with linear segments, five-parted. Stigma bifid or trifid. Caps. two-celled or three-celled, inferior.

SPECIES.

1. *Phyteuma pauciflora*.

Lin. spec. 241. fyst. 211. Reich. 1. 470. Willd. 919. Jacqu. collect. 2. 63. Allion. pedem. n. 424. Villars dauph. 2. 515.]

Rapunculus pauciflorus. Mill. dict. n. 4. [Scop. carn. n. 241. Hall. belv. n. 680.]

R. alpinus parvus comosus. Bauh. hist. 2. 811. Raii hist. 745.

Head somewhat leafy, bractes ovate ciliate, all the leaves linear-lanceolate subcrenate.

2. *Phyteuma Scheuchzeri*.

Lin. spec. ed. Willd. 919. Allion. pedem. n. 428. t. 39. f. 2.

P. scorzonifolia. Villars dauph. 2. 519. t. 12. f. 2. Rapunculus. Hall. belv. n. 682. Scheuch. it. 6. 460.

Head somewhat leafy, bractes linear, longer than the head, leaves lanceolate toothed.

3. *Phyteuma Michellii*.

Lin. spec. ed. Willd. 920. Allion. pedem. n. 427. t. 7. f. 3.

Rapunculus alpinus cœruleus, &c. Mich. flor. 80.

Head roundish, bractes oblong-lanceolate, leaves linear rigid almost entire.

4. *Phyteuma hemisphærica*.

Lin. spec. 241. fyst. 211. Reich. 1. 470. Willd. 920. Moench. bass. n. 176. Allion. pedem. n. 425. Villars dauph. 2. 515. Ger. prov. 454. Jacqu. ic. rar. vol. 2. collect. 2. 61.]

Rapunculus hemisphæricus. Mill. dict. n. 3. [Hall. belv. n. 679.]

8 C

R. umbellatus

- R. umbellatus folio gramineo.* *Baub. pin. 92. Raii hist. 745.*
R. sylvestris cœruleus umbellatus. *Thal. herc. 94. t. 8. f. 3.*
Rapuntium alterum angustifolium alpinum. *Col. ecphr. 2. 23. t. 26.*
Head roundish, bractes ovate, leaves linear almost quite entire scarcely shorter than the stem.
 5. *Phyteuma comosa.*
Lin. spec. 242. syst. 211. Reich. 1. 470. Willd. 921. Barr. ic. 889. Scop. ann. 2. 48. Jacqu. austr. app. t. 50. Villars dauph. 2. 517.]
Rapunculus comosus. *Mill. dict. n. 2. [Scop. carn. n. 240.]*
R. alpinus corniculatus. *Baub. pin. 113. prodr. 33. ic. Ger. emac. 454. 4. Raii hist. 744.*
Trachelium petræum minus. *Pona bald. 336. ic.—globosum. Park. theat. 643. 3. t. 644. 3.*
Campanula. *Pluk. phyt. t. 152. f. 6.*
Flowers in a sessile terminating bundle, leaves toothed, root-leaves cordate.
 6. *Phyteuma orbicularis. Round-headed horned Rampion.*
Lin. spec. 242. syst. 211. Reich. 1. 471. Willd. 921. Hudf. angl. 97. Wither. arr. ed. 3. 245. Engl. bot. 142. Jacqu. austr. 5. 18. t. 437. Villars dauph. 2. 517. Krock. filef. n. 326.]
Rapunculus orbicularis. *Mill. dict. n. 5. [Scop. carn. n. 239. Hall. helv. n. 631.]*
R. folio oblongo, spica orbiculari. *Baub. pin. 92. Mor. hist. 2. 463. f. 5. t. 5. f. 47.*
R. corniculatus cœruleus minor. *Barrel. ic. 525.*
R. corn. montanus. *Ger. emac. 455. 5. Raii hist. 744. syn. 278.*
R. alopecuroides orbiculatus. *Park. theat. 648. n. 3.*
Rapuntium montanum rarius corniculatum. *Col. ecphr. 1. 222. t. 224.*
β. P. lanceolata. *Villars dauph. 2. 517. t. 12. f. 1. Barrel. ic. 526. (Rapunculus).*
All the leaves oblong-lanceolate.
γ. P. elliptica. *Villars dauph. 2. 517. t. 11. f. 2.*
All the leaves oblong-elliptic obtuse.
δ. P. Charmelii. *Villars dauph. 2. 516. t. 11. f. 3.*
Root-leaves cordate-toothed, stem-leaves linear quite entire.
Head roundish, leaves ferrate, root-leaves cordate.
 7. *Phyteuma nigra.*
Lin. spec. ed. Willd. 922. Schmidt bohem. 1. n. 189.
P. cordata. *Villars dauph. 2. 517. t. 11. f. 1?*
Head ovate, bractes bristle-shaped, leaves simply toothed, root-leaves cordate, stem-leaves lanceolate embracing.
 8. *Phyteuma betonicaefolia.*
Lin. spec. ed. Willd. 922. Villars dauph. 2. 518. t. 12. f. 3.
Spike oblong, leaves simply crenate, root-leaves lanceolate-cordate, stem-leaves lanceolate.
 9. *Phyteuma spicata. Spiked horned Rampion.*
Lin. spec. 242. syst. 212. Reich. 1. 471. Willd. 923. Gært. fruct. 1. 149. Fl. dan. t. 362. Pollich pal. n. 215. Villars dauph. 2. 520. Krock. filef. n. 327.]
Rapunculus spicatus. *Mill. dict. n. 1. Baub. pin. 92. [Scop. carn. n. 238. Hall. helv. n. 684. Raii hist. 743.—cœruleus. Baub. prodr. 32. ic.—alopecuroides. Park. theat. 648. n. & f. 2.]*
R. corniculatus spica longiore. *Riv. mon. t. 109. f. 2.*
R. corniculatus spicatus f. alopecuroides, flore albo & cœruleo. *Mor. hist. 2. 463. f. 5. t. 5. f. 46.*
Rapuntium majus. *Ger. 369. emac. 453. f. 1.*
Spike oblong elongated, styles somewhat hairy trifid, root-leaves cordate doubly-toothed.
 10. *Phyteuma ovata.*
Lin. spec. ed. Willd. 923. Schmidt bohem. 1. n. 190.
P. Halleri. *Allion. pedem. n. 430.*
Rapunculus. *Hall. helv. n. 683.—spicatus, flore purpureo-cœruleo. Scheuch. it. 518.*
Spike ovate, styles hirsute longer than the flower emarginate-bifid, root-leaves cordate doubly-toothed.
 11. *Phyteuma virgata.*
Lin. spec. ed. Willd. 924.
Campanula virgata. *Billard. ic. syr. 2. 11. t. 6.*
Leaves lanceolate unequally toothed rugged, stem rod-like, flowers geminate sessile scattered.

12. *Phyteuma lobelioides.*
Lin. spec. ed. Willd. 924. Willd. phytog. 1. n. 20. t. 4. f. 2.
Rapunculus orientalis hesperidis folio. *Tournef. cor. 5.*
Leaves linear-lanceolate toothletted hispid, stem panicled, flowers geminate peduncled scattered.
 13. *Phyteuma lanceolata.*
Lin. spec. ed. Willd. 924.
Rapunculus orientalis foliis angustis dentatis. *Tournef. cor. 4.*
Leaves linear-lanceolate very finely toothletted rugged, stem branched at the base, branches very simple leafy, flowers scattered geminate sessile.
 14. *Phyteuma rigida.*
Lin. spec. ed. Willd. 925.
Rapunculus orientalis altissimus, folio glabro & rigido. *Tournef. cor. 4.*
Leaves linear-lanceolate obscurely toothletted smoothish, stem quite simple leafy, flowers scattered, peduncles three-flowered.
 15. *Phyteuma amplexicaulis.*
Lin. spec. ed. Willd. 925.
Rapunculus orientalis Campanulæ pratensis folio. *Tournef. cor. 4.*
Leaves embracing cordate ovate, doubly-ferrate, flowers scattered.
 16. *Phyteuma pinnata.*
Lin. spec. 242. Reich. 1. 472. Willd. 925.
Rapunculus creticus f. pyramidalis altera. *Baub. pin. 93.*
R. creticus petromarula. *Baub. hist. 2. 811. t. 812.*
Leaves pinnate, flowers in cymes.

DESCRIPTIONS, &c.

The European species of *Phyteuma* have the flowers in a close terminating head or spike: those from the East have them scattered: in all, there is a little bracte to each flower, as in *Plantago*.

1. This is a very small perennial plant; the stem being only about two or three inches high. In habit it resembles *Ph. hemispherica*, but the leaves are petioled, ovate-lanceolate, and notched here and there. There is probably much variety in this circumstance; for Haller says they are ferrate or bluntly toothed, and Villars that they are entire. Flowers in small number, supported by floral leaves that are wider than the others, cordate and blunt, by which it is also distinguished from *Ph. hemisphærica*. Head single, thin, having not more than twenty large, blue flowers: teeth of the calyx the length of the germ. Style often bifid. Capsule two-celled or three-celled^p.—Native of the South of Europe.

2. Root-leaves sometimes elliptic and blunt, or obsoletely cordate. Allioni's figure is very good, but too large. Villars's plant is perhaps a variety with a more oblong spike^q. He thus describes it: Root perennial, deep, fusiform. Stem strong, channelled, straight, about a foot high. Leaves smooth, oblong, very slightly and remotely toothed, resembling those of *Campanula persicifolia*. Flowers blue, in a close spike from half an inch to an inch in length, with linear almost imperceptible bractes.—Native of the Swiss and Piedmontese mountains.

3. Head roundish, but when out of flower becoming more oblong. Leaves rigid, linear, with sometimes a tooth or two, especially above.—On mont Cenis, and the mountains of the Valais and Tuscany^r.

4. It resembles the preceding, but differs in having the leaves longer, flaccid and more lanceolate^s. Haller remarks that the style is trifid. Scheuchzer observed it on the Speluga with a white flower.—Native of the South of Europe.

5. Root biennial or perennial. Leaves wide, blunt, crenate, dark green. Bractes cordate^t. The lower leaves are petioled, the upper half embracing^u. It varies with all the leaves spatulate and blunt^x.—Native of monte Baldo, and the Tyrolese and Carniolian mountains.

6. The long woody root branches near the surface into several divisions, each bearing a dense tuft of pe-

^p Haller, Scop. Villars, Linn. ^q Willdenow. ^r Idem.
^s Idem. ^t Villars. ^u Scopoli. ^x Willdenow.

tiolated, smooth, veiny ferrate or rather crenate leaves, the first of which are heart-shaped, the rest ovate-lanceolate. Stem simple, about a foot high, erect, slightly angular, clothed with alternate lanceolate leaves, the uppermost very acute, and somewhat recurved. A single round head of blue flowers stands erect, on a few ovate acute ciliate bractes. The parts of fructification agree in structure with *Campanula*, except that the corolla is divided to the very base, into five linear spreading segments, which in the bud cohere together, forming a curved horn, and separating first at their lower part. Every part of the flower remains permanent, though faded, till the seeds are dispersed, or longer. The herb is milky, but not acrid^v.

Native of the South of Europe, and of England in Surry, Suffex, and Hampshire, on chalk downs; as about Leatherhead, on Epsom downs, on the South downs; found near Maple-Durham in Hampshire by Merrett; near Sutton and Dorking by Blackstone; on Beacon-hill near Feverham, Kent; also between Kingsbury and Harrow, and between Harrow and Pinner in Middlesex; and between Selbury-hill and Beacon-hill in the way to Bath. It flowers in July and August.

β. Stem higher. Leaves petioled, lanceolate, and less rough. The flowers have often two stigmas.

γ. Leaves elliptic, oblong, blunt, soft, almost smooth. Stem almost a foot high.

δ. This has the habit of *Campanula rotundifolia*. Roots thick, twisted, branched and knobbed. Stems thin, channelled, three or four inches long. Lower leaves round, heart-shaped: stem-leaves narrower the higher they are, having some distinct hair on their borders. Bractes very thin, filiform, a little longer than the flowers, which form a spherical spike, and are blue^z.

Monf. Villars has named it from Monf. Charmeil, a surgeon, who used this plant with great success in venereal complaints.

7. The flowering spike is ovate, but it is lengthened out as it advances to maturity. It is a native of Bohemia, and is very distinct from all the species in the dark violet colour of the flower, the bristle-shaped bractes, and the shape of the leaves. Villars's figure of *Pb. cordifolia* resembles this, except in the head and bractes^a.

8. Root-leaves oblong, obtuse, crenate, a little villose, cordate: stem-leaves lanceolate, oblong. Spike of flowers twice as long as it is wide, with very short bractes. Flowers small, with two stigmas.—Native of Dauphiné^b.

9. Root yellow on the outside, white within, having some ovate little tubers hanging to it at bottom. Stem upright, not branched, a foot and half high, angular, smooth. Root-leaves cordate-ovate, on smooth petioles, grooved above, an inch and half long, running down a little into the petioles; they are an inch and half in length, and almost an inch in breadth, having frequently a blackish mark in the middle, and small roundish blunt toothlets about the edge: stem-leaves alternate, linear-lanceolate, the uppermost quite entire; all bright green, smooth. Spike cylindrical, close, two inches long, and one inch wide. Flowers sessile, with a lanceolate bracte to it. Corolla blue^c, varying to whitish yellow. Capsule inferior, membranaceous, very thin, crowned with the radiating teeth of the calyx, pyramidal-globular, deeply two-grooved, and having three or five acute-angled ribs on each lobe, two-celled, opening by a round lateral hole between the lobes. Receptacle oblong, fleshy, tubercled, fastened longitudinally to the partition on each side. Seeds very numerous, small, ovate, somewhat angular, smooth, shining, subferruginous, darker coloured at top and bottom^d.

Native of Germany, Switzerland, Austria, France and Italy. The whole plant abounds with a milky juice. The root is eaten boiled. Bees are fond of the flowers^e. Cultivated 1683, by Mr. James Sutherland^f.

^v English Botany.

^b Villars.

^c Pollich.

^z Villars.

^d Gartner.

^f Hort. kew.

^a Willdenow.

^e Krockner.

10. Stem from eighteen inches to two feet in height, not branched. Root-leaves on long petioles, acutely gashed, like those of the Nettle. Lower stem-leaves heart-shaped, upper ones more slender, long-lanceolate. Spike thick, longer than in some of the others. Bractes long, linear-lanceolate, and frequently two very large ones under the spike. Flower deep violet. Capsule two-celled^g.—Native of Bohemia, Switzerland and Piedmont.

11. For the description of this plant see *Campanula virgata*, n. 77.

12. The lower toothlets of the leaves are elongated. It resembles the preceding very much, but differs in having the flowers peduncled, the stem panicled with the branches brachiate, not strict and rod-like, and the flowers narrower.—Native of Armenia, where it was found by Tournefort.

13. From the base of the rugged stalk arise filiform branches leafy to the middle, covered at the top with geminate distant sessile flowers. Corolla of the same size with the preceding.—Found in Armenia by Tournefort.

14. The leaves appear to be quite entire, but when examined by a magnifier they are found to have very small, thin-spread, blunt teeth on the thickened margin. It resembles the preceding very much, but the leaves are smoothish and more rigid, the stem simple, smooth, and the peduncles somewhat branched and three-flowered.

15. Stem round, smooth, simple, leafy. Leaves smooth. Flowers on the upper part of the stem, distant, peduncled. Peduncles five, supported by an ovate-lanceolate, sharply ferrate, sessile bracte. Corolla of the same size and appearance with *P. spicata*. These are both natives of the Levant, and were found by Tournefort.

16. Stem somewhat branched, smooth, grooved. Leaves unequally pinnate; the lateral leaflets oblong-lanceolate, oblique, toothed on the lower margin only; the terminating leaflet very large, roundish-ovate; gash-toothed. Flowers the largest of any of the species, in many-flowered, scattered, alternate cymes, disposed on the upper naked part of the stem.

Native of the island of Candia or Crete^h.]

PROPAGATION AND CULTURE.

All the European sorts are hardy plants, which will thrive in the open air. They are propagated by seeds which should be sown in autumn, for if they are kept out of the ground till the spring, they frequently fail, or at least lie a year in the ground. These seeds should be sown on a bed of fresh undunged earth where they are designed to remain, for they do not thrive so well when they are transplanted; therefore the best method is to make small drills cross the bed about eighteen inches asunder, and sow the seeds therein; then cover them lightly over with earth, for if they are buried too deep, they will rot in the ground. In the following spring the plants will come up, when they should be diligently weeded, which is all the care they require; only they should be thinned where they are too close, so as to leave them six or seven inches apart in the rows, and afterwards they require no farther attention but to keep them clear from weeds. In June the plants will flower, and if the summer prove favourable, they will produce ripe seeds.

As these plants do not continue above two or three years, there should be seeds sown every other year to continue the sorts. They are plants which require little trouble to cultivate them, and their flowers make a pretty variety in large gardens, therefore they may be allowed a place amongst other hardy flowers.

[*PHYTEUMA*. See *Lobelia* and *Reseda*.]

PHYTOLACCA. (*From φυτον, a plant, and Lacca, a sort of dye or varnish*.)

Lin. gen. n. 538. Reich. n. 641. Schreb. n. 800.

Tournef. t. 154. Juss. 84. Gertn. t. 77.

Class. 10. 5. Decandria Decagynia.

Nat. order of *Miscellanea*. *Atriplices*, Juss.

^g Haller.

^h Willdenow.

GENERIC CHARACTER.

CAL. none, unless the corolla be called a coloured calyx.
COR. Petals five, roundish, concave, spreading, bent in at top, permanent.

STAM. Filaments ten or eight or twenty, awl-shaped, the length of the corolla. Anthers roundish, lateral.

PIST. Germ orbiculate, depressed, divided externally by swellings, ending in eight or ten very short, spreading-reflex styles.

PER. Berry orbiculate, depressed, marked with ten longitudinal grooves, umbilicated with the pistils, and having as many cells.

SEEDS solitary, kidney-form, smooth.

OBS. *Ph. dioica* has the sexes distinct. There is one species with eight, and another with twenty stamens.

ESSENTIAL CHARACTER.

Cal. none. Pet. five, calycine. Berry superior, ten-celled, ten-seeded.

SPECIES.

- [1. *Phytolacca heptandra*.
Retz. obs. 6. 29. n. 46.
Flowers seven-stamened six-styled, leaves lanceolate.]
2. *Phytolacca octandra*. White-flowered *Phytolacca*.
Lin. spec. 631. Reich. 2. 406. Thunb. jap. 189.
Brown. jam. 232. 1.
P. mexicana. Mill. dict. n. 2.—baccis sessilibus. Dill. elth. 218. t. 239. f. 308.
Jussia gobo. Kempt. amoen. 828. t. 829.
Flowers eight-stamened eight-styled.
3. *Phytolacca decandra*. Branching *Phytolacca* or *Virginian Poke*.
Lin. spec. 631. syst. 438. Reich. 2. 406. hort. cliff. 177. upf. 117. mat. med. 118. Gron. virg. 161.
Brown. jam. 232. 2. Desfont. atlant. 369 Hall. belv. n. 1007. Du Roi barbk. 2. 7. Blackw. t. 515. Mill. illustr. Regn. bot. Berg. phyt. 2. 165. Plenck, ic. t. 357. Abbot, Georg. t. 97.
P. vulgaris. Mill. dict. n. 1. Dill. elth. 318. t. 239. f. 309.
Solanum magnum virginianum rubrum. Park. theat. 347. 8.
S. racemosum americanum. Raii hist. 662. Pluk. phyt. t. 225. f. 3.
Flowers ten-stamened ten-styled.
4. *Phytolacca icofandra*. Red *Phytolacca*.
Lin. spec. 631. Reich. 2. 407. Gært. fruct. 1. 377. Mill. fig. 138. t. 207.
Flowers twenty-stamened ten-styled.
- [5. *Phytolacca dodecandra*. African *Phytolacca*.
L'Herit. stirp. nov. 143. t. 69. Ait. kew. 2. 123.
Flowers fifteen-stamened, five to eight-styled.]
6. *Phytolacca dioica*. Tree *Phytolacca*.
Lin. spec. 632. Reich. 2. 407. L'Herit. stirp. nov. 145. t. 70. Ait. kew. 2. 123.
Flowers dioecous.

DESCRIPTIONS, &c.

[1. Root perennial. Stem two feet high, branched, upright, striated, smooth, hollow. Leaves scattered, petioled, lanceolate, quite entire, smooth, an inch and half in length. Flowers racemed, pedicelled, with some awl-shaped little bractes near and above the base. Corolla white, green underneath, spreading. Filaments the length of the petals, with roundish anthers. Pistils shorter by half. Berries six in a calyx, distinct, yellow, pellucid, one-seeded. It is much smaller and more tender than the other sorts.—Native of America¹.

2. This has the stature of the common sort or *Ph. decandra*: but the leaves are whiter. The common peduncle is very short; and there are scarcely any pedicels. Calyx and corolla white, quite flat and not concave. Fruit red².

Native of Mexico. Cultivated in 1732, by James Sherard, M. D. It flowers from July to November¹.]

According to Mr. Miller Dr. Houstoun found it at Vera Cruz, where the inhabitants constantly used it at their tables. It seldom continues longer than two years, and when it flowers and seeds plentifully the

first year, the plants frequently die before the following spring. The stalk is herbaceous, two feet high, about the size of a man's finger, and divides at top into two or three short branches. Leaves ovate-lanceolate, near six inches long, and almost three broad; they have a strong midrib, and several transverse veins, are of a deep green, and the foot-stalks are an inch and half long. The peduncles come out from the side of the branches opposite to the leaves, are seven or eight inches long, the lower part, about two inches in length, is naked; the remainder has sessile flowers, white with a blush of purple in the middle, cut into five segments almost to the bottom, and having from eight to fourteen stamens, and ten styles. Berries flat, with ten deep furrows; cells the same number, with one or two smooth seeds in each.

[Browne calls it Spanish Calaloe, and says it is a native of Jamaica, now cultivated in most of the kitchen gardens. It is a palatable wholesome green: the tender stalks are frequently served up for young Sperages (*Asparagus*), and often prove a very agreeable succedaneum.

Thunberg on the contrary affirms that it is extremely poisonous; and relates, that having been eaten by two Japanese servants, one of them was eight days in recovering, and the other suffered during a much longer time.

Probably different species are confounded in these accounts.]

3. Root very thick and fleshy, as large as a man's leg, divided into several thick fleshy branches, which run deep in the ground. Stems three or four, herbaceous, as large as a good walking-stick, of a purple colour, six or seven feet high, dividing into many branches at the top. Leaves five inches long, and two inches and a half broad, rounded at their base, but terminating in a point, placed without order, on short foot-stalks; they are of a deep green, and in the autumn change to a purplish colour. The peduncles come out from the joints and divisions of the branches, and are about five inches long; the lower part is naked, but the upper half sustains a number of flowers ranged on each side like common Currants. Each flower stands upon a pedicel half an inch long, and the petals are purplish. Berry depressed, with ten furrows; having ten cells, filled with smooth seeds. It flowers in July and August, and in warm seasons the berries ripen in autumn.

[It is a very smooth plant, with an upright stem, frequently purple; the branches dichotomous at top. Leaves alternate, ovate, acute, quite entire, a little waved at the edge, on short petioles. Racemes solitary, opposite to the leaves. Peduncles striated. Pedicels spreading. Bractes awl-shaped, pressed close. Calyx (or corolla) white or purple, five-parted; segments ovate, blunt. Filaments a little longer, five alternate and five opposite. Berry blackish blue, marked with ten or twelve grooves, one-celled, and containing ten or twelve seeds, which are semi-orbiculate, convex and thicker on one side, disposed in a ring in one row, adhering to the central receptacle³.

Native of Switzerland, Spain and Portugal; Barbary, near Algiers; Virginia, Georgia, New England; Jamaica.—It was cultivated here in 1640, as appears from Parkinson⁴; who informs us that the inhabitants of North America use the juice of the root as a familiar purge.—An ounce of the dried root, infused in a pint of wine, and given to the quantity of two spoonfuls, operates kindly as an emetic, and is preferable to most others, as it hardly alters the taste of the wine. The roots are applied to the hands and feet in ardent fevers. Farriers give a decoction of them to drench cattle; and apply them in form of poultice for discharging tumours. Poultry are fond of the berries, but if eaten in large quantities, they give the flesh a disagreeable flavour⁵.] The juice stains paper and linen of a beautiful purple colour, but it will not last long; if a method could be found of fixing the dye, it might be very useful.

¹ Desfontaines.

² Hort. kew.

³ Cutler, mem. amer. vol. 1.

⁴ Retzius.

⁵ Linn. spec.

⁶ Hort. kew.

The vigneros in Portugal for many years used the juice of these berries to give a deep colour to the red Port wines, to which it was thought to communicate a disagreeable taste when mixed in too great a quantity. Complaint of this practice having been made to government, orders were given, that the stems of this plant should be cut down and destroyed before they produced berries.

In North America and the West Indies the young shoots are boiled and eaten like Spinach.

4. This plant is annual, always perishing soon after it has perfected seeds. It rises with an herbaceous stalk, from two to three feet high, with several longitudinal furrows, and changes at the end of summer to purple. It divides at top into three or four branches. Leaves lanceolate, six or seven inches long, and almost three broad in the middle, of a deep green, on short foot-stalks; some are alternate, others opposite, and they are frequently oblique to the foot-stalk. The peduncles come out from the side of the branches opposite to the leaves; they are nine or ten inches long, the lower part being naked, but for a shorter space than in the other sorts: the upper part narrow and commonly inclined. The flowers are larger, white within, of an herbaceous colour on their edges, and purplish on the outside, on short pedicels. The stamens vary in number from eight to nine or eleven: [in the lower flowers, according to Linneus, there are certainly twenty; and Gærtner affirms that they vary from eight to twenty. Berry globular, scarcely depressed, not grooved, hollowed at top with a small point, and terminated by ten permanent styles, smooth, blueish black, pulpy, ten-celled: styles clothed with their proper membrane, which is very tender: pulp dark blood-red. Seeds solitary, lens-shaped, very shortly beaked, smooth, shining, black, fastened to the bottom of the cells near the axis of the fruit^p.] These berries are very succulent, and their juice stains paper and linen of a beautiful purple colour, but it is not permanent.

[Native of the East Indies. Cultivated by Mr. Miller in 1758^q.

5. This is a shrub, a fathom in height. Stem upright, rude, tubercled, ash-coloured. Leaves alternate, ovate, entire, acuminate, acute at the base, thickish, spreading, permanent, four inches long, from eighteen to twenty-four lines in breadth. Petioles round on one side, channelled on the other, pubescent, one-third of the length of the leaf. Racemes terminating, but by a branchlet pushing out from the uppermost axil they become lateral, and at the same time opposite to a leaf; they are upright, but when in fruit nodding or pendulous, on short peduncles, villose, bracted, six inches long. Flowers scattered, on short pedicels, herbaceous, three lines wide. Bracte acute, small, under each pedicel; with other very minute bractes on the pedicel itself. Calyx (or corolla) five-parted to the very base. Filaments commonly fifteen, ten of which are alternate in pairs, the other five solitary, shorter than the calyx, inserted into the bottom of the calyx, spreading, permanent; sometimes there is only a single row, and then there are but ten stamens. Germ roundish with from five to eight corners. Styles as many as there are swellings in the germ, most commonly five. Berry roundish, flattened, many-angled, but commonly five-angled, five-celled, marked at top with lines from the styles then growing to the berry, fleshy, soft, red, with a saffron-coloured juice, four lines in diameter. Seeds solitary, kidney-form, black. It is distinguished from *Pb. octandra* and *decandra* by its shrubby stalk, and decandrous flowers.

Native of Abyssinia, where it was found by James Bruce, Esq. and by him the seeds were communicated to the Paris garden^r; and to the Royal garden at Kew in 1775. It flowers in may and june^s.

6. This is a shrub two fathoms in height. Stem upright, a little branched, very thick, gray. Leaves scattered, oblong-ovate, acuminate, entire, smooth, flat or ascending on the sides, five inches long, and two

inches and a half wide. Petioles spreading, cylindrical, reddish, equal to half the leaf in length. Racemes terminating, peduncled, solitary, pendulous, bracted, six inches long. Flowers scattered, pedicelled, spreading very much, whitish green; the males five or six lines in breadth, the females smaller by half. Bracte small, acute, under the pedicel; with another under some flowers of the same shape with the calyx. Calyx (or corolla) five-leaved. Stamens about thirty, and a rudiment of a germ in the male flowers. In the females a head, composed of from ten to twelve germs, and as many styles as there are swellings. Berry orbicular-flattened, umbilicated, torulose, many-celled or composed of united *acini*; fleshy, soft, watery, seeming to be green even when ripe, half an inch in diameter. Seeds solitary, kidney-form, shining, brown. Both male and female plants flower every spring in the Paris garden, but still the latter has continued barren^t.

It is a native of South America, and was cultivated by Mr. Miller in 1768^u.]

PROPAGATION AND CULTURE.

3. Sow the seeds in the spring upon a bed of light earth, and when the plants come up transplant them into the borders of the flower-garden, allowing them space to grow, for they will overbear other plants, if they are too near them, especially if the soil be good. Clear them from weeds, and in the autumn they will produce flowers and fruit. The first frosts will destroy the stems, but the roots will abide, and shoot in the spring. In very severe winters the roots will be destroyed, especially in a wet soil, unless the surface be covered with mulch.

2. 4. These being less hardy, the seeds should be sown upon a moderate hot-bed in the spring. When the plants are fit to remove, transplant them into another hot-bed, shading them till they have taken new root. Then treat them as other tender exotic plants; and at the beginning of july, set them out upon a warm border, or in pots filled with light rich earth, and shaded till they have taken new root: water them duly in dry weather, and keep them clean from weeds. These plants perfect their seeds every autumn; and may therefore be easily preserved.

6. Plant cuttings during the summer months, in pots filled with light earth, and plunged into a moderate hot-bed, covering the pots with hand-glasses, and shading them. In five or six weeks they will put out roots; then plant each in a small pot; plunge them into the bed again, shade them till they have taken root, and then gradually inure them to the open air, where they may remain to the end of september, when they must be removed into a moderate stove for the winter season.

PICEA. See *Pinus*.

[PICK-TOOTH. See *Daucus*.

PICNOMON. See *Cnicus*.

PICRAMNIA. (From *πικρος*, bitter, and *θάμνος* a shrub; the whole of it being remarkably bitter.)

Lin. gen. Schreb. n. 1517. Swartz prodr. 27.

Class. 22. 5. Dioecia Pentandria.—Triandria Digynia. Sw.

GENERIC CHARACTER.

* Male.

CAL. Perianth one-leaved; three or five-parted: segments lanceolate; erect.

COR. Petals three or five, lanceolate, from erect spreading, longer than the calyx.

STAM. Filaments three or five, awl-shaped, approximating at the base, erect, longer than the corolla. Anthers ovate, twin.

* Female.

CAL. as in the Male, permanent.

COR. as in the Male.

PIST. Germ oblong, somewhat compressed: Styles two, short, recurved, permanent. Stigmas simple, acute.

PER. Berry ovate-roundish, two-celled.

SEEDS two in each cell, ovate-oblong.

^p Gærtner.

^q Hort. kew.
^r Hort. kew.

^s L'Heritier.

^t L'Heritier.

^u Hort. kew.

Obs. Swartz describes three stamens, a three-parted calyx and a three-petalled corolla. In the specimens sent to Schreber by Crudy there are five stamens and five-cleft flowers.

The Berry sometimes, but very seldom, is three-celled and one-seeded. Is two the natural number of the fruit?

ESSENTIAL CHARACTER.

Cal. three or five-parted. Cor. three or five-petalled. Berry two-celled.

SPECIES.

1. *Picramnia Antidesma*.

Swartz prodr. 27. descr. 218.

Antidesma fruticosum ramulis teretibus racemis laxis terminalibus. Brown. jam. 123.

Berberis frut. racemosa, fraxini folio alato fructu nigro dipyrreno. Sloan. jam. 2. 101. t. 209. f. 2. Raii hist. 3. dendr. 65.

Racemes very long, flowers three-stamened.

2. *Picramnia pentandra*.

Swartz descr. 220.

Racemes shorter, flowers five-stamened.

DESCRIPTIONS, &c.

1. This is a small tree, with an upright weak even trunk: branches subdivided, rod-like, spreading, bending down, smoothish, with an ash-coloured bark. Leaves pinnate, a foot long and more: leaflets petioled, alternate, elliptic with a blunt tip, entire, nerved and veined, smooth, bent down each way by the side of the petiole. Petioles roundish, spreading, smooth: petiolets very short, pubescent, red. Racemes terminating, from one to two feet in length, filiform, striated, loose, pendulous, many-flowered. Flowers alternately conglomerate, peduncled, whitish-green. Peduncles from five to seven, clustered, whitish, longer than the flowers. Males deciduous. Calyx three-parted. Petals three. Filaments three. Anthers rufous. Females the same size with the males. Berries oblong, the size of a Gooseberry when ripe, two-celled: cells two-seeded, at first scarlet, afterwards black. Native of Jamaica and Hispaniola, in mountain coppices*.

Dr. Browne says it is pretty frequent about St. Mary's in Jamaica, and seldom rises above eight or nine feet from the ground; it was not put to any use there. Swartz relates, that it is looked upon by the negroes as antivenereal, and that they commonly use an infusion of it in the colic. The whole plant is very bitter, and is called *Majo Bitters* in Jamaica. It flowers in august, and the fruit is ripe in november^y.

Browne uses Burman's appellation, as more expressive of the virtues of this plant, which he thinks should be the principal source whence the names of vegetables ought to be derived, when they are remarkably noted for any.

2. This also is a small tree, with the branches, branchlets and leaves as in the preceding; but the leaflets are commonly wider. Racemes much shorter, commonly subdivided at the base, nodding. Flowers a little smaller, alternately clustered; (in scattered little balls) pedicels pubescent. Calyx five-parted. Petals five. Filaments five. Anthers roundish. In the female flowers the calyx is permanent. Germ roundish, without any styles; but two-headed stigmas.

Native of the West Indies: found by Ryan at Palmeto point in the island of Montserrat^z.

PICRIS. (Πικρίς of Dioscorides: from πικρός, bitter.)

Lin. gen. n. 907. Reich. n. 986. Schreb. n. 1231.

Gartn. t. 159. Juss. 170. Helminthotheca. Vaill. aff. gall. 1721. 47. 25. 26.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of Compositæ Semisfculosæ. Cichoraceæ, Juss.

GENERIC CHARACTER.

CAL. Common double. Outer very large, five-leaved: leaflets cordate, flat, loose, converging. Inner imbricate, ovate.

COR. Compound imbricate, uniform: with numerous hermaphrodite corollets.

* Swartz.

^y Idem.

^z Idem.

Proper one-petalled, ligulate, linear, truncate, five-toothed.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ subovate. Style the length of the stamens. Stigmas two, reflex.

PER. none. Calyx unchanged, at length reflex.

SEEDS solitary, ventricose, transversely grooved, blunt. Down feathered, stipitate.

REC. naked.

ESSENTIAL CHARACTER.

Cal. calyced. Recept. naked. Seed transversely grooved. Down feathered.

SPECIES.

1. *Picris echinoides*. Rough Ox-tongue.

Lin. spec. 1114. Reich. 3. 619. hort. cliff. 387. upf. 241. Hudf. angl. 342. Wither. arr. ed. 3. 673. Curt. lond. 3. 51. 150. Relb. cant. n. 572. Sibth. oxon. n. 667. Neck. gallob. 323. Villars dauph. 3. 149.

Hieracium echinoides capitulis Cardui benedicti. Bauh. pin. 128. Raii hist. 233. syn. 163. Petiv. brit. t. 12. f. 12. Mor. hist. 3. 68. n. 41. f. 7. t. 5. f. 38. Bauh. hist. 2. 1029. 1.

Buglossum luteum. Ger. 655. 2. emac. 798. 1.— f. Lingua bovis. Park. theat. 800.

B. echinoides luteum Hieracio cognatum. Lob. ic. 1. 577. 2.

Outer perianths five-leaved larger than the inner one, which is awned.

2. *Picris aculeata*. Prickly Ox-tongue.

Vahl symb. 2. 89. Desfont. atlant. 221. Gron. orient. n. 243.

Hieracium montanum longifolium sinuatum asperitundine Borriginis. Raii hist. 139.

H. mont. Borr. facie asperum dentatum. Cup. hort. cathol. 95.

H. tortuosum ficulum echinoides, integro bullato folio spinoso, capitulis tuberosis. Bocc. app. 8.

Helminthotheca hispida, pedunculis florum tumentibus. Vaill. mem. acad. 1721. p. 206.

Hispid rough, stem naked at top, leaves obovate-oblong unequally toothed, flowers corymbed, peduncles thickened at top, down feathered stiped.

3. *Picris hieracioides*. Hawkweed Ox-tongue.

Lin. spec. 1115. syst. 711. Reich. 3. 619. hort. cliff. 387. fl. succ. n. 686. Gartn. fruct. 2. 366. Wither. arr. ed. 3. 673. Engl. bot. 196. Relb. cant. n. 573. Sibth. oxon. n. 668. Hall. helv. n. 24. Scop. carn. n. 953. Pellich pal. n. 725. Neck. gallob. 322. Krock. files. n. 1249. Villars dauph. 3. 148. Gmel. fib. 2. 39.

Hedypnois hieracioides. Hudf. angl. 342.

Cichoreum pratense luteum hirsutie asperum. Bauh. pin. 126. Park. theat. 777.

Hieracium asperum majori flore, in agrorum limitibus. Bauh. hist. 2. 1029. 2. Raii hist. 233. syn. 167.

H. asperum. Ger. 234. 8. emac. 298. 7.

Perianths loose, leaves entire, peduncles scaly up to the calyx.

4. *Picris flexuosa*.

Linn. trans. 2. 340.

P. japonica. Thunb. jap. 299.

Perianths hispid, leaves toothed cordate-embracing, stem grooved hispid.

5. *Picris asplenoides*.

Lin. spec. 1115. Reich. 3. 620. Vahl symb. 2. 90. Desfont. atlant. 222.

Leontodon muricatum. L'Herit. stirp. nov. 173. Dict. nostr. n. 4.

Virea scabra. Scop. insubr. 2. 25. t. 13.

Helminthotheca hispidosa asplenoides, succo sulphureo. Vaill. mem. 1721. p. 206.

Stem prostrate at the base; leaves rough, the lower run-cinate, lobes rounded, calyxes imbricate, leaflets reflex at the tip.

6. *Picris repens*.

Lour. cochinch. 478.

Outer perianths imbricate short, inner cylindric eight-leaved even, stem creeping.

DESCRIPTIONS, &c.

1. Root annual, branched. Root-leaves ovate, crenate, rigid, with numerous warty protuberances, set with short spinose ciliae; as are also the nerves and margins of the leaf. Stem two or three feet high, round, firm, striated, usually reddish, much branched; both stem and branches irregularly set with scattered rigid spines, hooked at the end. Stem-leaves embracing, oblong or cordate-lanceolate, pointed, entire, thick set with tubercles and spines, particularly on the margins and midrib. Flowers solitary, on grooved peduncles gradually thickening upwards. Leaves of the outer calyx very spreading, heart-shaped, acuminate and ending in a sharp awn, fringed with rigid ciliae: scales of the inner calyx ciliate on the back. Corolla yellow. Seed shining, of a red orange colour, and when viewed with a glass very beautiful from its numerous transverse streaks or grooves. Down the length of the inner calyx, on a stipe three or four lines in length; rays downy^a.

The flower expands at four or five in the morning, and never closes before noon; sometimes it remains open till nine at night^b.

It grows not unfrequently on banks, on the edges of corn fields, and in woods that have been cut down; flowering in June and July.

The only use to which this singular plant has been applied is as a pot-herb, to which purpose its appearance is certainly no recommendation^c. It can only be eaten when young, and then it is said to be agreeable; the juice is milky, but not too acrid^d.

2. The root-leaves and lower stem-leaves obovate-oblong, blunt, running down into a short petiole, unequally toothed, having short stiff hairs scattered over them. Stem upright, firm, thick, striated, rough, hispid, having on it a few, small, lanceolate, sessile leaves. Flowers in a loose corymb. Peduncles thickened upwards, hairy, simple or forked, unequal. Calyx round, loose: leaflets linear-lanceolate, hairy on the back. Corolla yellow. Down stiped, white, feathered. Seeds brown, slightly striated transversely^e.

It differs from the preceding in having no outer five-leaved perianth^f.

Native of Barbary. Vahl found it near Zowan, a city of Tunis; and Desfontaines on mount Atlas and uncultivated hills of that country.

3. This is a plant of rude growth; and not very attractive appearance. The root is perennial, or at least biennial. Stem three feet high, round, furrowed, rough with stiff hairs; much branched; the branches furrowed, purple on their upper side and in their axils, as Linneus most truly observes. Lower leaves on foot-stalks; upper sessile, oblong or lanceolate, acute; uppermost approaching to linear; all mostly undivided, except that the root-leaves are frequently grossly toothed. The herb is rough with hooked bristles. Peduncles branched: each branch bearing a single flower; the lateral ones elongated so as to rise above the central stem. Calyx scarcely to be called double; numerous loose scales, all rough on the back, on the upper part of the peduncle approaching to, and at length imbricated with, and forming a part of the calyx: the inner row almost linear, parallel, and exactly the length of the seed-down, which is slightly feathery and sessile; whence Hudson has made this plant a *Hedynois*: but that, as Dr. Stokes has observed, is an artificial genus, the species of which are no ways naturally allied; and the down being sessile or stiped, affords no certain permanent character in this tribe.

The corolla is bright yellow; and the seeds are longitudinally and transversely furrowed^g. According to Gartner, they are uniform, oblong, roundish, drawn to a point at both ends, netted and rugged, but without any lateral sutures: the down is twice as long as the seed, and has the rays filiform, regularly bearded. Receptacle flat, with shallow pits inclining to a pentagon figure, and between them a minute teat. It

^a Woodw. Mss. and Curtis.^b Withering.^c Curtis.^d Withering.^e Desfontaines.^f Vahl.^g Engl. bot. and Woodw. Mss.

differs from his *Virea* in having the rays of the down uniform; and from his *Helmintia*, in the down being not apparently stiped.

Native of many parts of Europe; with us it occurs abundantly about the borders of fields, in a gravelly or calcareous soil, flowering in July and August.

4. Stem grooved and angular, flexuose, bristly-hispid; branched at top, almost erect, scarcely a foot high. Leaves alternate, all sessile and embracing, subcordate, oblong, villose and rugged, the lower ones a finger's length, the upper ones gradually smaller. Flowers on the branches terminating, solitary. Peduncles or branches alternate, simple, hispid. Calyx double, the lower reflex. Corollas yellow, with a white feathered down.—Native of Japan^h.

5. Root perennial, fusiform, the thickness of a man's little finger. Stems several; prostrate at the base, rough-haired especially at bottom, angular, grooved, branched below: branches ascending, simple. Root-leaves many, wide, runcinate, the sinuses bowed: lobes irregular, rounded at top, unequal, often turned back, sometimes narrower at the base; the outermost larger, blunt. Peduncles one-flowered, striated, hispid, simple, firm, erect, gradually thicker upwards, covered with linear-spatulate, blunt, scattered leaflets, somewhat remote from each other. Calyx cylindric, imbricate, hispid: leaflets lanceolate-linear, obtuse; the outer reflex at the tip, and somewhat rigid. Flower the size of *Tragopogon Dalechampii*: corollas sulphur-coloured above, rose-violet underneath. Seed smooth, rufescent, oblong, slightly streaked across. Down stiped, feathered, white. Receptacle naked, flattishⁱ.

Native of Barbary; found by Vahl abundantly on the sandy coast of Tunis; and by Desfontaines near Hamamelif.

See L'Heritier's description of this plant under *Leontodon muricatum*.

6. Stem procumbent, slender, round, smooth. Leaves lanceolate linear, blunt, repand, toothletted, smooth. Flowers few, yellow, on long, scattered peduncles, almost equal to the leaves. Calycle short, imbricate: inner calyx oblong, round, eight-leaved; leaflets linear, even, equal. Down subplumose, stiped. Seeds grooved longitudinally, not transversely. Root slender, very bitter.—Native of China near Canton^k. *Picris pyrenaica* of Gartner; see under *Hieracium pyrenaicum*.—Receptacle flat, obsoletely excavated, smooth. Seeds roundish, drawn to a point at both ends, divided by four longitudinal depressed streaks, as it were into so many valves, and besides this muricated with thick transverse wrinkles, of a red ferruginous colour: the marginal seeds curved; those in the centre straight. Down feathered, subsessile, longer than the seed, caducous; all the rays filiform, equally bearded^l.

PICRIS. See *Apargia*, *Hedynois*, *Hieracium*, *Leontodon*, *Tragopogon*.

PICRIUM. (From *πικρος*, bitter.)

Lin. gen. Schreb. n. 1726. p. 791. Coutoubea.

Aubl. t. 27. Juss. 141.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Rotaceæ*. *Gentianæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, four or five-cleft, permanent: segments linear, acute, erect.

COR. one-petalled, funnel-form: tube the length of the calyx: border four or five-cleft: segments ovate, acute.

Nectary: scales four or five: each at the base of each filament, between that and the tube of the corolla.

STAM. Filaments four or five, filiform, almost the length of the corolla, inserted into the tube. Anthers sagittate.

PIST. Germ. oblong. Style filiform, longer than the corolla. Stigma capitate, bilamellate.

PER. Capsule ovate, half-two-celled, two-valved.

SEEDS very many, minute, fastened to the receptacle.

ORS. It is allied to *Gentiana*.

^h Thunb. in Linn. trans.ⁱ Desfontaines.^k Loureiro.^l Gartner.

ESSENTIAL CHARACTER.

Cal. four or five-cleft. *Cor.* one-petalled, four or five-cleft. *Neet.* of four or five scales. *Stigma* bilamellate. *Caps.* half-two-celled, two-valved.

SPECIES.

1. *Picrium spicatum.*

Coutoubea spicata. *Aubl. gui.* 1. p. 72.

With ovate-oblong sharp leaves, and white flowers.

2. *Picrium ramosum.*

Coutoubea ramosa. *Aubl. gui.* 1. p. 74.

With narrow sharp-pointed leaves, and purple flowers.

DESCRIPTIONS, &c.

1. This is an annual, of about three feet high. The root is fibrous, branched, and somewhat woody. The stem round and straight: leaves opposite, rather fleshy, sessile, smooth, glaucous, lanceolate, perfectly entire, sometimes ternate, verticillate. Flowers spiked, axillary, and terminal: the inferior ones opposite in the spike, afterwards alternate; the four uppermost verticillate: all sessile at the base, and guarded by three bractes, of which the two lateral ones are smaller. Corolla white, not deciduous. The whole plant is bitter: it flowers at various times of the year. Its native name is *Coutoubea*. It is found near the banks of rivulets, pathways, &c. in Cayenne and Guiana.

2. This species differs from the former in having a branched stem, smaller and narrower leaves; solitary flowers, which are subsessile at the bosoms of the leaves, and have a purple corolla. The capsule is subcompressed: the leaves at the extremities of the branchlets are extremely narrow. It flowers at almost all times of the year, and is called *Coutoubea* also. It is found in woods and by sides of rivulets^m.

PIERCEA. See *Rivina*.

PIGEON PEA. See *Cytisus Cajan*.

PIG-NUT. See *Bunium*.

PILCORN OR PILLIS. See *Avena nuda*.

PILEWORT. See *Ranunculus*.

PILOCARPOS. (From *πῖλος*, a hat or other covering of the head, and *καρπος*, a fruit.)

Vahl eclog. 29. t. 10.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Dumosa*. *Rhamni*, *Juss.*

GENERIC CHARACTER.

CAL. Perianth inferior, very small, five-leaved: leaflets ovate, rounded.

COR. five-petalled. *Petals* flat, small, ovate.

STAM. Filaments five, inserted under the germ, erect, a little shorter than the petals. *Anthers* small, subcordate, erect.

PIST. Germ superior, flattened-globular, smooth, having five lines engraved on it at top towards the style. *Style* scarcely any. *Stigma* subsessile, acute.

PER. Capsule composed of five grains (cocculi), two or three, sometimes four of which are abortive, fastened from the base to the middle to an angular woody short receptacle, distinct above.

SEEDS solitary, arilled.

Obs. It is very nearly allied to *Euonymus*.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Cor.* five-petalled. *Filaments* inserted below the germ. *Per.* with from two to five cocculi, united below, elastic.

SPECIES.

1. *Pilocarpus racemosus.*

Vahl eclog. 1. 29. *Lin. spec. ed. Willd.* 1133.

Euonymus latifolius racemosus, fructu pentagono atropurpureo. *Plum. spec.* 18. ic. 119. t. 127.

DESCRIPTION, &c.

This is a low Shrub, with round, smooth, pendulous branches, covered with an ash-coloured bark, and alternate; short, purplish-brown branchlets. Leaves on the latter, approximating, alternate, the two last almost opposite, two or three inches long, elliptic, very blunt, commonly emarginate, more acute at the base, quite entire, membranaceous, smooth, veined, very minutely dotted on both sides. Petioles very short, smooth, flat above, convex underneath, purplish-brown. Stipules none. Racemes from the top of the branches, with a branchlet growing out at the farther side, soli-

^m Aublet.

tary, a foot long and more. Peduncle straight, round, smooth, purplish brown. Pedicels scattered, about an inch in length, spreading very much, one-flowered. Bractes two above the middle of the pedicel, very minute, ovate, alternate, remote. Flowers bright purple. Petals terminated by a minute dagger-point, and having on the upper surface a longitudinal line, a little raised, springing from the tip, forked towards the middle of the petal, the divisions divaricating and running to the edges of the petal. Anthers of a deep golden colour, and shining very much. The cocculi or component parts of the capsule semiorbicular, more gibbous at the base, convex on the back and sides, more acute on the inner margin, the outer substance somewhat fleshy, the inner coriaceous; at first they have impressed dots scattered over them, but when ripe they are grooved longitudinally archwise, and open with a spring at top by the future. Seeds black and very smooth. Aril membranaceous, cordate, acute, keeled on the outside, closing the ventral triangular aperture of the inner cocculus.—Native of the West Indies. Found by Ryan in the island of Montserratⁿ.

PILOSELLA. See [*Arabis*, *Draba*, *Gnaphalium*,] *Hieracium*, [*Sideritis*, *Thlaspi*.

PILSEN. See *Boletus*.

PILULARIA. (So named by *Jussieu*, from the receptacle of the seed having the shape and size of a common pill.)

Lin. gen. n. 1183. *Reich. n.* 1300. *Schreb. n.* 1619.

Vaill. par. t. 15. f. 6. *Dill. musc.* 538. t. 79. f. 1.

Juss. art. gall. 1739. p. 251. t. 11. *Juss. gen.* 16.

Class. 24. 1. Cryptogamia Miscellanea.

Nat. order of *Filices* or *Ferns*.

GENERIC CHARACTER.

Common Receptacle globose, with four cells and four valves, lined with numerous anthers, and many globose germs beneath them.

SPECIES.

1. *Pilularia globulifera.* *Pill-wort* or *Pepper-grass*.

Lin. spec. 1563. *syn.* 942. *Reich.* 4. 439. *fl. suec.*

n. 950. *Huds. angl.* 462. *Wither. arr. ed.* 3. 760.

Engl. bot. 521. *Bolton*, 40. *Fl. dan.* 223. *Pallas*

it. 1. 431. *Allion. pedem. n.* 2420. *Bulliard*, 375.

Pluk. phyt. t. 48. f. 1.

P. palustris juncifolia. *Vaill. par.* 159. t. 15. f. 6.

Dill. musc. 538. t. 79. f. 1. *Juss. in art. par.* 1739.

p. 240. t. 11.

Graminifolia palustris repens, vasculis granorum piperis æmulis. *Raii hist.* 1325. *syn.* 136. *Mor. hist.* 3. 608. f. 15. t. 7. f. 49.

Gramen piperinum. *Merr. pin. Petiv. brit. t.* 9. f. 8.

DESCRIPTION, &c.

Stem perfectly prostrate and trailing, throwing out numerous roots at every joint, by which it creeps to a considerable extent, and also about three delicate slender leaves, two or three inches in length, simple, upright, awl-shaped, smooth. Fructifications globular, like pepper-corns, downy, solitary, sessile or on very short pedicels at the base or axil of the leaves. What at first sight seems a capsule, is in fact a hollow receptacle, as in the Fig, which separates into four valves, and is internally divided into as many cells: the valves are lined with organs of fructification, several sessile club-shaped anthers being in the upper part, and about as many oblong germs occupying the lower. *Jussieu* says the anthers are most numerous; he also remarks that the seeds are coated. Mr. Sowerby found the germs shaped like an Acorn reversed, and terminating in a small acute style.

From the above description it appears that the *Pilularia* has almost as good a right to a place among the perfect flowers as the Fig, and might perhaps be ranged in the order *Polyandria* of the class *Monoecia*. In habit and sensible qualities it has most affinity with the *Equisetum*, *Lycopodium* and other plants of obscure fructification, which are akin to the proper Ferns. The fructification is produced from May to the end of autumn. It is found in shallow ponds, and watery places, on gravelly or sandy commons or heaths. Or Hillingdon-common and Hounslow-heath in Middlesex.

ⁿ Vahl.

Near Yarmouth in Norfolk, St. Faith's Newton near Norwich^o: Hainford and Stratton heaths in the same county. In the ponds on the upper part of Streatham-common in Surrey, I observed it near fifty years ago; where Plukenet had before shewn it to Doody. About two miles from Mold, on the north side of the Chester road, near Offa's dyke, by Mr. Griffith.

PILUM. See *Abrus*.

PIMELĒA. (From *πικρὴν*, fatness; or *πικρὸς*, fat or sweet.)

Smith, nov. holland. 31.

Class. 2. 1. Diandria Monogynia.

ESSENTIAL CHARACTER.

Cal. none. Cor. four-cleft. Stam. inserted into the throat. Nut covered with a bark, one-celled.

SPECIES.

1. *Pimelea linifolia*.

Smith, nov. holl. 1. 31. t. 11. Lin. spec. ed. Willd. 50.

Leaves linear-lanceolate, heads terminating involucred, corolla villose on the outside.

2. *Pimelea Gnidia*.

Lin. spec. ed. Willd. 50.

Bankia Gnidia. Forst. gen. 8. act. upf. 3. 173.

Passerina Gnidia. Lin. suppl. 226. Forst. prodr. n. 170.

Leaves oblong-lanceolate acute very smooth, corolla villose on the outside.

3. *Pimelea pilosa*.

Lin. spec. ed. Willd. 50.

Bankia tomentosa. Forst. gen. 8.

B. pilosa. Forst. act. upf. 3. 174.

Passerina pilosa. Lin. suppl. 226. Forst. prodr. n. 171.

Hairy, leaves linear obtuse.

4. *Pimelea prostrata*.

Lin. spec. ed. Willd. 51.

P. lævigata. Gært. fruct. 1. 186.

Bankia prostrata. Forst. gen. 8. act. upf. 3. 175.

Passerina prostrata. Lin. suppl. 227. Forst. prodr. n. 172.

Leaves ovate sessile fleshy.

DESCRIPTIONS, &c.

1. This is a native of the coast of New South Wales, among rocks. It has a small zigzag root, from which rises a straight round smooth upright stem, generally branched in an irregular manner, though sometimes appearing dichotomous, in consequence of the young branches springing in pairs from the upper part of the old flowering ones: the bark is reddish, cracking longitudinally, and its inner layer is remarkably silky. Leaves clothing the younger branches, opposite, on very short footstalks, slightly spreading, linear-lanceolate, varying much in breadth, sharpish, entire, with a simple nerve. Stipules none. Flowers in terminal heads, numerous, inodorous. Bractes four, broad, ovate, entire, close to the flowers. Corolla very slender, tubular, snow-white, externally silky; the limb in four equal ovate spreading segments, with a red spot at the base of each within side. Stamens two, their filaments rather shorter than the limb, and inserted into the base of its two segments, so that they are altogether without the tube, and not within it, as in *Daphne*, *Passerina*, &c. Anthers oblong, yellow. Germ superior, oval, green, very small, smooth. Style rather longer than the tube, simple and capillary. Stigma headed, very small. Fruit a small oval dry berry or rather drupe, invested with the permanent base of the corolla, and containing a solitary hard seed or nut. Common receptacle clothed with numerous white permanent hairs^p.

2. The leaves of this are more rigid than the others, and resemble very much those of *Gnidia*, whence its trivial name. It is a native of New Zealand, in the fissures of rocks, both on the coast and on the tops of mountains.

3. This also is a native of New Zealand, where it was found, with the preceding and following species, by Forster^q.

4. Gærtner thus describes the fruit of this, from the Banksian collection. Nut superior, small, clothed

with the permanent silky-white corolla, ovate-acuminate, covered with a thin coriaceous rind: shell somewhat bony, brittle, brown, having a moderately elevated longitudinal streak on one side, in the other parts smooth, one-celled, valveless. Seed one; of the same size and form with the cavity of the shell, pale.

The corolla is one-petalled, ventricose; narrowed and funnel-form at the throat; the four segments ovate-oblong. Stamens in the throat of the corolla.

Found by Forster on the dry mountains of New Zealand.

These plants are united by the younger Linneus with the genus *Passerina*, because he was not willing to break a natural genus, on account of a diversity in the number of stamens. He remarks that the flowers have the odour of *Syringa*, and that the plants are evergreen^r.

PIMENTA and PIMENTO. See *Myrtus*.

PIMPERNEL. See *Anagallis*.]

PIMPINELLA. (For *Bipennula*. Linn. from its pinnate leaves.)

Lin. gen. n. 366. Reich. n. 396. Schreb. n. 498.

Gært. t. 32. Juss. 219. Tragofelinum. Tourn. t. 163.

Class. 5. 2. Pentandria Digynia:

Nat. order of *Umbellatæ* or *Umbelliferæ*.

GENERIC CHARACTER.

CAL. Umbel universal of many rays: partial of still more.

Involucre universal none: partial none.

Perianth proper scarcely observable.

COR. universal almost uniform. Florets all fertile. Proper,

Petals five, inflex-cordate, almost equal.

STAM. Filaments five, simple, longer than the corollet.

Anthers roundish.

PIST. Germ inferior. Styles two, very short. Stigmas subglobular.

PER. none. Fruit ovate-oblong, bipartite.

SEEDS two, oblong, narrower towards the top, on one side convex and striated, on the other flat.

Obs. The fruit of *P. dichotoma* is subglobular. The petals of *P. dioica* (formerly *Seseli pumilum*) are not emarginate, and there are male and hermaphrodite flowers on distinct individuals.

ESSENTIAL CHARACTER.

Petals bent in. Stigm. subglobular. Fruit ovate-oblong.

SPECIES.

1. *Pimpinella saxifraga*. Common Burnet Saxifrage.

Lin. spec. 378. Juss. 291. Reich. 1. 723. Willd.

1471. prodr. n. 347. fl. suec. n. 261. mat. med. 86.

hort. cliff. 106. Retz. obs. 3. 29. Hudf. angl.

127. Wither. arr. ed. 3. 311. Engl. bot. 407.

Lightf. scot. 169. Relb. cant. n. 241. Sibth.

oxon. n. 313. Fl. rust. 127. Woodv. med. bot.

488. t. 179. Pollich pal. n. 305. Jacqu. austr. 4.

t. 395. Fl. dan. t. 669. Gmel. fib. 1. 220.

Leers herb. n. 224. 225. Krock. fles. n. 467.

Villars dauph. 2. 604. Allion. pedem. n. 1329.

Blackw. t. 472. Plenck, ic. 221.

α. *P. saxifraga minor*. Baub. pin. 160. Raii syn. 213.

n. 3. & — foliis Sanguisorbæ, n. 2.

β. *P. saxifr. & hircina*. Mill. dict. n. 2, 3.

β. *Pimpinella nigra*.

Willd. prodr. n. 348. spec. Linn. 1471. Mill. dict.

n. 4. Retz. obs. 3. 30. t. obs. 2.

P. saxifr. major altera. Baub. pin. 159.

Saxifraga hircina minor foliis Sanguisorbæ. Baub.

hist. 3. 111.

γ. *Pimpinella dissecta*.

Lin. spec. ed. Willd. 1472. Retz. obs. 3. 30. t. 2.

Sibth. oxon. n. 314. Wither. arr. ed. 3. 312.

var. 5. Hall. helv. n. 787. (Tragofelinum).

P. saxifr. major degener. Mor. umb. t. 5. hist. 3.

284. Raii syn. 213.

Leaves pinnate, root-leaflets roundish, uppermost linear.

2. *Pimpinella magna*. Great Burnet-Saxifrage.

Lin. Juss. 291. Reich. 1. 723. Willd. 1471. prodr.

n. 349. mant. 219. Wither. arr. ed. 3. 313.

Relb. cant. n. 242. Sibth. oxon. n. 315. Pollich

pal. n. 306. Jacqu. austr. 4. t. 396. Krock.

^r Idem.

^p Engl. bot.

^q Smith's New Holland

^r Linn. suppl.

- filef. n. 468. Villars dauph. 2. 603. Allion. pedem. n. 1330. Hall. belv. n. 785. (Tragose-linum). Plenck, ic. 222.*
- P. major. *Mill. dict. n. 1. Hudf. angl. 127. Gouan illustr. 21. Lob. obs. 413. 2. ic. 1. 720. 1. Fuchf. 608.*
- P. saxifraga. *Raii syn. 213. Scop. carn. n. 345. Camer. epit. 775. Petiv. brit. t. 26. f. 5. Ger. emac. 1044. 1.*
- Saxifraga magna. Dod. pempt. 315. 1.*
- P. saxifr. hircina major. *Park. theat. 947. 1.*
- Saxifr. hircina major. Baub. hist. 3. 2. 109.*
- S. Pimp. German. major. *Clus. hist. 2. 197. 1.*
- P. saxifr. maj. umbella candida. *Baub. pin. 159. 1. Mor. hist. f. 9. t. 5. f. 1. umb. t. 5. f. 1.—item, umbella rubente. Baub. pin. 159. n. 3.*
- β. Pimpinella orientalis.
- Gouan illustr. 21. t. 15. Jacqu. austr. 4. t. 397. Riv. pent. 80. Wither. arr. ed. 3. 312. var. 6. Plenck, ic. t. 224.*
- Leaves pinnate, leaflets ovate, the terminating one three-lobed.*
- [3. Pimpinella lutea. *Yellow Burnet-Saxifrage. Desfont. atlant. 265. t. 76.*
- P. saxifraga maxima africana. *Magn. bot. app. Tragosefinum africanum altissimum. Tournef. inst. 309. Leaves pinnate pubescent: leaflets cordate toothed, gashed in front, peduncles filiform paniced.*
4. Pimpinella glauca.
- Lin. spec. 378. Reich. 1. 724. Willd. 1473. Pollich pal. n. 307.*
- Seseli pumilum. Gouan illustr. 15.*
- Leaves superdecompound, stem angular, very much branched.*
5. Pimpinella capensis. *Cape Burnet-Saxifrage. Lin. spec. ed. Willd. 1473. Thunb. prodr. 51. Leaves superdecompound, segments acute, stem striated.]*
6. Pimpinella peregrina. *Nodding Burnet-Saxifrage. Lin. spec. 378. syst. 291. Reich. 1. 724. Willd. 1473. mant. 357. Jacqu. hort. 2. 61. t. 131. Allion. pedem. n. 1332. Lin. hort. cliff. 107. upf. 67. (Anisum).*
- Apium peregrinum foliis subrotundis. Baub. pin. 153. Daucus tertius Dioscoridis. Col. ephr. 1. 108. t. 109. Root-leaves pinnate crenate, upper leaves wedge-form gashed, umbels before flowering drooping.*
7. Pimpinella Anisum. *Anise. Lin. spec. 379. syst. 291. Reich. 3. 724. mat. med. 86. Woodv. med. bot. 490. t. 180. Blackw. t. 374. Kniph. cent. 2. n. 57. Thunb. jap. 120. Anisum foliis radicalibus simplicibus. Lin. hort. cliff. 107. upf. 67.*
- A. herbaris. Baub. pin. 159.*
- A. vulgare. Clus. hist. 2. 202.*
- Anisum. Ger. 880. emac. 1035. 1. Park. theat. 911. Raii hist. 450.*
- Root-leaves trifid gashed.*
- [8. Pimpinella dichotoma.
- Lin. syst. 291. Reich. 1. 725. Willd. 1474. mant. 58.*
- Peduncles opposite to the leaves, floriferous leaves twice trifid, petioles membranaceous-winged.*
9. Pimpinella dioica. *Least Burnet-Saxifrage. Lin. syst. 291. Reich. 1. 725. Willd. 1474. mant. 357. Hudf. angl. 128. Wither. arr. ed. 3. 313.*
- P. pumila. Jacqu. vind. 227. austr. 1. 19. t. 28.*
- Seseli pumilum. Lin. spec. 373.]*
- Peucedanum minus. Hudf. angl. ed. 1. 101. Lin. mant. 219. syst. 280. Baub. pin. 149. Raii syn. 217. hist. 460. Park. theat. 880. n. 3.—numilum. Ger. 863. emac. 1054. 3. & 1021. 3.*
- [Selinum montanum pumilum. Clus. hist. 2. 200. 1. Baub. hist. 3. 2. 18. f. 1.*
- Peucedani facie pusilla planta. Lob. adv. 331. 2. ic. 1. 745. 2.*
- Dwarf, umbels very numerous compound and simple, flowers dioecous.*

DESCRIPTIONS, &c.

1. Root perennial, strong, woody, highly aromatic and pungent, to some persons not unpleasant, especially when dry. Stems about a foot high, erect, slender, rigid, round, striated and roughish, varying much

in luxuriance, generally branched above. Leaves on long footstalks, veiny, roughish, and rigid; the leaflets of the first root-leaves roundish or ovate, acutely ferrate and generally deeply notched, especially that at the end; the other leaves are composed of decurrent, linear, often falcated, sometimes twice pinnatifid leaflets, those which grow high on the stem being the narrowest and most simple, and their common footstalk more membranous and dilated than in the rest. Umbels drooping when young. Flowers small, white with long stamina: top of the germ very tumid and reddish. Styles short. Seeds small.

There is a wonderful diversity in the size and foliage of this species. It often happens that the root-leaves become like those of the stem, and then it has been supposed to be a distinct species. I shall not attempt to follow this Proteus through all its changes: and have only given above our common sort here described, the *nigra* and the *difsecta*, which are set down by some for distinct species.]

β. Mr. Miller says, that the seeds of the *nigra*, or black-rooted German Burnet-Saxifrage, were sent him from Paris by Bernard de Jussieu; that the lower leaves are composed of six or seven pairs of leaflets terminated by an odd one; that they are heart-shaped, almost two inches long, and an inch and half broad near the base, hairy and of a pale green; that the stalk rises near two feet high, dividing into several branches, which have one narrow five-pointed leaf at each joint, and are terminated by umbels of white flowers, like those of *P. magna*, of which this may perhaps rather be a variety. [Willdenow distinguishes it by the pubescence of the stem and leaves; the root leaflets are subcordate, gashed, blunt and toothed, the stem-leaves bipinnate and linear; the root when cut or wounded pours out a blue milky liquor. It is a native of Germany in dry soils.

γ. Retzius, who has figured this says, that the root-leaves of the first year are entirely pinnate, and the pinnae roundish; but when these decay, the pinnae are all many-parted, and the segments subfalcated and acute. He remarks farther, that in a garden it grows taller, and the stem is stiffer, but in other respects it does not undergo any change. It is a native of Germany and Sweden.

We have it also in England. It is the fifth variety of Withering, who describes the "root-leaves as doubly-winged, the leaflets wing-cleft, with entire segments; stem-leaves doubly winged, with entire leaflets; floral leaves cloven at the end."

He distinguishes four other varieties:

1. With all the leaflets egg-shaped, ferrate. For this he refers to the following figures: *Tabern. ic. 88; 255, 1 & 2. Germ. edit. Ger. 887. 1 & 2. Baub. hist. 3. 2. 111. 1 & 2. Mor. hist. f. 9. t. 5. f. 6. Trag. 466. Fuchf. 609. Matth. 1032.*
2. Leaflets on the root-leaves egg-shaped, ferrate, those on the stem-leaves strap-shaped (linear) mostly entire, floral-leaves strap-shaped. This is figured by Jacquin, *austr. 395. Clus. 2. 197. 2. Dod. 315. 2. Lob. obs. 413. 1. & ic. 719. 2. Ger. emac. 1044. 2. Park. 947. 4. Cam. epit. 776.*
3. Leaflets on the root-leaves egg-shaped ferrate, on the lower stem-leaves deeply wing cleft, floral leaves winged.—Figured in *Flor. dan. 669. Blackw. 472. Riv. pent. 83. P. minor.*
4. All the leaves doubly winged, leaflets strap-shaped mostly entire, floral leaves winged. From Mr. Relhan. No figure.

The sixth variety belongs rather to *P. magna*.

All the above varieties, he adds, are probably occasioned by the different age of the plant, and the greater or less expansion of its foliage, according to the soil in which it grows. It is probable that the first root-leaves are the same in all, that is simply winged, the leaflets egg-shaped and ferrate: when these disappear, the lower leaves have wing-cleft or doubly winged leaves, and the upper leaves become also more compound than the rest.

Common Burnet Saxifrage is a native of most parts of Europe, in dry gravelly or calcareous pastures; flowering from midsummer through the autumn.

Mr. Miller's *P. hircina*, is nothing more than *P. saxifraga* β. of Hudson—*hircina* minor of Parkinson. *Ray syn.* 213. 3.

2. Root perennial, woody, like that of *P. saxifraga* in flavour, but rather weaker. Stem two feet or more in height, round, striated. Leaves on rather shorter footstalks than in the preceding, pinnated, but of fewer leaflets (scarcely more than three pairs), and those larger, ovate or ovate-lanceolate, the terminating one more or less deeply three-cleft, and all strongly serrated. Sometimes, it is said, the upper leaves are deeply pinnatifid, but that is not generally the case. Flowers commonly white, about the size of the last, and like them in structure; but in alpine situations they often become rose-coloured^a. The stem-leaves are gradually narrower as they are higher up; at length linear and almost entire. The universal umbel has fourteen, the partial from ten to eighteen rays, in the preceding both have from eight to twenty rays^b.]

Mr. Miller remarks, that the lower leaflets, which are the largest, are near two inches long, an inch and half broad at their base, and of a dark green, and that white and red flowers rise from the same seed.

Native of the South of Europe, Germany, Switzerland and England. With us it grows chiefly in woods and hedges in a calcareous soil, flowering in august or even later. Ray marks it to grow in the woods of Cambridgeshire, Bedfordshire, Kent, &c., Mr. Woodward in Ripton-wood, Huntingdonshire, Mr. Ballard in Worcestershire, Dr. Pulteney in Hollinghall-wood, Leicestershire, Mr. Robson about Thirsk and Burroughbridge in Yorkshire, Dr. Smith under the walls of York, Dr. Milne near Clandon-place in Surry, in Petworth-park, near Lord Petre's at Brentwood, at Greenhithe, by the 31st mile-stone on the Canterbury road, on Hampstead-heath, at Leads near Claremont in Surry, about Guildford and Godalmin, between Wimbledon and Merton, Dr. Sibthorp in Stow-wood and Noke woods, Oxfordshire. In Wednesbury-field, Staffordshire, with a red flower. In hedges near Maidstone, Kent, with all the leaves jagged.

This and the former species partake nearly of the same qualities. The root is very acrid, burning the mouth like Pepper. It affords a blue oil. Its acrimony has occasioned it to be used to cure the tooth-ache, and to cleanse the skin from freckles. It is chewed to promote the secretion of saliva, and is used in gargles for dissolving viscid mucus in the throat. In Germany it is prescribed in the asthma and dropsy^c.

β. Root biennial, branched. Stem grooved and angular, paniced with branches. Primary root-leaves having five petioled leaflets, the lower cordate crenate, the middle obliquely ovate, the end one ovate equal three-lobed crenate; the second root-leaves quinately also, but the two lower leaflets three-parted-palmate multifid, the middle ones smaller and less jagged, having a sessile oblong leaflet at the base longitudinally truncate upwards; the odd leaflet three-lobed. The second year the root-leaves or lower stem-leaves have sometimes seven leaflets, but most commonly five, the lowest ternate, the rest three-parted multifid, deeply pinnatifid, almost like *Aconitum Napellus*. The other stem-leaves and branch-leaves have much smaller leaflets; and the uppermost are very small, trifid and scarcely jagged. The petioles of the root-leaves are three inches long, three-sided and grooved above; the sheaths striated-nerved and wide, frequently purple. The umbels have from fourteen to sixteen rays, about half an inch in length but somewhat unequal. The umbellets have about sixteen very slender rays, two lines long. Flowers white. Seeds smooth^d.

Found by Tournefort in the Levant, and by Jacquin in Austria.

Mr. Miller's *P. austriaca* is probably a variety of the *magna*, but it does not correspond with the *orientalis*, as far as we can judge by his description.] The lower leaves have five pairs of leaflets, with an odd one; they are placed at a wider distance than the other sorts; are near two inches long, and three quarters of an inch broad in the middle, drawing to a point at each end, and are deeply cut in regular jags opposite; they are of a lucid green and are placed on long foot-stalks. The stems are two feet high, divide at the top into two or three slender branches, and at each joint have one pinnatifid linear leaf. Mr. Miller gathered the seeds in Boerhaave's private garden near Leyden, under the name of *Tragofelinum austriacum maximum, foliis profundissime incis.*

[3. Leaves nearly those of *P. magna*. Root-leaves pubescent, petioled: leaflets unequally and bluntly toothed, often gashed in front: terminating leaflet commonly three-lobed. Stem smooth, even, leafy below, leafless above and branched: branches dichotomous; branchlets filiform, paniced. Sheaths channelled, entire, membranaceous, deciduous. Peduncles nodding. Umbels small. Rays three to five, capillary. Petals yellow, very small. Filaments of the same colour. Seeds quite smooth, small, half ovate, scarcely striated. Central florets abortive. It flowers in summer, and has an aromatic odour.—Native of mount Atlas^e.

4. Root fusiform, fibrous, brown without, white within. Stem erect, seldom attaining a foot in height, four or five-cornered, very smooth, divided from the very base into smaller branches, and into very small ones much diverging. Leaves alternate, the lower petioled, the upper opposite or in threes sessile, near four inches long, two inches wide, the last pinnae short, twice-trifid, linear, somewhat fleshy, quite entire, all glaucous-green and smooth. Sheaths striated, smooth, with a white membranaceous margin. Peduncles angular, smooth. The universal umbel has about ten rays, the partial seventeen or more. Flowers small, white^f. It is not a species of *Seseli*, because it has no partial involucre^g. Gouan affirms, that it has involucels, which are sometimes deciduous, sometimes permanent, but that the latter are so small as not to be seen without a magnifier, or when the fruit is ripe.—Native of Germany, France and Italy.

5. Found at the Cape of Good Hope by Thunberg^h.

6. Root long, white and fibrous; of a very sharp taste. Radical leaves (at least when raised in a garden) prostrate, and numerous; those which appear first are simple, the next ternate, and the succeeding ones pinnate: leaflets roundish and crenated. Stem solitary, two feet high, striated, and branched above; it has but few leaves, the lower ones of which resemble more or less the radical ones; but the upper ones are variously divided into lanceolate segments. The umbels nod extremely before flowering, and afterwards are upright. The flowers are white, and the petals hairy on the back. The fruit is very small, and ovate-roundish, crowned with the two spreading styles, and separable into two brown seeds, flat on one side, and gibbous and striated on the other, and beset with numerous pale bristles: they have no smell, and when first chewed, scarce any taste, but in a short time are very acrimonious, and excite a great heat in the faucesⁱ.

Native of Italy and Spain. Cultivated in 1739, by Mr. Miller^j.]

7. Root annual. Lower leaves divided into three lobes, which are deeply cut on their edges. Stem a foot and half high, dividing into several slender branches, which have narrow leaves on them, cut into three or four narrow segments. Umbels pretty large and loose, on long peduncles. Flowers small, yellowish white. Seeds oblong, swelling. It flowers in July, and if the season prove warm, the seeds will ripen in autumn. It is a native of Egypt, but is cultivated in Malta and Spain, whence the seeds are annually

^a Desfontaines.

^b Pollich.

^c Linn.

^d Thunb. prodr.

^e Jacquin.

^f Hort. kew.

^g Engl. bot.

^h Relhan.

ⁱ Withering.

^j Gouan.

P I M

imported into England. [It was in our gardens in 1551, as appears from Turner².

The seeds have an aromatic smell, and a pleasant warm taste, accompanied with a considerable degree of sweetness. In distillation with water, three pounds of them yield an ounce or more of essential oil which, even when the air is not sensibly cold, congeals into a butyraceous white concrete. Its smell is very durable and diffusive, and its taste milder and less pungent than almost any other distilled vegetable oils.

These seeds yield an oil likewise by expression, of a greenish colour, and grateful taste, strongly impregnated with the flavour of the seeds: sixteen ounces lightly moistened by exposure to the steam of boiling water, are said to afford one ounce, composed of a gross insipid inodorous oil, of the same nature with common expressed oils, and a part of the essential oil of the seed, on which the flavour depends.

The seeds of Anise have been long used by physicians as an aromatic and carminative, in preference to those of most other umbellate plants; they have also been esteemed good in pulmonary complaints, and like those of Fennel, to promote the secretion of milk. Their chief use however is in flatulencies, and in the gripes to which children are more especially liable; and they are combined with such purgatives as are apt to produce these effects. Weakness of the stomach, diarrhoeas, and loss of tone in the primæ viæ are likewise complaints in which Anise-seeds are supposed to be peculiarly useful.

The essential oil, which is the only officinal preparation now directed by the Pharmacopœias, is usually grateful to the stomach, and may be taken in the dose of twenty drops. In diseases of the breast the oil is preferred, but in flatulencies and colics the seeds in substance are said to be more effectual.

It is asserted that the oil is a poison to pigeons³.

8. This plant is half a foot high, very much branched, dichotomous. Lower leaves triternate, upper biterminate, almost linear, shorter, acute; on petioles augmented on both sides by a membrane wider than the others, quite membranaceous, white. Peduncles opposite to the leaf, and much longer than it, one from each axil, whence they are abundant. The universal umbels have five or six rays. Petals white, curved in and emarginate. Fruit subglobular, striated. Native of Spain⁴.

9. Root perennial, fusiform, running straight down, somewhat branched at the base, with a villose head. Stem from half a cubit to a cubit in height, upright, angular, striated, leafy, smooth, very much branched; branches patulous. Lower leaves opposite, petioled, pinnate and bipinnate: leaflets simple and ternate, linear, channelled, naked, glaucous. Petiole membranaceous, sheathing, oblong, striated, entire. Umbels peduncled, axillary and terminating: universal of about six long rays; partial clustered, with about five short rays. Flowers yellowish or whitish dioecous. Petals equal. The male flowers have no pistil. The female flowers have anthers, but they are barren⁵. Mr. Swayne remarks, that the male plant has a yellow sickly appearance⁶.

According to Linneus, the stem is divaricating, even, striated, with but few leaves. Leaves ternate or biterminate, linear. Umbels one terminating and two lateral, opposite, generally compound, some few simple. Petals long-lanceolate, curved in but not emarginate. Filaments white, long. There is a male and an hermaphrodite plant. It is nearly allied to *P. glauca*, or of a distinct genus.]

Mr. Miller says it is a biennial plant, perishing soon after it has perfected its seeds: leaves short and very narrow, spreading near the ground: stems near a foot high, branched almost from the bottom; the branches are almost horizontal, and have a few narrow short leaves of a lucid green: each stalk is terminated by a small umbel of flowers of an herbaceous yellow colour and small: they are succeeded by small channelled seeds.

¹ Hort. kew.

² Woodville.

³ Linn. mant.

⁴ Hudson.

⁵ Withering.

P I N

[Native of Austria, Provence, Switzerland and England; on St. Vincent's rocks, near Bristol, and above Uphill in Somersetshire. It flowers in May and June.]

PROPAGATION AND CULTURE.

These are hardy perennials, except the fifth, which is a native of the Cape, and the seventh, which is an annual plant. They are propagated by seeds sown in the autumn rather than spring. When the plants come up, thin them where they are too close, and keep them clean from weeds: the second year they will flower and produce ripe seeds. The roots will abide some years in poor land. The last sort is biennial, (others make it perennial) and rarely ripens seeds in a garden.

7. The seeds of Anise should be sown the beginning of April upon a warm border, where the plants are to remain; when they come up thin them and keep them clean from weeds. It is too tender to be cultivated in England for profit.

[PIMPINELLA. See *Poterium*, *Sanguisorba*, *Seseli*, *Sium*.—Gärtner has united the two first of these under the name of *Pimpinella*.

PINANGA. See *Areca*.

PINASTELLA. See *Hippuris*.]

PINASTER. See *Pinus*.

[PINEA. See *Pinus*.

PINE-APPLE. See *Bromelia*.

PINE, Screw. See *Pandanus*.

PINE-TREE. See *Pinus*.]

PINGUICULA. [(*Dimin. from* *Pinguis*, fat: *on account of the greasiness of the leaves.*)

Lin. gen. n. 30. Reich. n. 33. Schreb. n. 40. Tournef. t. 74. Juss. 98.

Class. 2. 1. Diandria Monogynia.

Nat. order of *Corydales*. *Lyfimachia*, Juss.

GENERIC CHARACTER.

CAL. Perianth ringent, small, acute, permanent. Upper lip erect, trifold: lower reflex, bifid.

COR. one-petalled, ringent: longer lip straight, blunt, trifold, supine: shorter lip bifid, blunter, more spreading.

Nectary horned, produced backwards from the base of the petal.

STAM. Filaments two, cylindrical, curved, ascending, shorter than the calyx. Anthers roundish.

PIST. Germ globular. Style very short. Stigma two-lipped: upper lip larger, flat, reflex, covering the anthers: lower lip very narrow, erect, bifid, shorter.

PER. Capsule ovate, compressed at the tip, opening at the top, one-celled.

SEEDS very many, cylindrical. Receptacle free or detached.

ESSENTIAL CHARACTER.

Cor. ringent, with a spur. Cal. two-lipped, five-cleft. Caps. one-celled.

SPECIES.

1. *Pinguicula lusitanica*. Pale Butterwort.

Lin. spec. 25. syst. 65. Reich. 1. 49. Willd. 109. Wither. arr. ed. 3. 18. Smith, angl. 26. Hudf. angl. ed. 1. 7. Engl. bot. t. 145. Cullum, fragm. 6. Allion. pedem. n. 198.

P. villosa. Hudf. angl. ed. 2. 8. Lightf. scot. 77. t. 6.

P. minima flore albo. Merr. pin.

P. cornubienfis flore minore carneo. Raii hist. 752.

P. flore min. carneo. Raii syn. 2. 160. 3. *281.

Viola palustris, *Pinguicula dicta*, *lusitanica*. Griseb. virid. 84.

Nectary blunt shorter than the petal, scape villose, capsule globular.

2. *Pinguicula vulgaris*. Common Butterwort.

Lin. spec. 25. syst. 65. Reich. 1. 50. Willd. 110. fl. lapp. n. 11. fuc. n. 25. Hudf. angl. 8. Wither. arr. ed. 3. 18. Smith, angl. 27. Engl. bot. t. 70. Relb. cant. n. 16. Sibth. exon. n. 17. Abbot, bedf. n. 15. Hall. helv. n. 292. Fl. dan. t. 93. Gmel. fib. 3. 225. Roth. germ. 1. 10. 2. 26. Hoffm. germ. 8. Villars dauph. 2. 445. Allion. pedem. n. 199.

P. Gesneri. Bauh. hist. 3. 546. 1. Raii hist. 751. syn. *281. Petiv. brit. t. 35. f. 7.

Pinguicula

Pinguicula. *Clus. hist.* 1. 310. 2.
P. f. Sanicula eboracensis. *Ger.* 644. *emac.* 788.
Park. theat. 532. 2. *Mor. hist. f.* 5. t. 7. f. 13.
Sanicula montana, flore calcari donato. *Baub. pin.* 243.
Nectary cylindrical acute the length of the petal, capsule
ovate.

3. *Pinguicula grandiflora*. *Great-flowered Butterwort.*
Lin. spec. ed. Willd. 110. *Lamarck, encycl.* 3. 21.
t. 14. f. 2.

P. flore amplo purpureo, cum calcare longissimo. *Raii*
hist. 752. *Tournef. inst.* 167.

Nectary awl-shaped straight the length of the flower, up-
per lip spreading emarginate.

4. *Pinguicula alpina*. *Alpine Butterwort.*
Lin. spec. 25. syst. 65. *Reich.* 1. 50. *Willd.* 111.
fl. lapp. n. 12. t. 12. f. 3. *succ. n.* 26. *Fl. dan.*
t. 453. *Hall. belv. n.* 293. *Scop. carn. n.* 28.
Gunn. norv. n. 640. t. 4. f. 4. *Pallas, it.* 3. 33.
Roth. germ. 1. 10. 2. 27. *Hoffm. germ.* 8. *Villars*
dauph. 2. 445. *Allion. pedem. n.* 200.

P. flore albo minore, calcare brevissimo. *Raii hist.*
752. *Tournef. inst.* 167.

Nectary awl-shaped reflex shorter than the petals.

5. *Pinguicula villosa*. *Villose Butterwort.*
Lin. spec. 25. syst. 65. *Reich.* 1. 50. *Willd.* 111.
fl. lapp. n. 13. t. 12. f. 2. *succ. n.* 27. *Gunn. norv.*
n. 641. *Georgi. it.* 1. 195. *Villars dauph.* 2. 445.
Allion. pedem. n. 201.

Scape strict pubescent, nectary awl-shaped straight very
short, leaves nerved.

DESCRIPTIONS, &c.

1. Root perennial. Leaves like those of the other species, but rather more delicate and pellucid, reticulated with red veins, and much involute in the margin. Stalks hairy, especially in their lower part, with short spreading glandular hairs tipped with a viscid fluid. Flowers a little nodding. Calyx scarcely two-lipped, but almost equally five-cleft. Tube of the corolla nearly cylindrical, yellow streaked with red; limb in five equal obcordate spreading segments, of a pale lilac; orifice hairy; spur inflated at the base, then contracted, terminating in a very blunt conical figure, and when dried much thicker at the end than at the middle, streaked with red. Stamens flattish. Germ hairy. Stigma blunt, excavated on the upper side. Capsule perfectly globular, crowned with the withered stigma.

To distinguish this species from others it may be remarked, that *P. vulgaris* has an unequal limb, sharp slender spur, and oval capsule: *P. alpina* has a very short conical spur, and a long rostrated capsule: *P. villosa* a slender sharp spur, and obcordate compressed capsule, with short round leaves. Its hairy stalk and regular limb agree nearly with *P. lusitanica*, but the *villosa* is smaller in all its parts.

Ray had remarked that the leaves are almost pellucid, marked with purplish veins, and the edges rolled in; that the flowers are smaller with more of a reddish cast than in *P. vulgaris*.

Found about Kilkhampston by Ray, and midway from Oakhampton to Launceston by Merret; said to be frequent in the western counties by Hudson; found in Stoneham-park, Hampshire by Sir Joseph Banks; Dr. Pulteney says it is abundantly more frequent in Dorsetshire, on the borders of bogs, than *P. vulgaris*. Dr. Hope found it near Air in Scotland, and in the island of Lamlash; Mr. Stuart and Mr. Lightfoot in the Isle of Skye: and Mr. Lambert on Croagh Patrick, in the county of Mayo, Ireland. It flowers in June and July.

2. This is a smooth plant. The leaves are less involuted. Scapes smooth, only a little pubescent at the top. Corolla violet-coloured, with an unequal limb: spur awl-shaped, acute. Capsule ovate. The leaves are remarkably glutinous on their upper side, and afford a good example of an involuted margin. The structure of the stigma, and its close application to the stamens, are very remarkable.

Linneus remarks that the soft upright prickles which cover the leaf, secrete the glutinous liquor; and that

the corolla is violet, purple and reddish, with white lips, and an ash-coloured woolly spot on the palate.

Native of many parts of Europe, on bogs. It is abundant in our northern counties, and Scotland; also in Norfolk; Cambridgeshire at Hinton and Teversham moors, and in the fens near Ely; in Bedfordshire on Amphill bogs, Mr. Abbot; on Bullington-green, and under Headington-Wick copse in Oxfordshire, Dr. Sibthorp; on the little bog by Charlton wood, near Shooter's-hill, on Pets-bog near Chiselmhurst, and on the Mere near Feversham, in Kent; at Harrington; and Wellingborough in Northamptonshire; at Basford Scotum in Nottinghamshire.

Gerarde sets it down as growing in Crag-cloose and at Crosby Ravenswaith in Westmoreland, upon Ingleborough fells twelve miles from Lancaster, and in Harwood in the same county near to Blackburne; ten miles from Preston in Aunderness; in the boggy meadows about Bishop's Hatfield, and also in the fens in the way to Wittles meare from London in Huntingdonshire. Johnson adds, that it grows also in Hampshire, and abundantly in many places of Wales.

It flowers in May and June.

In Yorkshire, says Gerarde, where it doth especially grow, and in greatest abundance, it is called Butterworts, Butter-root, and White-root; but the last name belongeth more properly to Solomon's Seal. It is also named Yorkshire Sanicle.

If the fresh-gathered leaves of Butterwort are put into the filtre or strainer, through which warm milk from the Rein-deer is poured, and the milk is set by for a day or two to become aced, it acquires consistence and tenacity, neither the whey nor the cream separate: in this state it is an extremely grateful food, and as such is used in the north of Sweden. There is no farther occasion to have recourse to these leaves, for half a spoonful of the prepared milk, mixed with fresh warm milk, will convert it to its own nature, and so on. This has not succeeded when tried with Cow's milk. The juice of the leaves kills lice. The common people use it to cure cracks in Cow's udders. This plant is generally supposed injurious to sheep, and is called *White-rot*, from its occasioning a disease which farmers call the rot. But it may be questioned whether the rot in sheep be so much owing to the vegetables in marshy grounds, as to the *Fasciola hepatica*, a flat insect called a *Fluke*, from its similitude to a Flounder or Fluke; and which is found in such situations, adhering to stones and plants, as well as in the livers and biliary ducts of sheep affected with the rot. From experiments made on purpose, and conducted with accuracy, it appears that sheep, cows, horses, goats and swine will not feed upon this plant.

3. The flowers are three times the size of those of the preceding, of a violet purple colour: spur awl-shaped the length of the flower: upper lip dilated emarginate; lower wide, bluntly three-lobed, and not deeply three-parted, as in *P. vulgaris*.—Native of mountains in the South of France.

4. Corolla white with a reflex spur. Capsule beaked. —Native of the alps of Lapland, Norway, Switzerland, Austria, Germany, Dauphiné and Piedmont. It flowers earlier than the common sort.

Villars remarks, that the flower is more open, the nectary shorter, and the leaves wider, less elongated and more yellow than the common sort.

5. Scape setaceous, scarce apparently pubescent. Corolla violet-coloured, with the spur standing out. It is six times less in all its parts than *P. vulgaris*. It differs from *P. lusitanica* in having the scape strict, the leaves three-nerved, and the flowers smaller.

Native of Lapland, Norway and Siberia.

PINGUI. See *Bromelia*.

Pini foliis planta. See *Protea*.]

PINUS.

Lin. gen. n. 1077. *Reich. n.* 1175. *Schreb. n.* 1456.
Tournef. t. 355. *Juss.* 414. *Abies.* *Tournef.*
t. 353. *Juss.* 414. *Larix.* *Tournef. t.* 353.

^a Linn. lapp. and Withering.
^b Willdenow.

^a Withering.
^d Willdenow.

^c Engl. bot. ^{*} Smith, angl. ^v Engl. bot.

P I N

Class. 21. 8. Monoecia Monadelphia.
Nat. order of Coniferae.

GENERIC CHARACTER.

* Male flowers disposed in racemes.

CAL. Scales of the bud opening, and no other.

COR. none.

STAM. Filaments very many, connected at bottom into an upright column, divided at top. Anthers erect, naked.

* Female flowers on the same plant.

CAL. Strobile subovate, consisting of Scales which are two-flowered, oblong, imbricate, permanent, rigid.

COR. none.

PIST. Germ very small. Style awl-shaped. Stigma simple.

PER. none. Strobile serves for a calyx, having before been closed, but now only converging.

SEED. Nut augmented by a membranaceous wing which is larger than the seed, but less than the scale of the strobile, oblong, straight on one side, gibbous on the other.

ESSENTIAL CHARACTER.

MALE. Cal. four-leaved. Cor. none. Stam. very many, with naked anthers.

FEM. Cal. Strobiles with a two-flowered scale. Cor. none. Pist. one. Nut with a membranaceous wing.

SPECIES.

* With two or more leaves from the same sheathing base. Pine.

1. Pinus sylvestris. Wild Pine-tree.

Lin. spec. 1418. syst. 860. Reich. 4. 172. hort. cliff. 450. fl. suec. n. 874. lapp. n. 346. mat. med. 204. Woodv. med. bot. 570. t. 209. Hudsf. angl. 423. Wither. arr. ed. 3. 615. Lightf. scot. 587. Hall. helv. n. 1660. Gmel. fib. 1. 178. Pallas ross. 1. 5. t. 2. f. li. Scop. carn. n. 1196. Pollich pal. n. 913. Gunn. norv. n. 337. Villars dauph. 3. 804. Trew in nov. act. nat. cur. 3. app. 452. t. 15. f. 1. 3. t. 16. f. 11—25. Mill. illustr. Du Roi harbk. 2. 13. Evel. silv. ed. Hunt. 274. Blackw. t. 190.

α. P. sylvestris. Bauh. pin. 491. Dalech. hist. 45. Matth. 98. Bauh. hist. 1. 253. Dod. pempt. 860. 1. Lob. obs. 631. 2. ic. 2. 226. 2. Ger. 1175. 1. emac. 1356. 1. Raii hist. 1399. Park. theat. 1534. 2.

P. sylv. fol. brevibus glaucis, conis parvis albicantibus. Dubam. arb. 2. 125. t. 30. Raii syn. 442. hist. 1401.

P. rubra. Mill. dict. n. 3. Scotch Fir or Pine Tree.

P. communis. Ait. kew. 3. 366. Leaves in twos shorter glaucous, cones small.

β. P. tatarica. Tartarian Pine Tree.

Mill. dict. n. 4. Ait. kew. 3. 366.

Leaves in twos shorter broader glaucous, cones very small.

γ. P. montana. Mountain or Mugho Pine Tree.

Mill. dict. n. 5. Ait. kew. 3. 366.

P. sylv. mont. Dubam. arb. 2. 125. t. 31.

P. sylv. mugo. Ger. 1175. 2. emac. 1356. 2. Scop. ann. 2. 65.

Leaves often in threes narrower green, cones pyramidal with blunt scales.

δ. P. divaricata. Hudson's Bay Pine Tree.

Ait. kew. 3. 366.

Leaves divaricate oblique.

ε. P. maritima. Sea Pine Tree.

Ait. kew. 3. 366.

P. marit. major. Dubam. arb. 2. 125. t. 28.

Leaves two in a sheath rigid, cones ovate-conical the length of the leaves single or two together rounded at the base.

2. Pinus Pinaster. Pinaster or Cluster Pine Tree.

Ait. kew. 3. 367.

P. sylvestris. Mill. dict. n. 1.

P. sylv. γ. Lin. spec. 1418.

P. maritima altera. Dubam. arb. 2. 125. t. 29.

Leaves two in a sheath somewhat rough at the edge, cones oblong-conical shorter than the leaf attenuated at the base, scales echinated.

P I N

3. Pinus inops. Jersey Pine Tree.

Ait. kew. 3. 367.

P. virginiana. Mill. dict. n. 9.

Leaves two in a sheath, cones oblong-conical the length of the leaves solitary rounded at the base, scales echinated.

4. Pinus resinosa. American Pitch Pine Tree.

Ait. kew. 3. 367.

Leaves two in a sheath, cones ovate-conical rounded at the base solitary shorter by half than the leaf, scales unarmed.

5. Pinus halepensis. Aleppo Pine Tree.

Mill. dict. n. 8. fig. 139. t. 208. Ait. kew. 3. 367.

Leaves two in a sheath, cones ovate conical rounded at the base rather shorter than the leaf, scales obtuse.

6. Pinus Pinea. Stone Pine Tree.

Lin. spec. 1419. Reich. 4. 173. hort. cliff. 450.

upf. 288. mat. med. 205. Scop. carn. n. 1197.

Du Roi harbk. 2. 39. Regn. bot. Villars dauph.

3. 806.

P. sativa. Bauh. pin. 491. Raii hist. 1398.—f. domestica. Ger. 1173. emac. 1355.—urbana f. domest.

Park. theat. 1534. 1.

P. officulis duris, foliis longis. Bauh. hist. 1. 248.

Pinus. Camer. epit. 93. Lob. adv. 449.

Leaves two in a sheath, primordial ones ciliate, cones ovate blunt almost unarmed longer than the leaf, nuts hard.

7. Pinus Tæda.

Lin. spec. 1419. syst. 860. Reich. 4. 173. Gron.

virg. 152. Du Roi harbk. 2. 48. Cold. noveb.

230. Raii dendr. 8.

α. P. tenuifolia. Ait. kew. 3. 368.

P. Tæda. Mill. dict. n. 11. Frankincense Pine Tree.

Leaves longer and more slender, cones very large loose.

β. P. rigida. Three-leaved Virginian Pine Tree.

Mill. dict. n. 10. Ait. kew. 3. 368.

Cones longer with more rigid scales.

γ. P. variabilis. Two and three-leaved Pine Tree.

Ait. kew. 3. 368.

Leaves by twos or threes in a sheath.

δ. P. alopecuroidea. Fox-tail Pine Tree.

Ait. kew. 3. 368.

Leaves spreading and squarrose.

Leaves mostly three in a sheath, cones oblong-conical shorter than the leaf aggregate, scales echinated.

8. Pinus palustris. Swamp Pine Tree.

Mill. dict. n. 14. Ait. kew. 3. 368. Dubam. arb.

2. 126. Abbot, Georgia, t. 42.

Leaves three in a sheath very long, cones subcylindrical echinated, branches roughened with ramentaceous stipules.

9. Pinus Cembra. Siberian Stone Pine Tree.

Lin. spec. 1419. syst. 860. Reich. 4. 173. Scop.

ann. 2. 65. Gmel. fib. 1. 179. t. 39. Dubam.

arb. 2. t. 32. Hall. helv. n. 1659. Pallas ross. 1.

t. 2. Villars dauph. 3. 806. Du Roi harbk. 2. 51.

Amm. ruth. 178. Raii hist. 1398. 2.

P. sylvestris Cembra. Camer. epit. 42.

P. Cembro. Lob. adv. 449. Matth. 103.

P. sylv. montana tertia. Bauh. pin. 491. Scheuch.

it. 6. 460.

Pinaster. Bell. conif. 19. Mich. gen. 223.

Larix sempervirens, foliis quinis, nucleis edulibus.

Breyn. eph. nat. cur. cent. 7. obs. 2.

Leaves five in a sheath, cones ovate blunt, scales pressed close, nuts hard.

[10. Pinus occidentalis. West Indian Pine Tree.

Swartz prodr. 103. Plum. spec. 17. ic. 161.

Leaves five in a sheath rugged along the edge very long, cones oblong, scales truncated at top.]

11. Pinus Strobus. Weymouth Pine Tree.

Lin. spec. 1419. Reich. 4. 174. Gron. virg. 152.

Du Roi harbk. 2. 57. Cold. noveb. 229. Dubam.

arb. 2. 127.

Larix canadensis longissimo folio. Tournef. inst. 506.

Leaves five in a sheath, cones cylindrical longer than the leaf loose.

12. Pinus Cedrus. Cedar of Lebanon.

Lin. spec. 1420. Reich. 4. 174. Du Roi harbk. 2.

84. Evel. sylva ed. Hunt. 2. p. 1.

Larix Cedrus. Mill. dict. n. 3.

Cedrus

- Cedrus conifera foliis laricis.* Baub. pin. 490. Raii hist. 1404. Trew Ebret, t. 1—4. nov. act. nat. cur. 3. app. 445. t. 13. f. 1—7.
- C. libani.* Ger. 1171. emac. 1352. Barr. ic. 499. Edw. ornith. t. 188.
- C. phoenicea.* Renealm. spec. 27.
- Cedrus.* Bellon. itin. 162. Camer. epit. 57.
- C. magna conifera Libani.* Park. theat. 1532. Leaves fascicled acute.
- [13. *Pinus pendula.* Black Larch Tree. Ait. kew. 3. 369. Leaves fascicled soft bluntish, scales of the strobiles covering the bractes.
14. *Pinus Larix.* Common White Larch Tree. Lin. spec. 1420. Reich. 4. 175. mat. med. 205. Woodv. med. bot. 576. t. 210. Scop. carn. n. 1198. Hall. belv. n. 1658. Villars dauph. 3. 807. Pallas it. 1. 451. & 2. 127. roff. 1. t. 1. Trew in nov. act. nat. cur. 3. app. t. 13. f. 8—28. Ludw. est. t. 86. Blackw. t. 477. Kniph. cent. 9. n. 77. Du Roi barbk. 2. 61. Hunt. Evel. 179.
- Larix.* Baub. pin. 493. Dod. pempt. 668. Camer. epit. 45. 46. Ger. 1183. emac. 1365. Raii hist. 1405. Park. parad. 608. theat. 1533. Matth. 105.
- L. folio deciduo conifera.* Baub. hist. 1. 265. hort. angl. 43. f. 11. Dubam. arb. 1. 332. t. 131.
- L. decidua.* Mill. dict. n. 1.
- Abies foliis fasciculatis obtusis.* Lin. hort. cliff. 450. Gmel. fib. 1. 176. Leaves fascicled soft bluntish, bractes standing out beyond the scales of the strobiles.
- * Leaves solitary and distinct at the base. Fir.
15. *Pinus Picea.* Silver Fir Tree. Lin. spec. 1420. Reich. 4. 175. Wood. med. bot. 575. t. 209. Hall. belv. n. 1657. Scop. carn. n. 1193. Pollich pal. n. 914. Pallas roff. 1. 7. t. 1. f. F. Trew in nov. act. nat. cur. 3. app. t. 13. f. 29—44. Villars dauph. 3. 809. Gært. fruct. 2. 60. Evel. silva ed. Hunter, 278.
- P. Abies.* Du Roi barbk. 2. 95.
- P. candida.* Trag. 1117.
- Abies alba.* Mill. dict. n. 1.
- Abies fol. solitariis apice emarginatis.* Lin. hort. cliff. 449. Gmel. fib. 176.
- A. taxi folio, fructu sursum spectante.* Tournef. inst. 585.
- A. conis sursum spectantibus f. mas.* Baub. pin. 505.
- A. femina.* Baub. hist. 1. 231. Camer. epit. 48. 49.
- Abies.* Park. theat. 1540. Raii hist. 1394. Oelhaf. arb. 25. t. 5—8. mas. Blackw. t. 203. Leaves solitary flat emarginate pectinate, scales of the cone very blunt pressed close.
16. *Pinus Balsamea.* Balm of Gilead Fir Tree. Lin. spec. 1421. Reich. 4. 176. Gron. virg. 152. Du Roi barbk. 2. 193.
- Abies Balsamea.* Mill. dict. n. 3. Hort. angl. 2. n. 6. Dubam. arb. 3. Pluk. phyt. t. 121. f. 1. Raii dendr. 8. Leaves solitary flat emarginate subpectinate almost upright above, scales of the cone when in flower acuminate reflex.
17. *Pinus canadensis.* Hemlock Spruce Fir Tree. Lin. spec. 1421. Reich. 4. 177. Du Roi barbk. 2. 124.
- Abies foliis solitariis confertis obtusis membranaceis.* Gron. virg. 191.
- A. americana.* Mill. dict. n. 6. Gært. fruct. 2. 60. Leaves solitary flat submembranaceous sharpish pectinate, cones ovate scarcely shorter than the leaf.
18. *Pinus nigra.* Black Spruce Fir Tree. Ait. kew. 3. 370.
- P. mariana.* Gært. fruct. 2. 59.
- Abies mariana.* Mill. dict. n. 5.
- A. Picea foliis brevioribus, conis biuncialibus laxis.* Mill. fig. 1. t. 1. Seligm. av. 5. t. 11. Leaves solitary four-cornered scattered all round straight striat, cones oblong.
19. *Pinus Abies.* Norway Spruce Fir Tree. Lin. spec. 1421. Reich. 4. 177. mat. med. 205. Woodv. med. bot. 573. t. 208. Gært. fruct. 2. 60.

- Hall. belv. n. 1656. Scop. carn. n. 1194. Gunn. norv. n. 39. Pallas roff. 1. 6. t. 1. f. G. Fl. dan. t. 193. Villars dauph. 3. 810. Trew, nov. act. nat. cur. 3. app. 451. t. 14. f. 5—10. & t. 16. f. 1—10. Blackw. t. 198. Regn. bot. Evelyn ed. Hunter, 278. n. 2.
- P. Picea.* Du Roi barbk. 2. 110.
- Abies Picea.* Mill. dict. n. 2. Lin. hort. cliff. 449. fl. juv. n. 875. lapp. n. 347. Gmel. fib. 1. 175. Dubam. arb. 1. 3. t. 2.
- A. rubra.* Trag. 1117.
- A. mas Theophrasti.* Raii hist. 1396. syn. 441.
- Picea.* Camer. epit. 47. Matth. 97. Park. theat. 1538. Oelhaf. arb. 35. t. 9—16. —major. Ger. 1172. emac. 1354.
- P. major prima f. Abies rubra.* Baub. pin. 493. Leaves solitary somewhat four-cornered sharpish distich; branches naked below, cones cylindrical.
20. *Pinus alba.* White Spruce Fir Tree. Ait. kew. 3. 371.
- Abies canadensis.* Mill. dict. n. 4. Leaves solitary four-cornered the lateral ones curved in; branches almost naked beneath, cones subcylindrical.
- [21. *Pinus orientalis.* Oriental Fir Tree. Lin. spec. 1421. syst. 861. Reich. 4. 178. *Abies orientalis folio brevi & tetragono, fructu minimo deorsum inflexo.* Tournef. cor. 41. Leaves solitary four-cornered.]

DESCRIPTIONS, &c.

1. The Wild Pine is called in Britain the Scotch Fir, from its growing naturally in the mountains of Scotland; but it is common in most parts of Europe, particularly the northern parts; and Monf. Duhamel mentions his having received cones of this tree from St. Domingo. The wood is the red or yellow deal, which is the most durable of any of the kinds yet known. The leaves are much shorter than those of the Pinaster and Stone Pine, broader, of a grayish colour and twisted. The cones are small, pyramidal; and end in narrow points; they are of a light colour, and the seeds are small.

[In a favourable soil this tree grows to the height of fourscore feet, with a straight trunk. The bark is of a brownish colour and full of crevices. The leaves issue from a white truncated little sheath in pairs; they are linear, acuminate, quite entire, striated, convex on one side, flat on the other, mucronate, bright green, smooth, from an inch and half to two inches or a little more in length. The scales of the male catkins roll back at top, and are feathered. The inner and upper scales of the cones gradually terminate in a short awn, but the lower scales have none; the scales open very readily.]

Few trees have been applied to more uses than this. The tallest and straightest afford masts to our navy. The timber is resinous, durable, and applicable to numberless domestic purposes. From the trunk and branches of this and others of the genus tar and pitch are obtained: by incision barras, burgundy pitch and turpentine are acquired and prepared. The resinous roots are dug out of the ground in many parts of the Highlands of Scotland, and being divided into small splinters, are used by the inhabitants instead of candles. The fishermen make ropes of the inner bark: but hard necessity has taught the Laplanders and Kamschatdales to convert it into bread. To effect this, in spring they strip off the outer bark carefully from the fairest trees, and collect the soft white succulent interior bark, and dry it in the shade. When they have occasion to use it, they first toast it at the fire, then grind, and after steeping the flour in warm water to take off the resinous taste, they make it into thin cakes and bake them. Linneus remarks, that this bark-bread will fatten swine; and that the boys in Sweden, frequently peel off the bark in the spring, and eat it raw with a greedy appetite.

From the cones a diuretic oil is prepared, like oil of turpentine, and a resinous extract, which has similar virtues with Balsam of Peru. An infusion of the buds is highly commended as an antiscorbutic.

• Pollich.

The

The farina of the male flowers is sometimes in spring, carried away by the winds in such quantities, as to alarm the ignorant with the notion of its raining brimstone^f.

Though the different species of Fir possess in common the same medicinal properties, and agree in affording the different products of the turpentine kind, yet some produce them in greater purity or abundance than others. This tree not only furnishes most abundantly the *Pix liquida* or Tar; but common Turpentine, and the white and yellow resins may also be obtained from it.

The manner in which Tar is procured, is by cutting the tree into pieces, which are inclosed in a large oven, with a channel at the bottom. A sufficient degree of heat is then applied, by which the Tar is forced out of the wood, and runs off by the channel: a process termed *distillatio per descensum*.

Tar is properly an empyreumatic oil of turpentine, and has been much used as a medicine both internally and externally. Tar water, or water impregnated with the more soluble parts of Tar has been a very popular remedy in various obstinate disorders, both acute and chronic: and though its medicinal efficacy has been greatly exaggerated, yet Dr. Cullen acknowledges that he experienced it to be a valuable medicine, and that it appeared to strengthen the tone of the stomach, to excite appetite, promote digestion, and cure all symptoms of dyspepsia: at the same time it manifestly promotes the excretions, particularly that of urine.

The proportions that have been commonly employed, are two pounds of tar to a gallon of water; these are well stirred together, suffered to settle for two days, and then poured off. From a pint to a quart, according to circumstances, may be taken in the course of twenty-four hours. Dr. Cullen thinks with Mr. Reid, that the acid principle gives the virtue to Tar water; and hence the Bishop of Cloyne properly preferred the Norway Tar to that of New England, the former containing more acid than the latter.

An ointment of Tar is directed both in the London and Edinburgh Pharmacopœias, which has been chiefly employed in cutaneous disorders^g.]

β. Tartarian Pine has a great resemblance to the Scotch Pine, but the leaves are broader, shorter, and their points are more obtuse; they emit a strong balsamic odour when bruised: the cones of this are very small, as are also the seeds, some of which are black, and others white.

It grows naturally in Tartary, whence Mr. Miller received the seeds.

γ. This has very narrow green leaves, which grow sometimes by pairs, sometimes by threes from the same sheath; they generally stand erect; the cones are of a middling size and pyramidal; the scales are flat, having each a small obtuse rising, but very compact till they are opened by the warmth of the sun the second spring. The seeds of this are much less than those of the Pinaster, but larger than those of the Scotch Pine.

Native of the Swiss mountains, where it is called Torch Pine, grows to a great height, is full of resin, the wood, when first cut, of a reddish colour, and used in building.

[Monf. Villars says it is the most common sort on the mountains of Dauphiné, but that the shortness of the trunk and other characters disappears when it grows in lower situations, insomuch that it cannot then be distinguished from the common sort.]

ε. This has smooth leaves; the cones are very long and slender; and the seeds are about the same size with those of the Pinaster.—It grows in the maritime parts of Italy and the South of France.

2. The Pinaster grows to a large size; the branches extend on every side to a considerable distance, and whilst the trees are young, they are fully furnished with leaves, especially when they are not so close as to exclude the air from those within; but as they advance in age, the branches appear naked, and all those which

are situated below become unsightly: hence, and because the timber of the Scotch Pine is much preferable to this, it has been more generally propagated. The branches of the Pinaster grow at a wider distance than those of the Scotch Pine, and are more horizontal; the leaves are much larger, thicker and longer, grow straight, have a broad surface on their inside, which has a furrow or channel running longitudinally; they are of a darker green and their points are obtuse. The cones are seven or eight inches long, pyramidal with pointed scales; the seeds are oblong, a little flattened on their sides, and have narrower wings on their tops.

It grows naturally in the mountains of Italy and the South of France, where there are forests of these trees, which if suffered to stand, grow to a large size; in Switzerland they are frequently cut into shingles for covering their houses, and also for making Pitch: in the South of France the young trees are cut for stakes to support their vines.

[It was cultivated here in 1596, by Gerarde^h.]

3. This never rises to any great height, and is the least esteemed in the country of all the sorts. While the trees are young they make a pretty good appearance, but when they get to the height of seven or eight feet they become ragged and unsightly, and are therefore not worth cultivating here.

It grows naturally in most parts of North America; [and was cultivated in 1748, by Mr. Miller.

4. Native of North America. Cultivated in 1756, by Hugh Duke of Northumberlandⁱ.]

5. This tree branches out on every side near the root; the branches at first grow horizontally, but turn their ends upwards; their bark is smooth and of a dark gray colour. The leaves are long and very narrow, of a dark green, and if they are bruised emit a strong resinous odour. The cones come out from the side of the branches; they are not much more than half the length of those of the Pinaster, but are full as large at their base; the scales are flattened, and the point of the cones is obtuse. The seeds are much less than those of the Pinaster, but of the same shape.

It grows naturally near Aleppo, and in several other parts of Syria, and is a tree of middling growth there; but in England most of the trees were killed in the severe winter of 1740. The two largest which Mr. Miller had seen were at Goodwood in Suffex, the seat of his grace the Duke of Richmond, which were raised by Mr. Miller, and had been transplanted thither the year before, and having scarcely recovered their removal, had made no shoots that summer, and therefore escaped much better than those trees which were in greater vigour.

The seeds of this tree were sent to Mr. Miller from Aleppo, by Consul Cox, in the year 1732. He raised many of the plants in the Chelsea garden, some of which were grown upwards of eight feet high by the year 1740, when most of them were destroyed by the frost.

Mr. Miller mentions that he received cones of a Pine Tree, brought from Aleppo by Dr. Ruffel, from which he raised many plants, bearing a near resemblance to this; but that the cones were more pointed, and the scaly protuberances sharper than those of the Goodwood cones. Mr. Miller therefore suspects them to be different, and imagines the cones brought over by Dr. Ruffel to belong to Tournefort's *Pinus orientalis foliis durioribus amaris, fructu parvo peracuto*. *Coroll.* 41^k.

6. The leaves of the Stone Pine are not quite so long as those of the Pinaster, and are of a grayish or sea-green colour. The cones are not more than five inches long, but are very thick, roundish, and end obtusely; the scales are flat, and the seeds are more than twice the size of those of the Pinaster. The kernels are frequently served up in deserts during the winter season in Italy and the South of France; and formerly they were used in medicine here; but Pistachia nuts have been generally substituted for them. The wood is white, and not being so full of resin as many of the

^f Lightfoot.

^g Woodville.

^h Hort. kew.

ⁱ Idem.

^k Mill fig.

other sorts, this tree is not cultivated for timber, but chiefly for the beauty of its leaves, and for the nuts; [the kernels of which are as sweet as Almonds, but with a slight flavour of turpentine.

The Stone Pine will grow to a considerable height, with a straight and fair stem, but a rough bark. The leaves contribute to diversify the scene in plantations, as they differ in colour from the other sorts, and are arranged in a different manner. The cones are very large and turbinate, striking the eye by their bold appearance when hanging on the trees; and when closely examined, they afford pleasure from the beautiful arrangement of their scales¹.

Native of the South of Europe.] Very common in Italy (particularly about Ravenna:) but Mr. Miller doubts whether this species is originally of that country, because there are none of the trees growing there, except where they have been planted, or where the seeds are scattered from planted trees. He has frequently received the seeds of a Pine from China so like those of this sort as not to be distinguished from them; but having never vegetated, he could not ascertain the species.

[Sir George Staunton relates that the kernels of the Stone Pine are much relished by the Chinese.

It was cultivated here in 1570, as appears from Lobel^m.]

7. This has very long narrow leaves, growing¹ by threes out of each sheath. The cones are as large as those of the Stone Pine, but they are more pointed, and the scales are looser; they open horizontally and discharge the seeds. The French in Canada built a sixty-four gun ship entirely with the wood of this tree, which is like that of the Scotch Pine, but has more resin.

It is a native of North America, whence it was sent to Mr. Ball of Exeter, and to Compton Bishop of London, by the name of Frankincense Pine.

β. Leaves long, generally three in each sheath. Cones in clusters round the branches, as long as those of the Pinafter, but with rigid scales: the seeds also are nearly as large as those of the Pinafter. It grows naturally in Virginia, and other parts of North America, where it rises to a great height. There are many of these trees in the noble plantations of his Grace the Duke of Bedford at Woburn, which were twenty feet high, when they were not of many years standing, and kept pace with the other sorts in the same plantation.

[According to the Kew catalogue, *Pinus Teda* was introduced in 1736, by Peter Collinson, Esq.—There are many other varieties sent over from North America, some of which have little or no difference.]

8. This tree grows to the height of twenty-five or thirty feet, on the swamps of North America. The leaves are a foot or more in length, growing in tufts at the ends of the branches, and therefore having a singular appearance. The wood is of little use but for fuel.

[Native of Carolina and Georgia. Cultivated here in 1730ⁿ.]

9. The Siberian Stone Pine is confounded with that of Switzerland; but the cones of the latter are short and roundish, with close scales, whereas those of the Siberian Pine are long and the scales looser. The leaves have a near resemblance; but the plants raised from Swiss seeds make much greater progress than the others, which can scarcely be kept alive in England.

[The Cembra Pine grows higher up the Alps than any other Pine, and is even found at elevations where the Larch will not grow. The stones are shorter than those of the Stone Pine, but full as thick. The wood is very soft, and having scarcely any grain, is very fit for the carver. The peasants of the Tyrol, where this tree abounds, make various sorts of carved works with this wood, which they dispose of in Switzerland among the common people, who are fond of the resinous smell which it exhales.

Linneus and other botanists make this the same with the Siberian Stone Pine, which resembles it much, but Duhamel and Haller will have them to be distinct

species. The Siberian Pine is lofty and straight, pushing out few side branches; whereas the Swiss Pine is small, knotty and often deformed. The wood of the Siberian has no smell, and the cones are different. In the Brianconnois the Cembra is called *Alviz*, and in Savoy *Aroles*^o. But Villars remarks that it has different names in almost every village of Dauphiné. The kernels are good to eat, and yield abundance of oil which smells a little of turpentine; it is pectoral and diuretic^p.

Mr. Harte describes it under the name of *Aphernoussi* Pine: and at Gledgow near Leeds it is called the *Gledgow* Pine. There are several of the trees in the plantations belonging to Jeremiah Dixon, Esq. at that place.

It is likely to thrive in bleak rocky situations, or peaty moors: the timber is large; the bark of the trunk is of a whitish cast. Wainscoting, flooring and other joiner's work made of the planks, are of a finer grain, and more beautifully variegated than Deal, and the finell is more agreeable. A white odoriferous resin is extracted from this wood^q.

Scopoli thus describes the Cembra in his *Iter Tyrolense*—Bark smooth. Leaves from three to five in a sheath, three-cornered, the corners rough when stroaked downwards; one of them flat, shining and green; the others whiter and not shining. Male aments in pairs, half an inch long, red, coming out at the base of the new leaves, composed of keeled, ovate scales, and two-celled, pedicelled anthers. Female cones oval, composed of hemispherical scales terminated by a brown point, wrinkled, of a pale ferruginous colour, two-celled within, and having a brown wedge-shaped nut in each cell, furnished with two opposite angles, and containing an eatable, oily, white kernel, covered with a rufous skin.

Native of Switzerland and Siberia. Cultivated in 1746, by Archibald Duke of Argyle^r.

10. Native of Hispaniola. This has been confounded with *Pinus Strobus* or the Weymouth Pine^s.

11. The Weymouth Pine, or White Pine as it is called in North America, is one of the tallest species, often attaining a hundred feet in height in its native country. The bark is very smooth and delicate, especially whilst the tree is young. The leaves are long and slender; they are pretty closely placed on the branches, and make a fine appearance. The cones are long, slender and very loose, opening with the first warmth of the spring; so that if the seeds are not gathered in winter, the scales open and let them out. The wood is esteemed for masts of ships; and there was a law made in the ninth of Queen Anne for the preservation of these trees, and to encourage their growth in America. It is only within forty years past that they began to be propagated in England in any plenty^t; though there were some large ones growing in two or three places long before, particularly at Lord Weymouth's, and at Sir Wyndham Knatchbull's in Kent: and it has been chiefly from the seeds of the latter, that most of the trees now in England have been raised, or from those in the plantations of the Duke of Argyle at Whitton. This and the Scotch Pine are the best worth cultivating for timber. In England it is called Lord Weymouth's or New-England Pine: [and was cultivated in 1705, by the Dutchess of Beaufort^u.

The value of the timber in our island, especially in cold soils, is perhaps doubtful; nor will it bear the severity of our winters, and the variableness of our springs, except in particular situations and soils; as Earl Nugent's plantations at Gosfield and others too plainly testify^x.

The size to which this beautiful species will arrive may be supposed from a tree which was cut down in 1736 on the banks of the river Merimack, that was seven feet eight inches in diameter at the butt end^y. It is very fit for masts.

^o De Saussure, voyages, 2. 14.

^p Villars.

^q Dr. Hunter in *Evel. silva*. Harte's Essays, 102.

^r Hort. kew.

^s Swartz.

^t This was said in 1768.

^u Hort. kew.

^x R. in Young's annals.

^y Hunter *Evel. silva*.

¹ Hunter in *Evel. silva*.

^m Advers. 449. Hort. kew.

ⁿ Hort. kew.

‡2. That noble tree, the Cedar of Lebanon, has a general striking character of growth so peculiar to itself, that no other tree can possibly be mistaken for it. It is placed by Linneus, along with the Larch, in the same genus with the Firs and Pines: it agrees with the former in its foliation, with the latter in being evergreen.

The sturdy arms, says Evelyn, grow in time so weighty, as often to bend the very stem and main shaft; the leaves much resemble those of the Larch, but are somewhat longer and closer set, erect and perpetually green, which those of the Larch are not; but hanging down, dropping off, and deserting the tree in winter. The cones are tacked and ranged between the branch-leaves, in such order, as nothing appears more curious and artificial, and at a little distance exceedingly beautiful: these cones have the bases rounder, shorter, or rather thicker, and with blunter points, the whole circumzoned, as it were, with pretty broad thick scales, which adhere together in exact series to the very summit, where they are somewhat smaller; but the entire lorication smoother couched than those of the Firs: within these repositories, under the scales, nestle the small nutting seeds, of a pear-shape^z.] These cones grow upon the upper part of the branches, and stand erect, having a strong, woody, central style, by which they are firmly annexed to the branch, so as with difficulty to be taken off; which central style remains upon the branch after the cone is fallen to pieces; for it never drops off whole, as those of the Pines do.

Many wonderful properties are ascribed to the wood of this celebrated tree, such as its resisting putrefaction, destroying noxious insects, continuing a thousand or two thousand years sound, yielding an oil famous for preserving books and writings, [purifying the air by its effluvia, inspiring worshippers with a solemn awe, when used in wainscoting churches or chapels, &c.

Touching the diuturnity of this material, says Mr. Evelyn, 'tis recorded, that in the temple of Apollo Utica, there was found timber of two thousand years old; and at Sagunti in Spain, a beam in an oratory consecrated to Diana, which was brought to Zant, two centuries before the destruction of Troy: that Sesostris built a vessel of Cedar of 280 cubits: and the statue of the Goddess in the famous Ephesine temple, was said to be of this material, as was most of the timber-work of that glorious structure. In the relation of the properties assigned to this tree there is much vulgar error, and confusion of the Cedar of Lebanon, with other trees called Cedars; and as to the materials used in the heathen temples, it is very uncertain what they were. We have better authority than that of Pliny, that this was the species of timber employed in building the sumptuous temple and palace of Solomon at Jerusalem.—“Now therefore command thou, said Solomon to Hiram, that they hew me Cedar-trees out of Lebanon. I will do all thy desire, replied Hiram concerning timber of Cedar, and concerning timber of Fir^a. And Solomon raised a levy of thirty thousand men out of all Israel; and he sent them to Lebanon, ten thousand a month, by courses: and he had threescore and ten thousand that bare burdens, and fourscore thousand hewers in the mountains^b. And he covered the temple with beams and boards of Cedar. And he built chambers against it, which rested on the house with timber of Cedar^c. And the Cedar of the house within was carved with knops and open flowers: all was Cedar, there was no stone seen^d. And he built the inner court with three rows of hewed stone, and a row of Cedar beams^e.—Solomon's house also of the forest of Lebanon was covered with Cedar upon the beams: and the porch of judgment was covered with Cedar from one side of the floor to the other. And the great court of his palace was with three rows of hewed stones, and a row of Cedar beams^f.”

Mr. Evelyn remarks, that the Cedar is of so dry a nature, that it does not well endure to be fastened with

nails, from which it usually shrinks, and therefore pins of the same wood are better^g.

The allusion of the Psalmist, of spreading abroad like a Cedar in Libanus, shows that he was well acquainted with this tree, which is remarkable for the wide spread of its branches, rather than for its height. Had Milton known it as well, he would not have used the expression of the—

“Insuperable height of loftiest shade:”

in speaking of the Cedar.

It is not only found on mount Lebanon or Libanus, but Belon observed it on the mountains Amanus and Taurus.

Solomon's fourscore thousand hewers must have considerably thinned the forest of Libanus. Few now remain there.

Rauwolff in 1575 saw only twenty-four sound trees, and two old decayed ones. “We found ourselves (says he) upon the highest point of the mountain, and saw nothing higher, but only a small hill before us, all covered over with snow, at the bottom whereof the high Cedar trees were standing. And though this hill hath in former ages been quite covered over with Cedars, yet they are since so decreased, that I could tell no more but twenty-four that stood round about in a circle, and two others, the branches whereof are quite decayed for age. I also went about in this place to look out for some young ones, but could find none at all. These trees are green all the year long, have strong stems that are several fathoms about, and are as high as our Fir trees^h.”

Maundrell, in 1696, May 9th, could reckon only sixteen large trees, but many small ones. His account is as follows.—“Having gone for three hours across the plain of Tripoli, I arrived at the foot of Libanus; and from thence continually ascending, not without great fatigue, came in four hours and a half to a small village called Eden, and in two hours and a half more to the Cedars. These noble trees grow amongst the snow near the highest part of Libanus; and are remarkable as well for their own age and largeness, as for those frequent allusions made to them in the word of God. Here are some of them very old, and of a prodigious bulk; and others younger, of a smaller size. Of the former I could reckon up only sixteen; and the latter are very numerous. I measured one of the largest, and found it twelve yards six inches in girth, and yet found, and thirty-seven yards in the spread of its boughs. At about five or six yards from the ground, it was divided into five limbs, each of which was equal to a great treeⁱ.” What Maundrell has related, says Mr. Miller, was confirmed to me by a worthy gentleman of my acquaintance, who was there in the year 1720, with this difference only, that in measuring the branches of the largest tree, he found them to be twenty-two yards in diameter. [Supposing these two gentlemen to have measured the same tree, and not to be mistaken in their admeasurement, this difference can only be reconciled by supposing that the latter meant the spread of the boughs from the trunk, the former the whole spread or diameter, which we may conceive to have increased in twenty-four years.] The traveller Le Bruyn reckons about thirty-five or thirty-six trees remaining on mount Libanus when he was there, and would persuade us it was not easy to reckon their number, as is reported of the stones of our Stonehenge on Salisbury plain. He also says that some of the cones grow dependent, which is abundantly confuted by the above-mentioned travellers, and also from our own experience.

[The few Cedars still remaining on mount Libanus are preserved with a religious strictness. On the day of the Transfiguration, the Patriarch repairs in procession to these trees, and celebrates a festival called the feast of Cedars^k.

We have now probably more Cedars in England, than are left on mount Libanus.] It is matter of

^z Silva, p. 155. ed. 4. 1706.

^l Ibid. v. 13—15.

^c Ibid. v. 36.

^a 1 Kings v. 6—8.

^e Ibid. c. vi. 9, 10.

^d Ibid. v. 18.

^f Ibid. c. 7.

^g Silva, 156.

^h Travels, part 2. chap. 12.

ⁱ A journey from Aleppo to Jerusalem, by Henry Maundrell, M. A. Oxf. 1721. p. 142.

^k Hunter's notes on Evelyn.

surprise to me, says Mr. Miller, that this tree has not been more cultivated in England formerly, for till within a few years past, there were but few here; since it would be a great ornament to barren bleak mountains, where few other trees will grow so well; it being a native of the coldest parts of mount Libanus; where the snow continues great part of the year. From the observations I have made of the trees now growing in England, I find that such as have been planted in a strong, rich, loamy earth, have made a poor progress, in comparison with those which have grown upon a stony meagre soil. That these trees are of quick growth, is evident from four of them in the botanic garden at Chelsea, which, as I have been credibly informed, were planted there in the year 1683, and at that time were not above three feet high. [Sir Hans Sloane, in a letter to Mr. Ray, dated march 7, 1684-5, says—"I was the other day at Chelsea, and find that the artifices used by Mr. Watts have been very effectual for the preservation of his plants, inasmuch that this severe enough winter has scarce killed any of his fine plants. One thing I much wonder, to see that the *Cedrus Montis Libani*, the inhabitant of a very different climate, should thrive here so well, as without pot or greenhouse to be able to propagate itself by layers this spring. Seeds sown last autumn have as yet thriven very well, and are like to hold out. The main artifice I used to them, has been to keep them from the winds, which seem to give a great additional force to the cold, in destroying tender plants¹."] Two of these trees were in 1766 upwards of twelve feet and a half in girth, at two feet above the ground, and their branches extended more than twenty feet on every side their trunks; which branches, though they were produced twelve or fourteen feet above the surface, did at every termination hang very near the ground, and thereby afford a goodly shade in the hottest season of the year. [In august, 1793, the girth of the largest at three feet from the ground was twelve feet eleven inches and a half, of the smaller twelve feet and a quarter of an inch, as measured by Sir Jos. Banks.]

The soil in which these trees were planted, is a lean hungry sand mixed with gravel, the surface of which is scarcely two feet deep, before a hard rocky gravel appears. They stood at four corners of a pond, bricked up within two feet of their trunks, so that their roots having no room to spread on one side were cramped in their growth; but whether their standing so near the water might not have been advantageous to them, I cannot say; but sure I am, if their roots had had full scope in the ground, they would have made a greater progress. [Probably the roots, finding themselves stopped by the brick wall, tended downwards, and spread themselves in the moist earth under the water, which promoted greatly the growth of the trees; for some years after the time of which Mr. Miller speaks, this pond having been filled up, these noble trees decayed, and were quickly ruined for want of their accustomed beverage.]

I have also observed, that lopping or cutting these trees is very injurious to them, more perhaps than to any other of the resinous trees, in retarding their growth: for two of the four trees abovementioned, having been unadvisedly planted near a green-house, when they began to grow large, had their branches lopped, to let the sun into the house, whereby they were so much checked, as to be little more than half the size of the other two.

All these trees produced, for several years, large quantities of catkins, or male flowers; but only three of them had, in 1766, produced cones; nor was it above thirty-five years before that period, that these ripened their cones, so as to perfect the seeds; but after that, the seeds that fell out of the cones on the ground near them produced plants in plenty, which came up naturally without care. Since then we find that the Cedar is so far naturalized to our country as to produce ripe seeds, we need not fear a supply, without depending on the cones from the Levant: but I find they are

more apt to produce and ripen their cones in hard winters than in mild ones; which is a plain indication, that they will succeed, even in the coldest parts of Scotland; where, as well as in England, they might be propagated to great advantage:

[The Cedars at Chelsea are supposed, in the Kew catalogue, to have been the first known to be planted in England. Dr. Hunter, in his additions to Evelyn says, that we do not know when and by whom the Cedar was first introduced here. Dr. Turner, when he treats of the Pine tree, and other trees of that kind; says nothing of it. Gerarde mentions it not as growing here; and Parkinson says, the branches, some say; all grow upright, but others, straight out. It is very certain, from what Mr. Evelyn says, that it was not cultivated in England in 1664, but from the warm manner in which he expresses himself on this head it is probable, that it soon after became an object of the planter's attention.—Mr. Evelyn informs us, that he received cones and seeds of the few remaining trees on Libanus; and adds, why they should not thrive in old England I know not, save for want of industry and trial^m.

The old palace or manor house at Enfield, was occupied by Robert Uvedale, L.L.D. who kept a flourishing school there, about the year 1670. In the gardens, among other curious trees planted by Dr. Uvedale, there is a fine Cedar. The body, exclusive of the boughs, contains about 103 cubical feet. Girth at top three feet seven inches, second girth seven feet nine inches, third girth four feet, fourth, fourteen feet six inches. It is in height forty-five feet nine inches, eight feet having been broken off from its top by the hurricane in 1703; and in 1793, was twelve feet in girth, at three feet from the ground. An account of it was printed in 1788, in four pages small folioⁿ.

Several other Cedars of considerable size are or were scattered about in different parts of this kingdom: some of the finest of these were planted at Whitton by Archibald Duke of Argyle. One of the most remarkable was blown down by the hurricane that happened on the first of January 1779. It grew on the north side of Hendon place in Middlesex. Its height was seventy feet, the diameter of the horizontal extent of the branches was one hundred feet, the circumference of the trunk seven feet above the ground sixteen feet; and at twelve feet above the ground twenty-one feet. At this latter height it began to branch; and its limbs, about ten in number, were from six to twelve feet in circumference. This tree is supposed to have been two hundred years old, and tradition says was planted by Queen Elizabeth herself^o.—Tradition is seldom to be depended on, and Queen Elizabeth is a great favourite with tradition-mongers. But is it probable if such a tree existed in 1579, that Gerarde, Parkinson and Evelyn should know nothing of it? When blown down it was perfectly sound, and seemed as if not grown to maturity; it is probable therefore that it was not two hundred years old, for the Cedars at Chelsea attained their full size and decayed in less than a century.

The following are the dimensions of a fine Cedar growing at Hillington near Uxbridge. The height fifty-three feet; the extent of the branches from east to west ninety-six, from north to south eighty-nine feet; the circumference of the trunk close to the ground thirteen feet and a half, seven feet above the ground twelve and a half, twelve feet above the ground fourteen feet eight inches, at the height of thirteen feet and a half just under the branches fifteen feet eight inches. It has two principal branches, one of which is forked eighteen inches above its origin: before it divides it measures twelve feet round, after its division one of the forks measures eight feet and a half, the other seven feet ten inches. The other primary branch, at its origin, measures ten feet, and soon dividing, throws out two secondary ones, each five feet and a half. Its age is supposed to be 116 years^p.

^m Silva, p. 154.

ⁿ Hunter, and Lysons, 2. 285. & 4. 625. See Gentl. mag. for 1779.

^o Hunter's additions to Evelyn.

^p Idem.

¹ Ray's philof. letters, p. 176.

The only reliick of Dr. James Sherard's famous botanic garden at Eltham, so elegantly displayed by Dillenius, is a Cedar of Lebanon, which girts nine feet at three feet from the ground. It is now in the possession of John Dorington, Esq.⁹

Another of these trees is in the fellow's garden at Emanuel College in Cambridge, on a lawn by the side of the pond. It was planted in the year 1730 by Professor John Martyn, then a member of that college. The leading shoot being killed by the severe winter of 1740, its height is not very considerable; in form it is pyramidal, like the Spruce Fir, and its branches almost from the bottom.

Mortimer, in his Art of Husbandry, (edit. 2. 1708. p. 370.) affirms, that he had raised several Cedars of cones which he had from Lebanon, and that he then had a walk planted with them.]

13. There is a particular sort of this tree, brought from North America, and growing in the garden of Mr. Peter Collinson at Peckham in Surry, which differs from the European sort in having darker shoots. This is not mentioned by botanists, nor has it been long known in Europe, though it grows plentifully in some of the northern parts of America. It does not promise to make so large trees as the European, and therefore should be planted with those of lower growth, to make a variety. It will endure the severest cold of this climate¹⁰.

14. The common or white Larch Tree is of quick growth, and will rise to the height of fifty feet; the branches are slender, and their ends generally hang down. The leaves are long and narrow, in clusters from one point, spreading open above like the hairs of a painter's brush, of a light green, and falling off in autumn; in which circumstance this and the preceding differ from all the other species of this genus. In the month of April the male flowers appear, disposed in form of small cones; the female flowers are collected into egg-shaped obtuse cones, which in some have bright purple tops, but in others they are white: this difference is accidental, for seeds taken from either will produce plants of both sorts: the cones are about an inch long, and the scales are smooth; under each scale two winged seeds are generally lodged.

There are two other varieties of this tree, one a native of America, the other of Siberia: the latter requires a colder climate than England, for the trees are apt to die in summer here, especially if they are planted on a dry soil. The cones of this which have been brought to England, seem to be in general larger than those of the common sort; but there is so little difference between the trees in their characteristic notes, that they cannot be distinguished as different species, though in the growth of the trees there is a remarkable difference.

Mr. Miller mentions another variety from China, which he distinguishes as a species, under the name of *Larix chinensis*. The cones were sent to Hugh Duke of Northumberland, and the seeds, being sown, grew both at Stanwick and in the Chelsea garden. The cones were much larger than those of the common sort, and ended in acute points; the scales were prominent like those of the Scotch Pine, and had so little resemblance to those of the Larch, that every one who saw them, imagined they belonged to a sort of Pine, and they were sent over under the name of Pine good to keep up banks. As the plants made but little progress the first year, they were weak, and casting off their leaves in autumn were supposed to be dead, and thus most of them were lost; but those which escaped, afterwards shot out their branches horizontally, spreading close to the ground, and seemed to be shrubs, which would never rise upright. They are so hardy, as to thrive in the open air without any protection.

[Pallas thus distinguishes the European Larch from the American. In the latter the branches are more slender, with a bark more inclining to yellow, and the scars more slender and clustered; the leaves are more tender, narrower, more glaucous, and the outer ones

in each bundle shorter; cones only one-third of the size, blunt, with scales scarcely exceeding twelve in number, thinner, more shining, retuse-emarginate; wings of the seeds straight, more oblong, narrower, and together with the seed itself of a more diluted gray colour.

In the European Larch the bark of the branches is of an ash-coloured gray; the leaves a little wider, bright green, all nearly equal, commonly more than forty in a bundle: the cones an inch long, with above thirty woody, striated, rounded, entire scales. Seeds brownish-gray, with subtriangular wings somewhat bent in. In both, the cones are bent upwards on very short peduncles¹¹.

No tree is more valuable, or better deserves our attention in planting than the Larch. It is a native of the South of Europe and of Siberia. It appears from Parkinson's Paradisus that it was cultivated here in 1629¹²; and Evelyn says, a tree of good stature, not long since to be seen about Chelmsford in Essex, sufficiently reproaches our not cultivating so useful a material for many purposes, where lasting and substantial timber is required. We read of beams of no less than 120 feet in length, made out of this goodly tree. There is abundance of this Larch timber in the buildings at Venice, especially about the palaces in Piazza San Marco, where Scamozzi says he used much of it, and infinitely commends it. Nor did they only use it in houses, but in naval architecture also. It seems to excel for beams, doors, windows, and masts of ships: it resists the worm; being driven into the ground it is almost petrified, and will support an incredible weight: it bears polishing excellently well, and the turners abroad much desire it: the Larch makes everlasting spouts, pent-houses and featheredge, which needs neither pitch or painting to preserve them: excellent pales, posts, rails, props for vines, &c to these add the palats, on which painters separate and blend their colours; and were the tables on which the great Raphael and most famous artists eternized their skill¹³.]

In Switzerland, where these trees abound, and they have a scarcity of other wood, they build most of their houses with it; and great part of their furniture is also made of the wood, some of which is white, and some red, but the latter is most esteemed. The redness of the wood is by some supposed to be from the age of the trees, and not from any difference between them, but is rather owing to the quantity of turpentine contained in them. They frequently cut out the boards into shingles of a foot square, with which they cover their houses, instead of tiles or other covering: these are at first very white, but after they have been two or three years exposed, become as black as charcoal; and all the joints are stopped by the resin, which the sun draws out from the pores of the wood, which is hardened by the air, and becomes a smooth shining varnish, which renders the houses so covered impenetrable to either wind or rain; but as this is very combustible, the magistrates have made an order of police, that the houses so covered should be built at a distance from each other to prevent fire, which has often done great damage in villages.

In most countries where this wood is in plenty, it is preferred to all the kinds of Fir for every purpose; and in many places there are ships built of this wood, which they say are durable; therefore this may be a very proper tree for planting upon some of the cold barren hills in many parts of England, which at present produce nothing to their proprietors, and in one age may be large estates to their posterity, and a national advantage; which might be effected without a great expense, where the business is properly conducted.

[Line of battle ships are built with Larch at Archangel, which generally last fifteen years. At Venice it is also sometimes employed in ship-building, especially in the lighter parts of the upper works, but not where massy pieces of timber are required, on account of its weight. It resists the intemperature of the air more

⁹ Lyson's environs of London, 403.

¹⁰ Mill. Dict. vol. 2. 1739.

¹¹ Flora Rossica, 1. p. 2.

¹² Silva, p. 153.

¹³ Hort. kew.

than any wood known in that country, and therefore is much used for outer gates, pales, &c. In some of the old palaces at Venice there are beams of Larch as when first placed. In a word, wherever strength and durability are required, this is reckoned there the most choice wood they have^x.

Larch wood, says Dr. Anderson, is possessed of so many valuable qualities; that to enumerate the whole would appear extravagant hyperbole. It is known to resist water without rotting almost for ever. The piles of this timber on which the houses of Venice were built many hundred years ago, are still found as fresh as when first put in. Stakes of it have been tried in the decoys of Lincolnshire, which between wind and water, have already worn out two or three sets of oak stakes, and do not yet discover any symptoms of decay. It is also known to possess the valuable quality of neither shrinking nor warping when put into work, nor is it liable to be pierced by worms in our climate.

It is known to be one of the quickest growing trees, remarkably hardy, and extremely beautiful. It is much more easily reared than the Oak, and could be spread over a great extent of mountains, if sufficiently bare of herbage; at little or no expense, by the natural shedding of its seeds. It would be valuable not only for ship-plank; but even crooked timbers might be obtained, by using a little art to bend it when young. For flood-gates in navigable canals and wet docks it would exceed every thing that can be obtained in this climate. For barrel staves it would be inimitable; and in building it would answer all the purposes to which Fir is now applied, being much stronger and more durable than that wood. When it is also adverted to, that it is next to incombustible, it deserves to be strongly recommended to planters in this country, particularly in the most rugged and barren districts; where, at a very trifling charge, estates might be brought to a hundred times their present value^y.

The same valuable author, in the third volume of his Essays relating to Agriculture and Rural Affairs, has one entire long chapter, on the value and uses of the Larch tree; in which he says, that it is so much more valuable than the Scotch Fir, that it is now universally preferred to it, for plantations of large extent, in almost every situation. That as it has only been of late introduced into Britain, the qualities of the wood are not sufficiently understood: for before the last thirty years it was cultivated rather as an ornamental tree, than with a view to profit. But wherever it has been introduced it grows so freely; is so beautiful when in leaf; so highly ornamental when covered with its abundant pink blossoms in the spring; and is so elegant in its form, that it is sure to become a favourite with the planter.

Dr. Anderson is so full in his collections upon this subject, that I shall take the liberty of abstracting such parts of his memoir as have not been already given from their primary sources.

Among the Romans the Larch was employed, in preference to every other kind of wood, in building, where strength and durability were required; and Vitruvius attributes the sudden decay of buildings erected in his time, in a great measure to the want of Larch in the neighbourhood of Rome; it having been exhausted before his time, and the expense of bringing it from a distance being so high, as greatly to circumscribe the use of it.

Dr. Pallas, in his survey of the Russian dominions in Asia, observed several *tumuli* at Kamtshatka reared at a period so remote, that none of the present inhabitants had any tradition respecting their origin. The platform was covered by Larch wood, over which the mound of earth was raised; and the wood was found to be uncorrupted.

I have in my garden, says Mons. le President de la Tour d'Aigues, in the year 1787, some rails, part of which are Oak, and part of them Larch wood; they were made in 1743, and only once painted. The Oak has yielded to time, but the Larch is still sound. They

make casks of it in Provence: the fineness of the grain retains the spirit of the liquor perfectly, and does not alter its qualities: it has been used for that purpose for time immemorial in the higher Dauphiné. I have in my castle of Tour d'Aigues beams of twenty inches square, which are found, though upwards of two hundred years old; but trees of this size are now to be found only in places whence they cannot be transported. There are in some parts of Dauphiné, and in the forests of Baye in Provence, Larch trees, which two men could not grasp, and about seventy-two feet in height. This account is printed in Memoirs of the Royal Society of Agriculture, Paris 1787.

The Larch must stand to be of a sufficient age before the timber acquire its best qualities of strength and durability. We have not yet had an opportunity of using any of it in perfection in Great Britain; its introduction into this country having been at a period too late to admit of it. The two first trees that were planted in Britain, by the best accounts I can find, are at Dunkeld in Perthshire, the seat of the Duke of Athole. They were planted in 1741: consequently Dr. Anderson should have confined his remark to North Britain, for we have many trees in England prior to these: and some even in Scotland, belonging to Mr. Drummond were planted in 1734.

It appears from Parkinson's Paradisus, that the Larch tree was cultivated here so long since as 1629: it was then however, as he says, "rare, and nursed up but with a few, and those only lovers of rarities."

The largest of the Larch trees on the Duke of Athole's lawn at Dunkeld was measured in the month of march 1796, and the following are its dimensions:

| | F. | In. | | F. | In. |
|------------------|----|-----|----------------------|----|-----|
| At the height of | 1 | 8 | from the ground, the | | |
| | | | circumference is - | 11 | 11 |
| | 3 | 0 | | 10 | 0½ |
| | 6 | 0 | | 9 | 0 |
| | 9 | 0 | | 8 | 6 |
| | 12 | 0 | | 8 | 2 |
| | 18 | 0 | | 7 | 11 |
| | 24 | 0 | | 7 | 7 |

The whole height was eighty-five feet. There are several Larches upwards of one hundred feet in height, which are five or six years younger, but none of so great a girth. The largest of Mr. Drummond's was ninety-seven feet high, but less in circumference.

For a trial, the Duke of Athole has applied Larch to a variety of purposes, such as mill-axes, flooring in houses, window-frames and doors, posts and rails, and boat-building: for all of which it appeared to answer so well, that it is the greatest acquisition of wood ever introduced into Great Britain; especially as it attains a considerable size, on high grounds and bleak exposures, where even Scotch Firs either die or become stunted. Fishing boats made of Larch under forty years growth, last nearly three times as long as those built of Norway Fir.

The late violent winds blew down a Larch in the Duke's lawn of fifty years of age, eighty-six feet six inches in height, containing eighty-two feet of solid wood; for which four pounds sterling was offered as it lay on the ground.

Dr. Anderson has adduced a variety of satisfactory instances and experiments, from which the durability of this wood is established beyond a doubt, even in the early periods of its growth. Nor is this its only good quality; for, when made into planks, there are incontestible proofs of its neither shrinking nor warping, and of its not being liable to be attacked by the worm, during the course of several ages.

It is not yet known whether Larch wood is capable of resisting the sea-worm. Dr. Anderson proposes to ascertain this, by sinking a piece of sound, well-ripened Larch wood, with another piece of sound Oak wood in the river Medway at Rochester bridge, where it is well known that every other kind of wood is very soon perforated by the sea-worm.

Larch wood is in a manner incombustible; that is, though it may be consumed by fire, yet where the masses are large, even if a fire be placed on the bare wood, though it will be slowly corroded by it, yet

^x Transact. soc. arts, vol. 6. for 1788.

^y Report, in the present state of the Hebrides, p. 238.

unless in particular circumstances it cannot be made to flame, so as to communicate it to other bodies. This quality of Larch wood was known in the time of Julius Cæsar, who calls it *lignum igni impenetrabile*: and Mr. Harte observes, that there is perhaps no instance of the cottages in Carniola being set on fire, though they are so careless as to throw flaming fire-brands on their roofs². This seems to contradict what was said above with relation to Switzerland; but I apprehend that more of the houses in that country are built of Fir than of Larch. Duhamel however, in confirmation of Mr. Miller's opinion says, that the resinous substance in Larch trees is looked upon to be very combustible, and therefore there is a public order in the district near Briançon, that houses built with it should never join, but stand at a certain distance³. Or rather Mr. Miller copied from Duhamel.

Matthiolus informs us, that unwilling as this wood may be to take fire, yet it is no-ways difficult to burn it in kilns, glass-houses and furnaces belonging to iron-works, when once the inside of these receptacles is rendered intensely hot. Such is the practice in the iron-works of Stiria and the bishopric of Trent, where this wood is of singular use, when there is heat sufficiently fierce and strong to penetrate it forcibly. On this point, says Mr. Harte, experience alone can lead us to adopt the true opinion.—Though I have carefully looked over this learned author's essays, yet I cannot find what Dr. Anderson quotes from them, on the incombustibility of the Carniolian cottages.

To the other uses of Larch wood, Mr. Harte adds, that because it is not liable to be warped or to be attacked by worms, the Italians use it for back-boards, to place behind fine drawings, when they frame and glass them; as also for picture-frames, table-frames, &c. because no other wood gives gilding such force, brightness, and as it were a sort of natural burnishing; and this is the main secret why Italian gilding on wood is so greatly preferable to ours, which has often a tarnished spongy cast, and looks like gilt gingerbread. The Italians also prefer it for making the wheels of post-chaifes and other carriages, as being very durable and unapt to crack. No boards make better wainscoting, or take paint better. The application of it to shingles for covering barns and other outhouses would be invaluable in these kingdoms. The look of it would be far better than thatch; neither rains would rot it, nor winds ruffle it; and if it will not easily catch fire, it is a great additional recommendation. Whereas thatch is liable to all these accidents, and harbours sparrows, insects, cobwebs, dust and all sorts of foulness, to the great detriment of the grain: and though thatch be cheaper at first, it is dearer in the long run than tiling or slating. The shingles in the Grisons are half an inch thick and a foot square: being of a tough nature and nailed down to the rafters, they are not liable to the inconvenience of being broken by forks, like tiles or slates^b.

On account of the valuable qualities of the wood therefore, the Larch deserves to be cultivated in this country. Another recommendation of it is, its quickness of growth. Eight trees being measured in the spring and autumn of the year 1794, the average of their increase in height was nearly three feet nine inches and a quarter; and one of them increased three inches in circumference at two feet above the ground. In another plantation, the trees at eight years growth measured above twenty feet in height on an average; the trees were from six to nine inches high when planted. At twelve years old they measured, on an average from thirty-four to thirty-six feet in height. This plantation was on a good soil and in a favourable situation.

Nor is it only while the tree is young that it makes these vigorous shoots; for it appears by the measurement of the trees in Dunkeld, that this in a great measure continues even till a period of age beyond that which they have as yet attained: for 120 feet in fifty years gives an average of nearly two feet and a half in height for each year of their growth^c.

² § 3. p. 370, &c.

^b Ibid. p. 150.

^a Harte's Essays, 1. 148.

^c Anderson, vol. 3. p. 403.

According to Mr. Harte, it grows slowly the first four years; but in twenty years, will exceed a Fir tree both in height and circumference that is double its age. Nor is there any reason, he adds, for doubting whether this tree will thrive in England: for some Larches about forty years ago came to full size and perfection near Chelmsford in Essex; and Mr. Miller mentions others of a considerable growth at Wimbledon in Surry, which produced a large quantity of cones every year^d. This was said at least as far back as the year 1770: and Mr. Evelyn speaks of a Larch at Chelmsford.

The Bishop of Landaff informs us; that from many experiments made by himself, and collected from others, he finds the annual increase in circumference of the Larch, at six feet from the ground, to be one inch and a half on an average of several years; and that this inference has been drawn from the actual ad-measurement of Larches in different parts of England and Scotland, and of different ages from ten years old to fifty^e.

In making a plantation of Larch, the thinnings may be applied to a variety of useful purposes, whilst they are yet of a small size. In six, eight, or ten years, according to soil and circumstances, the trees will have attained a size sufficient to be made into hay-rakes. They grow so straight, and the wood is so light, strong and durable, as to be peculiarly calculated for this purpose; and from its shrinking less than any other wood, these rakes will remain longer firm than those made from any other. About two feet cut off from the root end will form the rake-head; and five feet above that, with a very little taken off from the thickness of the under part, will form the handle. No wood is more proper for the teeth of the rake, than some of the red wood of an older tree, because it is not only tough, but little liable either to split or shrink. The bow may be made of Ash, or of the laurel leaved sweet-scented Willow, (*Salix pentandra*) which is still better. Nothing is so fit for shafts to hoes; for it is nearly as strong, and much more durable than Ash. Handles for brushes, brooms, scythes, &c. would occasion a vast consumption of these small spars.

Light, neat and strong chairs, for rush bottoms, might be made of Larch wood at this age.

Nothing will answer better for hop-poles; for one set of these would outlast two or three sets of Ash. Hurdles, spars and gates, may be made of it, both lighter and more durable than of any other wood: and when the trees are of a size sufficient, they may be split down for cart shafts; and in mining countries they might be employed as posts for supporting the roofs of the mines.

The small tops cut off in making these various works, would furnish a neat, elegant, cheap and durable kind of railing, to be put upon the top of low walls, especially for preventing light sheep from over-leaping them. One end might be let into the coping, whether of sod clay or lime; and the other end received into a slip of sawn Larch wood, with holes bored through it to receive their points. From the straightness of the wood, this kind of rail would be very neat without much expense. In the same manner hen-coops, crates for packing glass, &c. might be made of those materials.

But one of the most extensive and beneficial uses of this kind of small wood, is for the purpose of inclosing. These spars, when the root is thick enough, may be slit up the middle by a saw, and cut into lengths of five or six feet; or if smaller they may be employed whole. As they are always straight, and nearly of an uniform thickness, if driven into the ground for a few inches in a row, at the distance of a few inches from each other, with the split sides all one way, they would make one of the neatest and most complete fences that can be seen. The tops of these uprights may be received into a piece of sawed plank, with holes bored in it for that purpose; and supported at due distances by sloping pieces reaching from the ground to the top.

^d Harte, Essay 1. p. 151.

^e Agricult. survey of Westmoreland, prelim. observations.

These are a few of the uses to which the small spires from the first thinnings of the plantations may be applied. As they advance to a larger size, for windows, joists, flooring, panelling, couples, rafters, and every other purpose in building, they would be superior to any other kind of wood hitherto employed for these purposes; and for ship-building, especially planks, it would be superior to Oak itself.

There is not a branch or a twig of the Larch, that may not be put to some useful purpose. The larger branches may be employed in fencing, and the smaller brush for filling drains and for fuel. In drains, it is more durable than any other wood; and though the timber will not burn readily, yet the brush is found to make a fire almost equal to the billets of many other trees^f.

The acknowledged utility of the Larch induced the truly respectable Society for the encouragement of Arts, Manufactures and Commerce, at London, to offer very early both honorary and pecuniary rewards for the propagation of this tree; and so long since as the year 1788 three gold medals, and a premium of thirty pounds had been bestowed by the Society for planting Larch, and giving an account of the utility of the wood.

This attention of the Society, and a conviction of the superior qualities of the Larch impressed upon the minds of gentlemen in various parts of these kingdoms, has induced them to make some considerable plantations; and we are informed by Mr. Drummond, of Blair Drummond in Scotland, son to the late Lord Kaims, that by the great plantations of Larch, yearly made both in England and Scotland, the value of this excellent tree is now well understood; and if these plantations are continued for some years with the same spirit, there can be little doubt, that in half a century, the many thousand pounds annually sent to Norway for timber, will be entirely saved to this country^g.

Some of these plantations are the following.—John Sneyd, Esq. of Belmont in Staffordshire, between the years 1784 and 1786, planted 13000 Larches.

The present Bishop of Landaff has planted on high ground near Ambleside in Westmoreland above an hundred acres with mixed timber trees, among which are 48500 Larches. These were planted in 1787 and 1788.

Joseph Cowlshaw, of Hodsock Park, Esq. planted 27,400.

William Mellish, Esq. of Blyth, 47,500.

Richard Slater Milnes, Esq. of Foynton near Ferrybridge in Yorkshire, 200,000, transplanted from two to four years old, 2000 on an acre.

Mr. George Wright, of Auston, at Gilding-wells in the county of York, 11,573.

Thomas White, Esq. of West Retford, in Nottinghamshire, 13,000.

John Holliday, Esq. of Dillorn in Staffordshire, 7900.

All these were planted chiefly in the year 1789.

In Scotland: George Ross, Esq. of Cromarty, planted 1900.

But the Earl of Fife has been the great planter there. He planted in the county of Moray 181,813 Larches.

The Rev. Thomas Dunham Whitaker, at Holme in Claviger in the county of Lancaster and parish of Whalley, planted 64,135 Larches, between June 1790 and June 1791. They were between two and four years old.

Mr. Thomas Gaitskell, of Little Braithwait in Cumberland planted 43,300 on fifteen acres of high land, between the first of February and the first of April 1791.

Between June 1794 and June 1795, John Sneyd, Esq. above-mentioned planted 11,000 more Larches, at Belmont in Staffordshire^h.

These amount in the whole to 599,621, and doubtless there are many more plantations which have not come to my knowledge.

^f Anderson's Essays, vol. 3. 407 to 422.

^g Transact. Arts, vol. 7. for 1789.

^h Transact. Soc. Arts.

The Duke of Athole, alone, says Dr. Anderson, plants 200,000 Larches every year; and one nurseryman at Edinburgh has raised this year (1796) above five millions.

A valuable produce of the Larch tree is the Venice Turpentine, which issues spontaneously from the bark, but is more commonly obtained by boring a hole with an auger about two feet above the ground, till it reaches near to the heart of the tree; into this hole is inserted a small pipe or cock, through which the turpentine flows into proper vessels placed for its reception. This process is continued from the end of May till the end of September. When the trees will yield no more for that season, the turpentine is pressed through a cloth to purify it. This is usually thinner than any of the other sorts, of a clear whitish or pale yellowish colour, a hot pungent bitterish disagreeable taste, and a strong smell, without any thing of the aromatic flavour of the Chian or Cyprus Turpentine obtained from *Pistacia Terebinthus*. The common and Strasburgh Turpentine is from the *Pinus Picea*: and the Canada balsam, which may be considered as the purest of the Turpentines, is procured from the Silver and Balm of Gilead Firs.

The turpentine is not to be obtained in considerable quantities from very young trees, and in old ones it gradually dries up, till at last it affords none: it is only after the tree has attained the thickness of ten or twelve inches in diameter, that it is thought worth while to collect the turpentine; and from that time, during forty or fifty years, if it continues so long in vigorous growth, the tree will continue to yield annually from seven to eight pounds of turpentine.

An English acre will contain 682 trees, at the distance of eight feet from each other. Suppose the annual produce to be six pounds a tree on an average, and the price to be no more than two-pence the pound, (the common turpentine that the painters use is now, 1799, six-pence a quart) the value of the produce would be 3l. 4s. 2d. the acre; on supposition that the trees would yield as much turpentine in Britain, as on the borders of the Adriatic gulf. Whether they will do so, remains to be ascertained by experiment.

All the turpentines dissolve totally in rectified spirit: they become miscible with water into a milky liquor, by the mediation of the yolk or white of an egg, and more elegantly by mucilages. Distilled with water they yield a subtle penetrating essential oil, vulgarly called spirit; a yellow or blackish resin remaining in the still, which is the common rosin of the shops. The essential oil, on being distilled in a retort, becomes more subtle, and in this state is called ethereal oil of turpentine.

The turpentines stimulate the first passages, and prove laxative; and we are told by Dr. Cullen, that half an ounce or an ounce of Venice turpentine, triturated with the yolk of an egg, and diffused in water, may be employed in the form of an injection, as the most certain laxative in colics, and other cases of obstinate costiveness. When turpentine is carried into the blood-vessels, it stimulates the whole system; hence its use in chronic rheumatism and paralysis. It readily passes off by urine, which it imbues with a peculiar odour; also by perspiration, and probably by exhalation from the lungs: and to these respective effects are to be ascribed the virtues it may possess in gravelly complaints, scurvy and pulmonic disorders. In all these diseases however, and especially the last, this medicine, as well as some of the gums and balsams of the terebinthinate kind, by acting as stimulants, are often productive of mischief, as was first observed by Boerhaave, and since by Fothergill.

Turpentine has been much used in gleet and fluor albus; its efficacy in the former Dr. Cullen ascribes to its inducing some degree of inflammation in the urethra.

The essential oil, in which the virtues of turpentine reside, is not only preferred for external use, as a rubefacient, &c. but also internally as a diuretic; and by Pitcairne and Cheyne, as a remedy for the sciatica; but few stomachs are able to bear it in the doses they direct.

Turpentine,

Turpentine, so much used formerly as a digestive application, is in modern surgery almost wholly exploded¹.

Besides this well known product the Larch yields also a Manna and a Gum. The Manna is found in the South of France, and is called there *Manne de Briançon*: it is white, concrete and sweet, like fine new honey. It is rare; and met with only in little drops, so that it would be very difficult to collect a pound of it. The drops are more or less hard, and adhere to the leaves.

Monf. Villars having made some enquiries relative to this substance, with Monf. Guettard in the year 1773, found it at sun-rise almost fluid; and picked up drops of it on the turf exactly like those which remained on the trees; but they have not given any analysis or farther account of it, except that the season of 1773 was less productive of Manna than usual^k. Last year (1798) I observed a Larch near my house covered with a hoary powder, but I neglected to examine whether it had any of the qualities of Manna. In the present year there is no appearance of it. The last season was a hot dry one, and therefore favourable to the production of Manna; and the season of 1799 has been a cold wet one.

Pallas informs us that they have this Manna in the Russian empire, but that it is rarely found concrete, being commonly soon washed off by the rains which are frequent on the Uralian mountains.

He remarks also, that the turpentine resides in the bark and the wood next to it, as is apparent when the trunk of a Larch is sawed transversely; for then it may be seen that the inner wood for more than half the diameter is dry. It cannot therefore be of any use to drive the auger almost to the centre of the tree, as Dr. Anderson recommends.

Pallas also mentions a Gum that is yielded by the Larch in particular circumstances. When the woods are on fire, which frequently happens in Russia, the Larches are easily burnt on the side next the flame to the height of several feet, on account of the turpentine in which they abound. If the wood happens to be scorched to the pith, the inner part exudes a dry, reddish gum, rather less glutinous than Gum Arabic, having a slight taste of resin, but wholly soluble in water. It is used in medicine; and the native mountaineers chew it to fasten their teeth, as an antiscorbutic, and as a substance highly nutritive; they also use it as a glue to fasten their bows, &c.

The Siberian hunters of Ermines, when their ferment or yeast which they carry with them to make the acid liquor which they call *Quass* with, is spoiled by the cold, scrape off the albumen or half-formed wood between the bark and the wood, which is very juicy and sweet, digest it with water over the fire during an hour, mix it with their rye meal, bury the dough in the snow, and after twelve hours find the ferment ready prepared in the subsiding feces¹.

Old Larches produce a Fungus, which is described very much at large by Jacquin, in the first volume of his *Miscellanea*, under the name of *Boletus Laricis*. It is also called *Agaricus purgans*: and is used in the northern countries as an emetic in intermitting fevers. The Tunguses dye the hair of the rein deer with this Fungus and the roots of Gallium, of a very deep red colour; whence perhaps it may be of some use in dyeing. The body of this Fungus is saponaceous, and is used by the women in some parts of Siberia, to wash themselves, and even their linen^m. It was celebrated formerly, but is now deservedly fallen into total disuse, as a medicine.

From the Pines properly so called, with the Cedar and Larches their allies, we proceed now to the Firs, which are distinguished from them by having the leaves single and distinct at the base; whereas the former have them two or more, or even in bundles from the same sheath.

15. The Silver Fir is a noble upright tree. The branches are not very numerous, but the bark is smooth and delicate. The upper surface of the leaves is of a

fine strong green, and their under has two white lines running lengthwise on each side of the midrib, giving the leaves a silvery look, from which this Fir takes its name. The cones are large and grow erect; and when warm weather comes on they soon shed their seedsⁿ. The scales are wide, deltoid, rounded above, below beaked, and appendicled with a membranaceous spatulate dorsal ligule, terminated by a recurved dagger-point. Nuts rather large, membranaceous, variously angular, dun-coloured. Wing covering the whole nut on one side, but half of it only on the other, membranaceous, widening upwards, obliquely truncated at top. Albumen gibbous, opaque. Embryo with five cotyledons, of a yellowish colour^o.

Native of Switzerland and Germany, (Dauphiné, Austria, Siberia, mount Caucasus, &c.)

Cultivated in 1739, in Chelsea garden^p: but as thirty-six fine trees are mentioned by Plot and Ray, as growing near Newport in Shropshire, it must have been here much sooner^q.

Evelyn also mentions two Spanish or Silver Firs then growing in Harefield-park, Middlesex, belonging to Mr. Serjeant Newdigate, that were planted there in 1603, at two years growth from the seed, the biggest of which was eighty-one feet high, and thirteen feet in circumference below; the length, so far as it is timber, that is, to six inches square, seventy-three feet, in the middle seventeen inches square, and containing 146 feet of good timber.]

Mr. Miller says, it is supposed, that most, if not all these trees in Germany were originally planted there; that Tournefort, in his travels, mentions the Firs of mount Olympus as the most beautiful trees in the Levant, and that he has received cones from thence upwards of a foot in length.

[Though Linneus, and several other writers on the *Materia Medica* refer the common Turpentine to the *Pinus sylvestris*, and the Strasburgh Turpentine to this; yet Murray, following Haller and Duhamel ascribe the common Turpentine to the Silver Fir, which pours it out so freely, that it is seldom necessary to make incisions through the bark for that purpose^r.

It has been observed in Ireland, that no tree grows speedily to so large a size as the Silver Fir. Some at forty years growth, in a wet clay on a rock, measuring twelve feet in circumference at the ground, and seven feet and a half at five feet high; one containing seventy-six feet of solid timber. It is found to be excellent for boat-building. A gentleman in Hampshire floored his library with Silver Fir fresh cut down, and the boards did not contract in the least^s.

The Earl of Fife also remarks, that no trees make a greater progress than this and the Larch.

16. This beautiful tree rises with an upright stem. The leaves are dark green on their upper surface, and marked with whitish lines underneath. The cones are roundish and small. The buds and leaves are remarkably fragrant. From wounds made in this tree a very fine Turpentine is obtained, which is sometimes sold for the true Balm of Gilead^t. Though it grows to a large size in America, yet it has not done so with us^u.

The Balm of Gilead Fir has very much the habit of the Silver Fir, but the leaves are wider and blunter, disposed on each side along the branches like the teeth of a comb, but in a double row, the upper one shorter than the under; underneath they are marked with a double glaucous line, and each has eight rows of white dots; they are often cloven at top^x.]

It was formerly growing (1696) in the Bishop of London's garden at Fulham; and of late years a great number of the trees have been raised from seeds brought from Virginia, where it is a native. It makes very little progress after eight or ten years growth; the only place in which the trees have made any figure is at his Grace the Duke of Bedford's at Woburn Abbey in Bedfordshire.

17. [The Hemlock Spruce Fir is a beautiful but delicate tree, and must have a good soil, with a warm

¹ Anderson, 3. 422. and Woodville.

^k Plantes de Dauphiné, 3. 808.

^l Flora Rossica, 1. p. 2, 3.

^m Idem, Ibid. p. 3.

ⁿ Hunter's additions to Evelyn.

^p Hort. kew.

^q Woodville.

^r Young's Irish Tour, 1. 245.

^s Boucher.

^o Gartner.

^t Idem, 576.

^u Hunter.

^x Linn.

situation. It will be improved by tying its leading shoot to a stake annually as it advances⁷.

The cone is of the size and shape of a small hen's egg, the whole of an ash-coloured bay. Scales coriaceous, thick, triangular, the outer side rounded and somewhat crenulate. Nuts a little smaller than in the Black Spruce, with a winged membrane on the outer side only. Wings ovate-oblong, nearly equilateral, or not so gibbous on the outer side, as in the Black Spruce. Seed ovate, acuminate downwards. Embryo like that of the Black Spruce in situation and shape, but with four cotyledons⁸.]

It is a native of many parts of North America. It does not thrive well in any part of England, nor in many parts of America; though in some particular spots I have been informed there are very large high trees now growing.

[It was introduced in 1736, by Peter Collinson, Esq.⁹

18. The Black Newfoundland Spruce has shorter leaves, whiter on their under side than the White; the cones also are smaller and more compact. There is also a Red Spruce; but there seems to be no difference between this and the Black, either in the cones which have been brought from Newfoundland, or the young plants which have been raised in our gardens.

The appellations of White and Black are given from the colour of the bark, for there is little difference in the colour of the wood, and the leaves of the Black are whiter on their under side than those of the White. Both are natives of North America; the White upon the mountains, the Black upon the low grounds, generally in bogs or swamps. The first is by much the largest tree. Few of these trees are now remaining near the European settlements, but farther up in the country they are in great plenty.

The cones both of the Black and White Spruce were sent from Virginia to England by Mr. Banister, towards the end of the last century; and several of the plants were raised in the gardens of Compton Bishop of London at Fulham, Mr. Reynardson at Hillendon near Uxbridge, and Mr. Darby at Hoxton; but these were soon destroyed, after the death of their possessors. About the same time cones were brought from Newfoundland to Devonshire, where there are now (1755) some large trees growing, which have produced cones for thirty years past; but except these, I believe there are few, if any of these trees now in England, which are of above twenty years growth. The finest in these parts are in the curious gardens of his Grace the Duke of Argyle, at Whitton in Middlesex. From both the sorts exudes a fine clear resin, of a strong scent, much used by the native Indians to cure wounds, and in internal disorders. The branches of both sorts are also used indifferently in making Spruce-Beer.

This sort is easily known by its narrow leaves, placed on every side of the branches, and its long pendulous cones, which do not fall to pieces on the tree, but drop off entire the following summer: the scales open and emit the seeds on the first warmth of the spring.

A variety of this tree is cultivated in the gardens near London, called the long-coned Cornish Fir. The leaves are longer, broader, of a lighter colour, and fuller on the branches; the cones also are longer. From the appearance of the old trees they may be taken for distinct species; but since both are produced from seeds of the same cone, they are certainly only feminal varieties¹⁰.

According to Gærtner, the cone is ovate, small, being scarcely the size of the outer joint of the thumb: scales imbricate, coriaceous, rounded, dun-coloured, large in proportion to the size of the cones. Nut small, bony, one-celled, valveless, entirely covered with an epidermis, which widens into a membranaceous wing, longer than the nut, straight on one side, gibbous on the other. Receptacle none, except the inner surface of the scales, to the base of which the two nuts are fastened. Seed single, of the same shape

with the cavity of the nut; pale yellow: cover single; very thin, membranaceous: albumen thick, fleshy, white: embryo nearly the length of the albumen; roundish, erect, milky: cotyledons three, very short, angular, fleshy: radicle long, roundish, inferior.

19. The Norway Spruce Fir is the loftiest of our European trees, attaining a height from 125 to 150 feet, with a very straight trunk, and throwing out its spreading branches so as to form an elegant pyramid. Leaves clustered, without order, from an oblong cortical scale, four-cornered, drawn out into a sharp point, thickish, commonly curved a little; as Linneus observes, compressed, slightly keeled on both sides, shining on the upper surface. Male cones or catkins ovate; scattered in the axils of the leaves, purple. The young female cones are also purple; when ripe pendulous^c. They have eight rows of scales in a spiral, each row having from twenty to twenty-three scales, in each of which are two seeds, and consequently about 365 in a cone^d.

The scales are obovate-rhomboidal, terminating in a dagger point, not appendicled. Nuts smallish, ovate, acuminate downwards, flattened a little, crustaceous, blackish-brown: wing covering the nut only on the outer side, membranaceous, elliptic, thin. Albumen subpellucid, of a watery colour. Embryo milky, having nine cotyledons^e.

The vast woods of Denmark, Norway, Sweden, &c. are principally composed of *Pinus sylvestris*, which we call Scotch Pine, because it abounds in Scotland, and is the only tree of this genus which is indigenous there, and this species of Spruce Fir, which we commonly call Norway Spruce, because we import the timber of this tree chiefly from Norway. There are two principal varieties of it, the White and the Red, but both afford the white deals. Gærtner says that they are called so from their paler or deeper colour of the cones, and that they agree in the want of the ligules on the back of the scales, by which they are distinguished with greater evidence and certainty from *Pinus Pinea* than by the leaves. Linneus has five varieties in his *Flora Suecica*, but they are insignificant.

In the Kew catalogue it is said that the Norway Spruce was cultivated in Chelsea garden in 1739: but we probably had it much earlier; for Mr. Evelyn speaks of Sir Norton Knatchbull's delicious plantation of Pines and Firs, which he beheld with great satisfaction, and where a Fir-tree of the Knight's own raising shot no less than sixty feet in height, in little more than twenty years; of Sir Peter Wentworth's, of Lillingston-level; Cornbury in Oxfordshire, and other places; but especially those trees growing now in Harefield-park in the county of Middlesex^f.

These might possibly be North American Firs; but it is scarcely credible that the Norway Spruce should not have been introduced here before 1739; though I have not at present found any direct evidence for it.

As to the immense forests of Fir or Pine discovered underground in various parts of these kingdoms, they were probably the *Pinus sylvestris* or Scotch Pine: for the subterraneous cones which I have seen evidently belonged to this species: and hence, after all, Julius Cæsar may be right in affirming that neither the *Fagus* nor the *Abies* were in his time indigenous of Britain, if the *Fagus* be a species of Oak, and the *Abies* the Norway Spruce Fir, which does not now, and probably never did grow wild in this island: whereas great quantities of Scotch Pine were cut down by the Romans, to disencumber the country, and destroy the retreats of the savage inhabitants^g.

The timber of the Spruce Fir is well known to be inferior to that of the *Pinus sylvestris*; the former affording the white, the latter the red deal. This however, says Haller, is what is chiefly used in Switzerland for masts, beams, joists, spars, and an infinity of utensils and instruments; charcoals, though not the hardest, for fusing metals; resin collected to the quantity of forty pounds from a tree in one year, pitch, tar, &c.^h

⁷ Boucher.

⁸ Gærtner.

⁹ Hort. kew.

¹⁰ Mill. fig. p. 1, 2.

^c Haller.

^d Linn.

^e Gærtner.

^f Silva, p. 141.

^g Idem, 145.

^h Haller. helv. 414.

Fir was anciently used, says Evelyn, for building ships; it is still used for the masts, and some other parts, but seldom for the entire vessel, except in small craft. Its great consumption now among us is for the interior work of our houses; beams, joists, rafters, spars, doors, floors, wainscot; all being made of this wood, almost to the exclusion of any other. Scaffold-poles, barks, laths, boxes, and bellies for musical instruments are made of Fir. It is exceeding smooth to polish on, and therefore does well under gilding work, and takes black equal with the Pear tree. It succeeds well in carving, the grain being easy to work, and taking the tool every way. No wood takes glue so well, or is so easily wrought. Cases and barrels for dry goods, shingles, hoops, &c. are made of it. It yields pitch, tar, turpentine and resin; and from the buds and tops spruce beer is made, accounted so excellent against the scurvy.

No tree will yield greater profit than the Spruce Fir in cold land, no tree is more beautiful standing single on turf in large plantations, or more useful for shelter in cold soils and situations.

An incision being made into the bark, a clear tenacious fluid issues, which concretes into a resinous substance, known by the name of *Resina Abietis*. This, after being boiled in water, and strained through a linen cloth, is called in the Pharmacopœias *Burgundy Pitch*. But if the boiling of the native resin is continued till the water is wholly evaporated, and wine vinegar is at this time added, a substance named *Colophonium* is formed.

Burgundy Pitch, which is chiefly imported from Saxony, is of a solid consistence, yet somewhat soft, of a reddish brown colour, and not disagreeable in smell. It is entirely confined to external use, and was formerly an ingredient in several ointments and plasters. In inveterate coughs, affections of the lungs, and other internal complaints, plasters of this resin, by acting as a topical stimulus, are frequently found of considerable service¹.

Fresh cones boiled in whey; and beer brewed with pine-tops are accounted good in inveterate scurvies.

Even the air impregnated with the exhalations of Fir-trees is reckoned very wholesome, particularly for phtisical persons. Resin melted with bees-wax, and stirred about, or small pellets of pitch thrown into the fire, or on heated plates of iron, are esteemed useful in the asthma.

20. For the distinction between this and the Black Spruce see n. 18.

21. This was found by Tournefort in the Levant.

Gærtner remarks a singularity in this genus, that the number of cotyledons differs in the different species. The *sylvestris* has five, *Cembra* twelve, *Cedrus* six, *Larix* two, *Picea* five, *nigra* three, *canadensis* four, *Abies* nine. Hence he recommends the cotyledons of the seeds, as well as the cones, to be called in for specific differences, when the leaves are not sufficient².

According to Linneus, *P. Strobilus* or Weymouth Pine has from six to ten cotyledons; and is the connecting link between *Pinus* and *Abies*, the Pines and the Firs.

Jussieu, following Tournefort, makes two genera of *Pinus* and *Abies*: the former having from two to five leaves coming out from each short cylindrical sheath; the aments or male catkins not solitary, but compacted into a terminating raceme, according to the observations of Duhamel and Lamarck; the strobiles or cones terminating: the latter, with which he joins the *Larix*, though he doubts whether it ought not rather to be separated, having the leaves alternate, linear, acuminate, single or distinct, except in the *Larix*, which has them in bundles, and not evergreen, but deciduous; both aments and cones are solitary and terminating, except on the *Larix*, which has them scattered over the stem or axillary, as Duhamel remarks. The genuine *Abietes* are balsamiferous, with a flattened foliation, and straight cones; the *Piceæ* are resiniferous, with a circular foliation, and inverted cones³.

¹ Woodville.

² Vol. 2. p. 61.

³ Genera, 415.

These distinctions deserve to be attended to, but they are not sufficient to induce us to lacerate a natural genus.]

PROPAGATION AND CULTURE.

All the sorts of Pines are propagated by seeds, which are produced in hard woody cones; the way to get out their seeds is to lay the cones before a gentle fire, or in the sun, which will cause the cells to open, and then the seeds may be easily taken out. If the cones are kept entire, the seeds will remain good for some years; so that the surest way to preserve them, is to let them remain in the cones until the time for sowing the seeds; if the cones are kept in a warm place in summer, they will open, and emit the seeds; but if they are not exposed to much heat, they will remain entire some years, especially those which are close and compact; and the seeds which have been taken out of cones of seven years old, have grown very well, so that these may be transported to any distance, provided the cones are well ripened and properly put up.

The best time for sowing the seeds of Pines is about the end of march, and when the seeds are sown, the place should be covered with nets to keep off birds, otherwise, when the plants begin to appear with the husk of the seed on their tops, the birds will pick off the heads of the plants and destroy them.

Where the quantity of seeds to be sown is not great, it will be a good way to sow them either in boxes or pots, filled with light loamy earth, which may be removed from one situation to another, according to the season of the year; but if there is a large quantity of the seeds, so as to require a good space to receive them, they should be sown on an east or north-east border, where they may be screened from the sun, whose heat is very injurious to these plants at their first appearance above ground. Those seeds which are sown in pots or boxes, should also be placed in a shady situation, but not under trees; and if they are screened from the sun with mats at the time when the plants first come up, it will be a good method to preserve them.

Most of the sorts will come up in about six or seven weeks after they are sown, but the seeds of the Stone or cultivated Pine, and two or three of the others, whose shells are very hard, frequently lie in the ground a whole year; so that when the plants do not come up the first year, the ground should not be disturbed, but kept clean from weeds, and the following spring the plants will rise. This frequently happens in dry seasons, and when they are sown in places a little too much exposed to the sun. Therefore the surest method is, to soak the seeds in water twenty-four hours before they are sown.

When the plants appear, they must be constantly kept clean from weeds; and in very dry seasons, if they are now and then gently refreshed with water, it will forward their growth; but this must be done with great care and caution, for if they are hastily watered, it will wash the tender plants out of the ground, or lay them down flat, which often rots their stalks; and when this is too often repeated, it will have the same effect; so that unless it is judiciously performed, it will be the best way to give them none, but only screen them from the sun.

If the plants come up too close, it will be a good method to thin them gently about the beginning of July. The plants which are drawn up may then be planted on other beds which should be prepared ready to receive them, for they should be immediately planted as they are drawn up, because their tender roots are soon dried and spoiled at this season of the year. This work should be done (if possible) in cloudy or rainy weather, and then the plants will draw out with better roots, and will soon put out new fibres again; but if the weather should prove clear and dry, the plants should be shaded every day from the sun with mats, and now and then gently refreshed with water. In drawing up the plants, there should be great care taken not to disturb the roots of the plants left remaining in the seed-beds, &c. so that if the ground be hard, the beds should be well watered some time before the plants are thinned, to soften and loosen the earth; and

and if after the plants are drawn out, the beds are again gently watered to settle the earth to the roots of the remaining plants, it will be of great service to them, but it must be done with great care, so as not to wash out their roots; or lay down the plants. The distance which should be allowed these plants in the new beds, is four or five inches row from row, and three inches in the rows.

In these beds the plants may remain till the spring twelve months after, by which time they will be fit to transplant where they are to remain for good, for the younger the plants are when planted out the better they will succeed; for although some sorts will bear transplanting at a much greater age; yet young plants planted at the same time, will in a few years overtake the large ones, and soon outstrip them in their growth; and there is an advantage in planting young, by saving the expense of staking, and much watering, which large plants require. I have often seen plantations of several sorts of Pines, which were made of plants six or seven feet high; and at the same time others of one foot high planted between them, which in ten years were better trees than the old ones, and much more vigorous in their growth; but if the ground where they are designed to remain cannot be prepared by the time before-mentioned, the plants should be planted out of the beds into a nursery; where they may remain two years, but not longer; for it will be very hazardous to remove these trees at a greater age.

The best season to transplant all the sorts of Pines is about the latter end of march or the beginning of april, just before they begin to shoot; for although the Scotch Pine, and some of the most hardy sorts, may be transplanted in winter, especially when they are growing in strong land, where they may be taken with balls of earth to their roots; yet this is what I would not advise for common practice, having frequently seen it attended with bad consequences, but those which are removed in the spring rarely fail.

Where these trees are planted in exposed situations, they should be put pretty close together, that they may shelter each other; and when they have grown a few years, part of the plants may be cut down to give room for the others to grow; but this must be gradually performed, lest by too much opening the plantation at once, the air should be let in among the remaining trees with too great violence, which will stop their growth.

Although these Evergreen-trees are by many persons despised on account of their dark green in summer, yet a proper mixture of these in large clumps make a fine appearance about a seat in winter, and in summer, by their contrast with other trees, have no bad effect in diversifying the scene.

Wherever large plantations are designed to be made, the best method will be to raise the plants either upon a part of the same land, or as near to the place as possible, and also upon the same sort of soil: a small piece of ground will be sufficient to raise plants enough for many acres, but, as the plants require some care in their first raising, if the neighbouring cottagers, who have many of them small inclosures adjoining to their cottages, or where this is wanting, a small inclosure should be made them for the purpose of raising the plants, and they are furnished with the seeds and directions for sowing them, and managing the young plants till they are fit for transplanting, the women and children may be usefully employed in this work; and the proprietors of land agreeing with them to take their plants when raised at a certain price, it would be a great benefit to the poor; and hereby they would be engaged to have a regard for the plantations when made, and prevent their being destroyed.

The Scotch Pine, as was before observed, being the hardiest of all the kinds, and the wood of it the most useful, is the sort which best deserves care. This will thrive upon the most barren sands, where scarce any thing else except Heath and Furze will grow; and there are many thousand acres of such land lying convenient for water carriage, which at present are of little benefit to any body, that might, by plantations of these trees, become good estates to their proprietors, and

also a national benefit; and as the legislature has taken this into consideration, and already passed some laws for encouraging these plantations, as also for their preservation and security, it may be hoped that this will be undertaken by gentlemen who are possessed of such lands in all the different parts of the kingdom with proper spirit; for although they may not expect to receive much profit from these plantations in their own time, yet their successors may with large interest; and the pleasure which those growing trees will afford them; by beautifying the present dreary parts of the country; will in some measure recompense them for their trouble and expense; and by creating employment for the poor, lessen those rates which are now so high in many parts of England as scarce to be borne.

The expense of making these plantations is what most people are afraid of; but the greatest expense is that of fencing them from the cattle, &c. for the other is trifling, as there will be no necessity for preparing the ground to receive the plants; and the charge of planting an acre of land with these plants will not be more than twenty or thirty shillings where labour is dear, exclusive of the plants, which may be valued at forty shillings more. I have planted many acres of land with these trees, which were covered with Heath and Furze, and have only dug holes between to put in the plants, and afterwards laid the Heath or Furze which was cut, upon the surface of the ground about their roots, to prevent the ground from drying, and few of the plants have failed. These plants were most of them four years old from seed, nor was there any care taken to clean the ground afterwards, but the whole left to shift, and in five or six years the Pines have grown so well as to overpower the Heath and Furze, and destroy it.

The distance which I have generally planted these plants in all large open situations was about four feet, but always irregular, avoiding planting in rows as much as possible; and in the planting, the great care is not to take up the plants faster than they can be planted; so that some men have been employed in digging up the plants while others were planting. Those who take up the plants must be looked after, to see they do not tear off their roots or wound their bark; and as fast as they are taken up, their roots should be covered to prevent their drying, and put into their new quarters as soon as possible. In planting them, care should be had to make the holes large enough for the roots, as also to loosen and break the clods of earth, and put the finest immediately about their roots, then to settle the earth gently with the foot to the roots of the plant. If these things are duly observed, and a proper season chosen for performing it, there will be very little hazard of their succeeding; but I have seen some plantations made with plants which were brought from a great distance, and had been so closely packed up as to cause a heat, whereby most of the plants within had their leaves changed yellow, and few of them have grown, which has discouraged others from planting, not knowing the true cause of their failure.

After the plantations are made, the only care they require for five or six years will be to secure the plants from cattle, hares, and rabbits; for if these are admitted to them, they will make great destruction in a short time: for if the branches are gnawed by hares or rabbits, it will greatly retard the growth of the plants, if not destroy them.

In about five or six years after planting, the branches of the young trees will have met, and begin to interfere with each other; therefore they will require a little pruning, but this must be done with great caution. The lower tier of branches only should be cut off; this should be performed in september, at which time there will be no danger of the wounds bleeding too much, and the turpentine will harden over the wounds as the season grows cold, and prevent the wet from penetrating the wounds. These branches should be cut off close to the stem of the plants, and care should be taken in doing this not to break any of the remaining branches of the young trees. This work should be repeated every other year, at each time taking off only the lower tier of branches; for if the plants are
much

much trimmed, it will greatly retard their growth, as it does in general that of all trees; but as these trees never put out any new shoots where they are pruned, they suffer more from amputation than those which do.

In those parts of France where they have forests of these trees, the proprietors always give the faggots to those, who prune their young trees first, for their labour, so it costs them no money. At the second pruning the proprietor has one-third of the faggots, and the dressers have the other two for their work, and afterwards the faggots are equally divided between the workmen and proprietors, but there must be great care taken that they do not cut off more than should be.

In about twelve or fourteen years these will require no more pruning, for their upper branches will kill those below where they have not air; but soon after this, if the plants have made good progress, it may be necessary to thin them; but this should be gradually performed, beginning in the middle of the plantation first, leaving the outside close to screen those within from the cold, by degrees coming to them at last, whereby those which were first thinned will have had time to get strength, and will not be in danger of suffering from the admission of cold air. When these plantations are thinned, the trees should not be dug up, but their stems cut off close to the ground, for their roots never shoot again, but decay in the earth, so there can no harm arise by leaving them, and hereby the roots of the remaining plants are not injured. The trees which are now cut will be fit for many purposes; those which are straight will make good putlocks for the bricklayers, and serve for scaffolding poles, so that there may be as much made by the sale of these as will defray the whole expense of the planting, and probably interest for the money into the bargain.

As the upright growth of these trees renders their wood more valuable, they should be left pretty close together, to draw each other up. If they are left eight feet asunder each way, it will be sufficient room for their growth; and if at the first thinning a fourth part of the trees are taken away, the others may stand twelve or fourteen years longer, by which time they will be of a size for making ladders and scaffold-poles, &c. so that from this sale as much may be made, as not only to pay the remaining part of the expense of planting, but rent for the land with interest; and the standing trees will be left for the fortunes of younger children.

1. The Scotch Pine grows well upon almost every soil. I have planted numbers of the trees upon Peat-pits, where they have made great progress. I have also planted them in clay, where they have succeeded far beyond expectation; and upon sand, gravel or chalk they likewise thrive as well. If they do not grow so fast on sand or gravel as on moist ground, the wood is much preferable; for those trees which have been cut down upon moist soils, where they have made the greatest progress, when they have been sawn out into boards, have not proved so valuable, the wood being white and of a loose texture; whereas those which have grown upon dry gravelly ground have been nearly equal to the best foreign deals: and I doubt not but those plantations, which of late years have been made, will not only turn out greatly to the advantage of their possessors, but also become a national benefit; this therefore is the sort which I would recommend to be planted on barren lands.

11. The Weymouth Pine also is worth propagating, not only for its beauty, but for the sake of its timber, particularly for masts.

It grows best upon a moist light soil, not too wet: it will also thrive on a loamy soil, if it does not approach too near to clay. The seeds should be sown with a little more care than the Scotch Pine, because their stems being not so strong, they are more apt to go off while young: if therefore they are sown in the full ground, the bed should be screened with mats from the sun every day, but exposed to the dews every night.

If all the plants are removed into beds in July, it will be a secure way to preserve them; but as they grow faster than the Scotch Pine, they should be

planted farther asunder; their rows six inches distant, and the plants four inches apart. This will allow them room to grow till the spring twelvemonth following; when they may be either transplanted where they are to remain, or into a nursery, where they may stand two years to get strength; but the sooner they are planted where they are to stand, the less danger there will be of their succeeding, and the larger they will grow; for although they will bear transplanting at a greater age, yet when they are planted young, they will make much greater progress, and grow to a greater size.

When the Weymouth Pine has been planted in a soft hazel loam, I have frequently measured shoots of one year, two feet and a half in length; and they have for some years continued growing as much. They should have a sheltered situation, for I have observed, where the trees have been much exposed to the south-west winds, they have not made near so great a progress as those which grew in shelter; and in large plantations, those on the outside have not kept pace with those in the middle, nor have their leaves retained their verdure so well.

8. The Swamp Pine does well in very few places here; in severe frosts the leading shoots are often killed; and in dry ground it will not thrive: unless the soil be favourable, it is to little purpose to plant this sort of Pine.

[6. The seeds of the Stone Pine being so large, they may be set in drills six inches asunder, four inches from each other, and an inch deep. The following spring they may be planted out in rows, two feet asunder, and one foot in the rows; where they must continue two years, and then removed to the place they are to remain in^m.

Bradley advises Heath land, which is generally sandy, and in which commonly we find abundance of morass ground, to be planted with Fir trees. We have some instances of this sort of land cultivated in this manner. At the Earl of Alresford's, near Guildford in Surry, we have an example of the good thriving of these trees upon a hill of common white sand, in which one could hardly expect the least vegetable quality; and the trees now growing there have not been planted quite thirty years, although they are about forty feet high; but it is to be observed that they are hardly six feet asunder, which may be the occasion of their extraordinary height, and the clearness of their stems without knots. The experience I have had of these trees, especially of the Scotch Pine, teaches me, that they thrive better raised from seed upon the spot where they are designed to remain, than if they are transplanted.

To make a Seminary of these trees gather the cones in September, even while their rind partakes yet of a green colour; for those which are already cracked and opened produce little or no good seed: lay them by in a dry place during the winter, and about February either expose them to the sun till they open, or put them in some vessel into an oven, after the great heat is gone off; by either of these ways the seed is come at without difficulty, as I have tried with good success, though some have been apt to suspect that the seeds of cones opened by the heat of an oven would be too much dried to vegetate. When the seeds are well cleaned, sow them thin in beds, covering them about half an inch deep with fine earth, and in a month's time they come up. Take care at their first appearance to preserve them from snails, which are their greatest enemies. The same summer they shoot hardly more than an inch, and as their roots lie very near the surface, it is advisable to sift sand over the beds near half an inch thick about September, to keep them steady, and prevent the frosts from turning them out of the ground. The second year they will be about four inches high, and if they were to remain a third year they would be near a foot taller; but it is best to remove them at two years old, and even then it should be done with care, removing them to the plantation in a barrow of earth, and not taking them out till the very instant, if possible, that they are to be planted,

for a little air dries and shrinks the roots. Set them not more than six feet apart, that they may grow straight and tall, unless you would run the hazard of transplanting some of them a second time, and then the distance between them need not be above three feet; they might remain thus five or six years, and then it would be high time to draw every other tree to make room for the rest. The method practised by James Johnston, of Twickenham, Esq. for removing large Firs above twenty feet high, was about midsummer to plant them in a preparation of earth and water, of the consistency of a thin mud, filling up the hole gradually with fine earth, till the roots of the trees were firmly settled in it: by which means they made shoots above a foot long the following year, before the others which remained in the nursery began to shootⁿ.

To raise plantations of Scotch Fir, let the cones be gathered in february or march, from thriving young trees: expose them to the heat of the sun, thinly spread on coarse canvas, taking them under cover in the night, and only exposing them when the sun shines. When any quantity of the seed is shed, separate it from the cones; otherwise the first-dropped seeds would become too dry. The sowing must be finished the end of april or beginning of may; so that if the cones will not yield their contents to the sun, they must be gently kiln-dried. A light loamy soil, trenched a foot and a half deep, and laid out in beds five feet broad, answers best for sowing. Let the seeds be sown very thick, and covered with a thick sifting of mould from the alleys. The plants will thus rise like a brush, and a good crop will have above a thousand in every foot of the beds, that is in five square feet. No manure should be given them, to avoid introducing of weeds, the drawing of which brings up many of the tender plants, and by loosening the ground lets in both frost and drought. When they have the growth of two seasons, plant them out irregularly from the seed-bed, three feet asunder, upon the grounds where they are to rise to perfection; planting the driest ground in autumn, eighteen months after sowing, and continuing till frost sets in. Begin again in february, or rather as the weather admits, and continue the work, if necessary, to the end of april. It is best to plant thus from the seed-bed, for when they are removed into the nursery, the roots must be pruned considerably before they can be planted where they are to continue, which adds greatly to the expense; and nursing causes a luxuriant growth in this hardy mountainous tree, which spoils its nature, and robs it of longevity. The trees which grow spontaneously from seed, come up very close, and grow very slow; for these reasons they are taller, less knotty, and of a closer harder grain than planted trees, which are usually set in a richer soil, and allowed more room. James Farquharson, Esq. who has planted several millions of Scotch Firs, has observed in a self-sown tree of two feet and a half diameter, which is near the size of a planted Fir fifty years old, 214 circles; which makes this natural Fir above four times the age of the planted one^o.

Mr. Boutcher directs the cones to be gathered or picked up in march or april, and kept in a dry place till the hottest weather, when they should be treated as he has directed for the Larch; and kept in boxes or bags, in a dry room, till the season of sowing: which should be the middle of march or as soon after as the land is dry, and the weather favourable, in shady borders of generous loose mould at the rate of a pound of good seed to a bed sixty feet long by three feet and a half broad; covering them a quarter of an inch thick. As the plants begin to appear water them in the morning every four or five days for five or six weeks, if the weather be dry without frost.

From the beginning to the middle of april following transplant them from the seed-bed in rows fifteen inches asunder, and six or seven inches in the row, giving them three or four plentiful waterings if the weather require it. Let them remain two years, and

they will be fit to encounter all difficulties, and to succeed in the worst soils and coldest situations.

For the purpose of immediate shelter they may be removed once more into rows three feet asunder and eighteen inches in the row, to stand two years longer.

In all the removals, have by you a tub of water and earth, mixed to such a consistence as that a considerable quantity will adhere to the roots of the plants. As soon as they are taken up, let them be plunged in the tub as deep as they stood in the ground; and if they continue several hours in this situation, it will be so much the better^p.

No Fir tree should ever be pruned, unless it be cutting off the branches near the ground: when this tree is in old age, the branches gradually decay from the root to the top. The time for cutting it down is when all the limbs are dead, but the top branches quite healthy. The timber is better when the branches drop from age; and there is no knot or blemish in the wood. If a Fir tree in vigour be much pruned, it is reduced to a state of old age.

The improvements that have been made in the northern parts of Scotland by means of large plantations of Scotch Pine, upon the barest moors, and in the bleakest and most inhospitable situations are well known. The returns of these plantations have been such as fully to satisfy the owners. But when the collateral advantages are adverted to, the improvements are very great indeed: for in the neighbourhood of such plantations, houses can be reared at so little expense, and the roofs are so much better than ordinary, as to induce settlers to make their dwellings much neater and more commodious than in other places; rails and other dead fences can be so easily obtained, that poor people are first enabled to have good well-fenced gardens, and then commodious inclosures of larger extent; the branches afford fuel to the settlers; cutting and manufacturing the wood furnishes employment to many; population is thereby augmented; hence a desire for land to produce the necessaries of life, and a consequent increase of rent to the proprietor. In this way, Mr. George Dempster sees fields rapidly converting into cultivated grounds on his estate, and yielding to him ten or twelve shillings an acre rent, not only without any expense to him, but after having derived a considerable profit from the sale of woods of his own planting, which grew upon land that five and twenty years before was not worth, to him, above two-pence an acre, and which might have remained in that state for ages to come, had it not been planted.

A plantation of Scotch Pine can be made at much less expense than any other tree in the northern parts of Scotland, because the young plants can be afforded at a smaller price. In Aberdeenshire plants of two years old, and above that age no experienced planter will ever buy them, sometimes sell at four-pence the thousand, consisting of 1200; and they seldom exceed eight-pence: and there are men who will undertake to complete the whole inclosing, and planting at the distance of a yard from each other, and supply the deficiencies for five years, at the rate of from ten shillings to thirty shillings the Scotch acre^q, according to the size of the inclosure, and the nature of the fence.

It is found by experience, that there is scarcely any soil so bad, or any exposure so bleak, where this tree will not live, if the plantation be of sufficient extent, and not upon the very summit of high peaked hills. They do not indeed bear the sea air very well; nor is the wood ever of a good quality, or the tree long lived upon clayey soils. Several persons in the South of England have found that the Pinaster bears the sea blast much better than any of the other Pines. The Spruce Fir will bear a still more exposed situation than the Scotch Pine, and after a few years it shoots up with still greater luxuriance. But the cones not being to be had in equal abundance, and the plants being more difficult to rear, they are sold at a much higher price. Silver Fir, in a good soil, prospers well, and is a beau-

ⁿ Philosoph. account of the Works of Nature, 1721, p. 17

^o Hunter's additions to Evelyn.

^p Boutcher,

^q Four Scotch acres are nearly equal to five English acres.

tiful tree, but the price of the plants is too great to admit of large plantations of them being made.

Where the situation is bleak, and much exposed to strong blasts of wind, the plantation must not only be of considerable extent, but the trees must be planted very close, so as to be not more than from two to three feet asunder: the more exposed the situation the closer they must be; for it is observed that until the branches intermingle and thus serve to give a mutual support to each other, the trees never begin to advance with vigour. Where the plantations are thus thick, there is a necessity for beginning to thin them out from the tenth to the fifteenth year after planting. Where the plantations are extensive, these thinnings sell at a small price, but there are few situations in which they will not do more than pay for the expense of cutting them out.

The leaves and branches of the Scotch Pine afford a very wholesome nourishment to cattle and sheep. In mountainous countries, where snow sometimes lies upon the ground for many weeks together, the benefit that may occasionally be derived from such plantations will be very great: and the larger branches that are left make excellent fire-wood.

The seeds of Pines are better extracted from the cones, by laying them in the sun than by the fire. The application of too great a heat will injure or destroy vegetation in them; and the practice of laying the cones on the floor of a malt-kiln, which is said to be used by seedsmen, will account for the badness of seed purchased from wholesale dealers. It may also be too old, for the seeds of Pines and Firs should be sown as soon as possible after they are taken from the cones.

Mr. Miller has affirmed, that the seeds, kept in the cones, will grow at seven or even ten or twelve years old. Mr. Hanbury, and Mr. Marshall from him, call this a very great and dangerous mistake, at least as applied to the Stone Pine, for the seeds of this sort, whether kept in the cones or taken out, are never good after the first year. This may probably be right; but Mr. Miller's affirmation is of Pines in general, not of the Stone Pine in particular; and Mr. Miller himself confirms these gentlemen's correction in some measure, by saying that he had frequently received the seeds of a Pine from China, so like those of the Stone Pine, as not to be distinguished from them; but that being taken out of the cones, they never grew.]

F I R S.

The Firs are propagated by seeds, in the same manner with the Pines. A gentle heat will serve to extract the seeds of these, because their cones open much easier than those of the Pines, especially the Silver and Balm of Gilead Firs, which, if permitted to hang late in the autumn, fall to pieces and scatter their seeds. It is best however to preserve the seeds in the cones till the time of sowing, which is the end of march or beginning of april, according to the season; in a north or north-east border; covering the seeds about half an inch deep with the same light mould in which they are sowed; and netting the beds to keep off the birds. In these beds the plants should remain until the following spring, when there should be a number of beds prepared in the nursery to receive the seedlings. In the beginning of april they should be transplanted into the beds, at the distance of six inches row from row, and in the rows at three inches asunder, setting them in a quincunx order. In removing these plants, they should be very carefully raised up with a trowel, so as not to break off the fibres of the roots; nor should they be kept long out of the ground. During the time they are out, their roots should be covered, to prevent the wind from drying their fibres; and in planting, the earth should be pressed close to their roots, to prevent the air from penetrating to them.

If the season prove dry, it will be proper to water the plants every week once or twice, according to the warmth of the weather; the beds should also be covered with mats, to screen the plants from the sun,

and drying winds, until they have taken good root; after which time they will require little farther care, than to keep them clean from weeds. In these beds the plants may remain two years, at the end of which they should be transplanted into an open spot of ground, for their roots will in that time meet quite over the beds. This ground, to which they are to be removed, should be well trenched and cleared from all noxious weeds, and made level. The beginning of april, just before the plants begin to shoot, will be a good time to remove them. In taking up the plants, great care should be taken not to tear off or injure their roots; nor should too many of the plants be taken up at one time, but rather plant them as fast as they are taken up, that they may be as little time out of the ground as possible. For the drying winds, which usually happen at this season, will greatly injure the roots of these plants, if much exposed thereto.

The distance at which they should be placed in the nursery, should be four feet row from row, and in the rows two feet asunder. This distance may by some be thought too great; but let it be considered how much their roots spread in the ground, as also that when they are planted nearer together, it will be very difficult to take up the plants again without cutting and tearing off their roots, especially if they are not all taken up clean at the same time: these considerations must have greater weight than that of the loss of a little ground, with all who have any regard to the future welfare of the plants. In planting them, it will be advisable to draw a line cross the ground, and to dig out a trench of a foot wide, into which the plants may be placed at the distance of two feet asunder. Then fill the earth into the trench, covering the roots of the plants with the finest part of it, scattering it carefully between the roots; and when the whole trench is filled in, press the earth gently down with your feet; but by no means tread it too hard, especially if the ground be strong, or apt to bind too close.

When the plants are thus planted, if the season should prove dry, they ought to be watered, in order to settle the earth to their roots; and if this be repeated three or four times, (if the season should continue dry) it will greatly promote their taking new root, and secure them from the injuries of the drying winds. In this nursery the plants may remain two or three years, according to the progress they shall have made; and during this time, the ground between the plants should be constantly kept clean from weeds, and dug between the rows every spring; in doing of which, care must be taken not to cut or injure the roots of the plants: this is all the culture they will require during their continuance in the nursery. When they are transplanted into the places where they are to remain, the necessary care to be taken is, in taking them up, not to injure or cut off their roots, and to let them be as little time out of the ground as possible; and while they are out, to guard their roots from the drying winds. The surest time for removing these trees is about the beginning of april; for though they may be, and often are, removed with success at Michaelmas, yet the spring is the more sure season, especially in moist land.

Most of the kinds of Firs may be removed at the height of six or seven feet; but those of two feet high are much better to transplant, and will in a few years gain the ascendant of taller trees: I would not, therefore, advise the transplanting of these trees when they are much above two feet high, especially if they have stood in the nursery unremoved. For then their roots will have extended themselves to a distance, and must be cut in taking them out of the ground; and where great amputation is used either to the roots or branches of these trees, the quantity of turpentine which commonly issues from these wounds, will greatly weaken the trees. There is another advantage also in planting them when small, which is that of not requiring staking to secure them from being blown down by strong winds, which in tall trees is a great trouble and expense. And whoever will give themselves the trouble to observe, how much trees of two feet high exceed

exceed in growth those which are removed at a much greater height, will, I am sure, be convinced of the truth of what is here said.

The common Spruce Fir is what affords the white deals. The trees grow in the deep strong soils of Norway and Denmark; but will grow likewise in almost any soil or situation in England, provided it be not within the reach of the smoke of great cities, which is very injurious to all these sorts of trees; nor do they thrive near so well in dunged land, as in fresh uncultivated soils. The disrepute these trees have been under for some years past, has been occasioned by their being planted too close together, or too near other trees, whereby the air has been excluded from their branches, which has occasioned most of their under branches to decay; so that when viewed from the ground under their branches, they have a greater appearance of dead than living trees. But where they have been allowed a good distance, and planted in a strong fresh soil, they have had their branches quite feathered within six or eight feet of the ground, and that too in trees upwards of sixty feet high; therefore they should not be planted nearer than twelve feet apart, nor should they be so near, where the plantation is more than three rows deep. In this case, eighteen or twenty feet asunder will be full near enough, especially where the trees are designed to have their branches feathered near the ground, in which one of the beauties of these trees consists.

The Silver Fir requires a stronger land than the Spruce, for in dry ground they seldom make any great progress; and many times, even after they have arrived to a considerable size, are destroyed by very dry seasons, where the soil is shallow, or too dry. But when they are planted in a proper soil, they grow to a very large size, and are extremely beautiful, having the under side of their leaves white, and the upper side of a dark green colour.

This sort of Fir, however, is frequently injured by frosts, when they happen late in the spring, especially while the plants are young. For when these are planted in a warm situation, they are apt to shoot pretty early, and if any sharp frosts happen after they have pushed, the young shoots are killed; so that they lose a year's growth, and are rendered so very unsightly, that many times they have been pulled up and thrown away. In cold situations, however, where they do not begin to shoot so early, they are not subject to this disaster; and, in many such places, these trees grow to a large size, and have their beauty. I have sometimes seen some fine trees of this sort of Fir, which grew upon natural bogs, where, by extending their roots, they had drained the ground to a considerable distance round them.

The method of raising the other sort of Firs.

About the latter end of march, or the beginning of april (according to the forwardness of the season, by which every person must be guided) prepare a very moderate bed, in length proportional to the quantity of seeds to be sown, and where there are frames which can be spared for this purpose, these may be placed upon the bed; but where these are wanting, the bed should be cradled over with hoops, that they may be covered with mats or canvass; then plunge the bed full of small pots, such as are commonly sold about London for four shillings and two pence per hundred. These pots should be filled with light undunged earth, and the interstices between the pots may be filled up with any other earth which is nearest to the place; then sow the seeds in these pots, covering them about half an inch with the same light earth. In drying winds the bed should be covered, to prevent the earth from drying too fast, which would prove hurtful to the seeds; nor should the seeds have too much wet, which would be equally injurious to them: therefore the earth should be but seldom watered, and it must never be given in great quantities. When there is any appearance of frost at night, the bed should also be covered. With this management the plants will appear in five or six weeks time, when they must be carefully guarded from birds as was before directed

for the common sorts, and also screened from the sun in the middle of the day; but they must now have fresh air admitted to them at all times when the weather will permit. They may also be allowed to receive any gentle showers of rain, but they should not have too great plenty of moisture, which will frequently rot the young plants, and cause them to drop. Upon the judicious care of this, depends the whole success; for I have frequently seen great numbers of these plants destroyed in one day, by being either too much exposed to the sun; or from having too much wet.

It may, perhaps, seem strange to many, that I should direct the sowing the seeds of these trees which are so very hardy upon a hot-bed; but from many trials I have always found they have succeeded much better this way than any other, for the gentle warmth of the bed will not only cause the seeds to vegetate much sooner than they would naturally do in the cold ground, but the plants will also rise much stronger, and, consequently, be in less danger of rotting in their shanks. And as the warmth of the bed is only to bring up the plants, so there should be but little dung employed in making it; for after the plants are up, they must be inured to the open air, and treated as hardily as the common sorts.

There may be others, perhaps, who will object to the directions given for sowing the seeds in such small pots, because, where there is any quantity of the seeds, it is usual to sow them in boxes, or large pots: but I can from many years experience aver, that most sorts of seeds succeed better when sown in small pots, than in boxes, or larger ones, and therefore recommend this practice.

As the seeds of the Hemlock Fir will frequently remain in the ground four or five months, the pots, in which they are sown, should not be disturbed, if the plants come not up so soon as may be expected; for unless upon stirring the ground, the seeds are found to be decayed, there may be hopes of their growing the second spring, for I have sometimes had the seeds remain a whole year in the ground, and afterwards come up very well: this caution, therefore, is given to prevent the pots from being too hastily turned out.

The plants of these sorts of Fir must be afterwards treated in the same way as the common sorts with this difference only, that they ought to be transplanted into a more shady situation and moister soil. For while the plants are young, they will not thrive if they are much exposed to the sun, or in a dry soil; but when they have obtained strength, they will bear the open sun very well, and in a moist soil will make great progress; whereas in dry ground they frequently stint, and produce plenty of male flowers and cones, by the time they get to the height of four or five feet. When the branches of these trees are cut off to trim them up to have stems, it should be done gradually, never cutting more than one tier of branches in one year; for if too many wounds are made at the same time on these resinous trees, the turpentine will issue out in such quantities as to weaken and check their growth. The best time for pruning these trees is in september, at which time they abound not so much in turpentine as in the spring, and, consequently, do not bleed much. What flows out at that season, is seldom more than is necessary for covering the wounds, to prevent the wet and cold of the succeeding winter from penetrating the wounded parts. These branches should be cut close to the trunk.

[In sowing all sorts of Firs, neglect not to clap over the beds with the back of a spade. In the autumn after sowing pick off all mossy hard particles from the beds, replacing them with some good soil, and then sifting over some chaff, or rather saw-dust, that has lain some time. The succeeding spring, and during may and june, water them frequently, and in autumn treat the beds as before. At two years old, when the buds begin to swell, remove them from the seed-bed.

The Balm of Gilead and Hemlock Spruce should have the beds hooped over, to be covered with mats for five or six weeks after the plants appear above ground, when the sun is hot, or the air cold or frosty:

they should be watered every second evening, when it does not rain.

The Balm of Gilead Fir requires a good deep soil, and a sheltered situation.

It is in vain to plant the Silver Fir in hot dry or rocky situations, where it commonly loses the top shoots, and the under branches soon become ragged. The largest and most flourishing trees are seen on four heavy obstinate clay, and though for ten or twelve years they do not advance so fast as several other Firs and Pines, yet in twenty they will outgrow them all. They should not be too close, but require a free circulation of air^s.

According to Mr. Boutcher's opinion though spring be the proper season for planting seedling Firs and Pines, yet the best time for transplanting all the hardy sorts, which have arrived to a foot in height or upwards, is the month of august, as soon as they have perfected their shoots. Mr. Hanbury recommends July.

For plantations of timber, where the land can be got in order for it, the best method certainly is to sow the seeds on the ground where they are to continue; but if this cannot be done, the plant should be finally set out from the seminary at two years old: in rough grounds overrun with heath, &c. such small plants would be lost; they must be removed from the seminary into a nursery, and not finally planted out till they are of a size to overtop the heath and grafs.

For ornamental plantations it may be sometimes desirable to plant out much larger. For this Mr. Boutcher gives the following directions.

In order to remove Firs or Pines eight or ten feet high with success, at four years old transplant them to another spot of good land, in rows two feet and a half asunder, and fourteen or sixteen inches distant plant from plant. Water them at planting, and continue it once a week five or six times when it does not rain: keep the ground clean, dig it spring and autumn, and let the plants remain three years. Then remove them in spring, shortening their straggling roots moderately, and plant them in rows four feet asunder, and two feet in the row, to remain three years longer. If required larger, remove them again, at six feet asunder every way, to remain two, or not more than three years; by which time, in good land, the Norway, Black and White American Spruces will be from fourteen to sixteen, and the Silver Firs from ten to twelve feet high. Thus managed, they will rise with such large balls of earth, as will prevent their receiving the least injury at removal. These and other large evergreens require more frequent, though gentler waterings, than deciduous trees, and should have no branches taken off at this time.]

CEDAR OF LEBANON.

The cones of this tree are frequently brought from the Levant, and we have them now of our own growth. If they are preserved entire, the seeds will keep good in them several years: the time of their ripening is commonly in the spring, and those which come from abroad are near one year old before we receive them; for which they are not the worse, but rather the better; the cones having discharged a great part of their resin by lying, and the seeds are much easier to get out of them than such as are fresh taken from the tree.

The best way to get the seeds out is to split the cones, by driving a sharp piece of iron through the center lengthways, then with your fingers you may pull out the seeds, which you will find fastened to a thin leafy substance as are those of the Fir-tree: but before the seeds are taken out, it will be proper to put the cones in water for twenty-four or thirty hours, which will render them easier to split, so that the seeds may be taken out with greater safety; for there will require care in doing of it, otherwise many of the seeds will be spoiled, as they are very tender, and will bruise where there is any force employed to get them out.

^s Boutcher.

[This will be best accomplished by thrusting a wooden peg down the hole, rather bigger than the iron one, after the cones have been soaked. The same method may be used for extracting the seeds out of the Stone Pine.]

These seeds should be sown in boxes or pots of light fresh earth in march, and treated as was directed for the Firs, only these require more shade in summer while young than the Firs, and should be frequently refreshed with water.

When the plants come up, which will be in seven or eight weeks, they must be guarded from the birds, otherwise they will pick off their tops, as they do of the young Firs where they are not guarded; they must also be constantly kept clean from weeds, and not placed under the drip of trees. The plants may remain in these boxes or pots in which they were sown till the following spring, but it will be proper to place them under a frame in winter, or cover them with mats, if the season proves very severe; for while they are young they are in danger of losing their tops, if they are pinched by frost, for the young plants often shoot late in the autumn. In april before the plants begin to shoot, they should be carefully taken up and transplanted into beds at about four inches distance, closing the earth gently to their roots; these beds should be arched over with hoops, and covered with mats in the heat of the day, to shade the plants from the sun till they have taken new root; and if the nights prove frosty, it will be proper to keep the mats over them in the night, but in cloudy or moist weather they must be always open. After the plants are well rooted, they will require no other care but to keep them clean from weeds, unless the season should prove very dry; in which case it will be proper to give them some water once or twice a week; but it must be but in small quantities, for too much wet is often very injurious to them; so that it will be better to screen them from the sun in hot weather, to prevent the earth from drying too fast, or cover the surface of the ground with moss to keep it cool, than to water the plants often.

In these beds the plants may stand two years, then in the spring they should be either transplanted to the places where they are designed to remain, or to a nursery where they may grow two years more; but the younger these trees are when they are planted out for good, the better the trees will thrive, and the longer they will continue.

When these plants begin to shoot strong, you will generally find the leading shoot incline to one side; therefore, if you intend to have them straight, you must support them with stakes, observing to keep the leader always close tied up, until you have got them to the height you design them, otherwise their branches will extend on every side, and prevent their growing tall.

These trees were formerly kept in pyramids, and sheared as Yews, &c. in which form they lose their greatest beauty; for the extension of the branches is very singular in this tree, their shoots for the most part are declining, and thereby shewing their upper surface, which is constantly clothed with green leaves in so regular a manner, as to appear at some distance like a green carpet; and these waving about with the wind, make a most agreeable appearance at a distance, especially if planted on a rising ground.

[During the time they are in the nursery, and after planting out, many will frequently have a tendency to droop in their leading shoot: as soon therefore as this is perceived, an upright stake must be driven into the ground, to which the shoots should be tied with bass matting to keep them in their upright growth. This however will not always effect it, for some plants in spite of the bandage, will shoot downwards. In this case, when they first discover signs of such a tendency, it will not be amiss to lighten the head, by nipping off the extremities of some few of the largest branches.

When these trees are planted out to remain, they should be left to nature, after being properly fenced: not a knife nor a hatchet should come near them: lopping even their lowest branches is so injurious, that

it both retards their growth and diminishes their beauty'.]

THE LARCH.

The common Larch is now very plenty in most of the nurseries in England, and of late years there has been great numbers of the trees planted; but those which have been planted in the worst soil and in bad situations, have thriven the best; for where trees of equal size have been planted in good garden earth at the same time, the others on the cold stiff land, have in twelve years been twice the height of those planted in good ground; which is an encouragement to plant these trees, since they will thrive in the most exposed situations, provided they are planted in clumps near each other, and not single trees; nor should the plants which are planted in very open exposed places be taken from warm nurseries, but rather raised as near to the spot where they are to remain as possible; nor should the plants be more than three or four years growth when planted, where they are designed to grow large; for though trees of greater size will remove very well, and grow several years as well as if they had not been transplanted; yet after twenty or thirty years growth they will frequently fail, where the young planted trees have continued very vigorous.

These trees are raised from seeds, which most years ripen well in England: the cones should be gathered about the end of november, and kept in a dry place till the spring, when they should be spread on a cloth and exposed to the sun, or laid before a fire, which will cause the scales of the cones to open and emit their seeds. These seeds should be sown on a border exposed to the east, where the morning sun only comes on it: or if they are sown on a bed more exposed to the sun, they should be screened with mats from the sun in the middle of the day; for when the plants first appear above ground, they are very impatient of heat; and when the bed is much exposed to the sun, the surface of the ground will dry so fast, as to require to have water very often, which frequently rots the tender stems of the plants; which will be prevented by properly shading them while young, and afterwards they will be in no danger. These young plants should be constantly kept clean from weeds, and if they have made good progress, they may be transplanted the following autumn, otherwise they may remain in the seed-bed another year, especially if the plants are not too close together. When they are transplanted, it should be performed in the autumn as soon as their leaves decay; they may be planted in beds at about six inches asunder each way, which will be distance enough for the growth of the plants the two following years, by which time they will be fit to transplant where they are to remain.

When the young trees are planted out for good, they need not be more than eight or ten feet distant from each other, always planting them closer on exposed situations, than where they are more defended; after the trees are planted, they will require no other care but to keep them clean from weeds for three or four years till the trees have obtained strength, when they will over-top the weeds and prevent their growth; but the ground between these trees should not be dug, for that I have found has greatly stopped their growth.

The Siberian Larch is of slow growth in this country, for when the spring is mild, the trees will begin to shoot in february, or early in march; and there are frequently sharp frosts after, whereby these shoots are often killed, and this stops the growth of the trees. Likewise when they are planted on a warm dry soil, they are frequently killed by drought in the summer; therefore this is a very improper tree for this country, unless for some cold, moist, peaty land, where they may probably thrive, and in such situations few other trees will grow.

The American or Black Larch, thrives pretty well upon moist land, but on dry ground will make but little progress. A few of these trees by way of variety, may be allowed to have place in every collec-

tion of trees designed for pleasure; but for profit, the common Larch is to be preferred to any other species.

This is a very proper tree for planting on cold barren hills, which in their present state produce little or nothing to the proprietors, and in one age may be large estates to their posterity, besides a great national advantage. This might be effected at no great expense, if properly conducted.

The best method for doing this, would be by making small nurseries or seminaries at or near the place where the plantation is intended to be made. In these nurseries the seeds should be sown; and if there are any poor cottagers, they may be employed in raising the plants, keeping them clean, and transplanting them. This will assist the poor, and by employing them in this business, they may be brought to have a regard for trees of their own planting: and as the season for doing this, is at a time when farmers have little employment for their labourers, it is an advantage to all parties; and children may be taught to weed the young plants, and thus rendered useful, instead of being burdensome to parishes.

[Though the cones of the Larch be of their full size in autumn, yet the seeds continue ripening all the winter; they should not be gathered therefore till march or april. Spread them in dry covered places till may or june, and then expose them to the full sun for several weeks, when the cones will open, and many of the best seeds come out, by shaking them in a wire sieve: to get out the rest, split the cones, by driving a small piece of sharp iron through the centre, and then by exposing them again to the sun for a few days, the seeds will shake out, or may easily be picked out with the point of a knife. Though the seeds in the cone are good for four or five years, yet out of it they lose their vegetating quality in a few months; therefore as soon as they are got out, mix them with fine dry sand, and keep them in bags till the season of sowing, which is the beginning of march, or as soon after as the weather will permit. Sow them very thin, in beds three feet and a half broad, with alleys of eighteen inches; clap them gently in with the back of a spade, and sift over them fine compost earth, with one fourth sea-sand or pit-sand. If the weather is dry and not frosty, in a fortnight after sowing, give them gentle waterings every fourth or fifth day, and in six weeks they will begin to appear. Guard them from the birds with nets, and water them every second or third night for three weeks very gently: continue this once in ten or twelve days to the end of august.

The end of march or beginning of april following remove them from the seed-bed to the nursery, in rows fifteen inches distant, and six or seven inches asunder; watering them at planting, and once a week for five or six weeks after.

At the same time in the succeeding year remove them to another nursery, in rows three feet distant, and fifteen or sixteen inches in the row: here let them remain two years; by this time they will be five or six feet high, and of a proper size to transplant in exposed situations, on meagre hungry ground".

Dr. Hunter directs, that just before sowing, the cones should be opened or torn into quarters by a knife, the point of which must be thrust exactly down the centre, that the seeds may not be damaged: they should then be threshed in a room. Three thousand cones will generally produce a pound of good seeds: these being winnowed or sieved will be ready to sow in april.

Or, the scales of the cones being so glued together, that they are separated with difficulty without bruising the seeds; let them be laid in heaps six inches thick, in a shady but exposed situation, till the beginning of may. Then let beds four feet in breadth be prepared, newly dug; let the mould be raked to the sides, so as to form a kind of ridge, to prevent the cones from falling into the alleys, which should be two feet wide for the convenience of the weeders. Cover these beds entirely with the cones, and if the weather comes

* Marshall on planting, edit. 2. vol. 2. 260.

" Boucher.

warm and dry, they will presently expand, and shed the seeds. When a sufficient quantity is shed, remove the cones to a second bed, first giving them a shake in a coarse sieve, which will cause a considerable quantity of seed to fall, especially if it be done in the middle of the day: then sift fine mould, a quarter of an inch thick, over the whole bed. If the weather should be dry, they must be gently watered, and the beds kept clear of weeds. The cones may be removed to a third, and even a fourth bed. The times for laying on the cones depends on the dryness and warmth of the weather. The seeds should come up thick, or else they will be apt to be thrown out of the ground by the frost.

The following spring prick them out in beds three inches asunder: and the second spring plant them in the nursery in rows three feet asunder, and eighteen inches in the rows. Hence they may be planted out finally the second or third year after. But as those trees always thrive best that are removed small, they should be planted out as soon as they are of a sufficient size not to be injured by weeds*.

Dr. Anderson, who endeavoured five and twenty years since to turn the attention of his countrymen in Scotland towards this useful tree, is of opinion that it should be planted entirely by itself, because soon outgrowing most other trees, where the Larches are thinly scattered, they are exposed to the wind, and their tender top-shoots are apt to be damaged. He recommends therefore that the Larch should be made to shelter itself, by planting very thick, even so near as two feet. In a plantation made at this distance, the trees have shot up with great rapidity, straight, clean, and healthy.

His theory is this. It has been often remarked, that no wood of the Fir-kind, raised in artificial plantations, ever equals in quality that which is produced spontaneously: the natural wood being closer in the grain, harder and deeper in colour, with fewer knots in it. The reason is, that in natural woods of Larch and other coniferous trees, the seeds being strewed very thick upon the ground, the plants spring up very close. Being straitened for room, their growth is stunted, and they struggle for some years which shall get the better. By degrees, the weaker plants are over-topped and die; but still others struggle for life, and maintain the contest; and thus it goes on till they have attained a considerable height, when the boughs of the most vigorous trees, spreading out above, overtop all those that are near, and thus a sufficient space is allowed for these to flourish till they attain their full size.

During this long struggle the growth of the trees is slow, and consequently the fibres of the wood very close and hard. The side branches too, having no room to spread abroad, are kept weak, and are soon suffocated, by the winds and rubbing of the trees round them, these branches are soon broken off, and the bark begins to close over the wound. The stem thus becomes clear of branches and smooth, and all the wood that afterwards grows over it is free from knots.

In artificial plantations we follow an opposite course. Anxious to admire the progress of our trees, no measures are adopted to retard their progress at an early period, but rather the reverse: and were we even inclined to follow nature, the very expense of planting so many trees on an acre would be a decisive bar to such enterprizes. The young trees are of course planted at a considerable distance, and are encouraged to grow as quickly as possible, and thus the wood is coarse in the grain and soft. The branches too, having room to spread, advance with great luxuriance, and continue to grow till they attain a large size, and of course render the wood full of large knots.

Though we cannot afford to make our plantations so thick as nature does, we ought to approach as near as prudence will admit; and by planting Larches at two feet distance, the benefit to be derived from the

* Additions to Evelyn. The last is the method practised in the Duke of Athole's plantations.

practice will do more than repay all expenses attending it.

At this distance, an English statute acre will contain 10890 plants. Being planted in rows, the younger the better, the ground laid dry, well fenced, and no grass or weeds suffered to choak them; in this state they may remain six, eight, ten or twelve years, according to the soil, or the purposes for which the thinnings are wanted; when they should be thinned for the first time. This however ought not to be too long delayed, lest the tops, by growing too close, should be so much smothered as to occasion a hurtful gap when the thinnings are taken away.

One row should now be wholly taken out, so as to leave the plants four feet apart; and allowing three rows to remain entire, take out the fourth, and so on. Thus, though the row on each side the opening will lose its support on one side, its branches being still intermixed with those on the three other sides, will give it sufficient support. It is necessary to cut out a row completely, to admit of trailing out the long spires, together with their tops, which could not otherwise be done.

In consequence of this open, the branches above will be permitted to grow more freely, and in this state they should remain till they intermingle again above, when they should receive the second thinning, by taking out the middle row that was left at the former thinning, when the plants will stand in the rows four feet apart, and two feet from each other in the rows.

When the branches close again, the third thinning may be given by culling out every fourth row crosswise. And the fourth thinning may be given, by taking out the cross row that was left between the two contiguous to it.

Now the trees in a whole plantation are again reduced to squares, standing four feet apart: and there will remain 2722 trees on an acre. So that 8168 trees have been taken out in the successive thinnings.

After a proper interval, the trees might be thinned, as above described, till they are gradually reduced to squares at eight feet apart, which is perhaps the greatest distance that should be allowed to trees of this kind. At this distance an acre will contain 680 trees.

If then thinnings be begun from the six to the tenth year from the time of planting, the whole may be completed thus far by the thirtieth or fortieth year of their growth; during which time there will have been fold 10210 spars from fifteen to fifty feet in height, and proportional thickness, from each acre. If it be thought advisable to continue the thinning farther, after this period, no whole rows ought ever to be cut out any where, but only a single tree here and there.

Now if we suppose that the sale of the spars would be sufficient to defray the expenses of making and upholding the plantation; and that each tree at fifty years growth, instead of containing 360 feet of wood, as those at Dunkeld are known to do, should at the same age measure no more than seventy feet each, which is less than one-fifth of the others: in that case the 680 trees on an acre would contain 47600 cubic feet of timber, which, at 1s. a foot, would be 2380l.; from which, if the rent be deducted at 5s. an acre, which for fifty years is 12l. 10s. and interest for payments withheld 14l. 10s. more; there will remain 2353l. clear profit: without taking into the account any advantage from turpentine.

An efficient fence is absolutely necessary for a plantation of Larch, because it is extremely impatient of wounds in its bark. No cattle or sheep therefore should be admitted, even after the trees have attained a considerable size.

The nature of the fence must be determined by circumstances. A stone wall will be the most common, as Larch ought chiefly to be planted on mountainous tracts, and it is the most effectual, except against light-bodied sheep, which will readily overleap it, unless there is some defence of bushes or a rail on the top of it.

A ditch and bank is by no means an effectual fence against sheep, or even against cattle after some time, unless

unless furze be sown upon the top of the bank; or in three rows, two of which should be on the slope of the bank, cutting one of the rows close every year, to keep it from becoming open at bottom.

When this fence decays, as it will in ten or twelve years, the outer line of Larches being left, will make a fence of themselves, or at least with the assistance of the Sweet-briar or Bramble planted between the trees and interwoven with their branches, and a rail from tree to tree where it is wanted^p.

Dr. Watson, the learned Bishop of Landaff, who is ever ready to step forward when useful science or arts can be promoted, remarks, that the highest and most craggy mountainous tracts in our island, two acres of which do not afford sufficient sustenance for six months in the year to one sheep, might, with a great prospect of success, be planted with Larches; and he states the probable profit which would attend such plantations.

A thousand acres of such land might be inclosed with a circular wall six feet in height, where the stones can be easily got, for 6s. an acre, or 300l. for the whole: five hundred larches, two feet in height, so as to enable them to resist the long grass, might be planted on each acre for 14s.; hence a plantation of five hundred thousand Larches might be made for 1000l. Now this sum improved at compound interest, at the rate of 4l. per cent. would in sixty years, amount to the sum of 10519l.; this is the accumulated loss attending the inclosing and planting one thousand acres of rocky land in sixty years. The rent of a thousand acres, at 1d. an acre is 4l. 3s. 4d. a year; in eight years the Larches would be out of all danger from sheep, so that the loss of rent ought only to be estimated for eight years; but 4l. 3s. 4d. a year, though improved after the same rate of compound interest, would not amount to 40l. in eight years; say however that it would amount to 81l. which is allowing more than 2d. an acre rent, then would the whole expense in sixty years be 10600l. If the amount of 81l. for fifty-two years be taken into consideration, the expense will be 11222l. The sheep are here supposed to be shut out of the plantation for eight years; if it should be found that sheep will not crop the Larch, and from more than one observation, I have reason to believe that they will not, they need not be shut out at all; nor on districts, where nothing but sheep are depastured, need any fence be made. The advocates for close planting, instead of five hundred, would require five thousand Larches for each acre; I am not convinced of the utility of such close planting, except where it is intended to nurse up Oaks, or other kinds of wood; but if that mode should be adopted, the thinnings, after twenty years growth, would pay the expense of it. At the expiration of sixty years, suppose that only 250 Larches remained on each acre, or that one half had perished, the probable value of them may be thus estimated. From many experiments made by myself, and collected from others, I find the annual increase in circumference of the Larch at six feet from the ground, to be one inch and a half on an average of several years; and this inference has been drawn from the actual admeasurement of Larches in different parts of England and Scotland, and of different ages from ten years old to fifty. On this supposition, the Larches would measure, one with another, ninety inches in circumference, at six feet from the ground. Such a Larch would measure above seventy at twenty feet from the ground; supposing the length of the tree to be forty feet, neglecting the top; then will its solid content be eighty-five cubic feet, and its value, at 9d. a foot, above three guineas. But as the trees are supposed to be planted in an high, bleak, barren situation, their annual increase may not be so great as is here supposed; instead of being worth, at sixty years after planting, three guineas apiece, admit that they are worth only 10s. then would the whole plantation be worth 125000l. and deducting the whole expense, there would remain a profit of 114400l. The pre-

^p Essays, vol. 3. §. 4. p. 426, &c.

sent value of this, to be received sixty years hence, is above 100000l.; interest of money at 4l. per cent. and will purchase an income, at this rate, of 4000l. a year. By planting then, a barren estate of a thousand acres is improved from 4l. 3s. 4d. to 4000l. a year, reckoning the value of a reversion as a present certainty. Sixty years is a great part of the life of a man; but it ought to be considered as nothing in the existence of a nation, or even of a family, which is a little nation. All waste lands that will not pay for converting into arable or pasture, ought to be covered with wood; the high parts, and especially the sheltered dells, in the high parts, with Larch; and the lower with Oak, Ash, &c. Their present application to the summer-maintenance of a few miserable sheep, ought not to be persevered in, if any other use can be made of them^z.

May the respectable prelate live to inform the public, whether the actual progress of the extensive plantations which he has made, corresponds with these calculations!

E. Harries, Esq. of Hanwood, recommends an attention to two circumstances in planting Larches, viz. situation and distance. The strong westerly winds are very apt to bend the upper part of the trees, especially if they stand single, or upon sloping grounds. To guard against this, he advises a shelter of Scotch Pines to be planted to the westward some years before the Larch. The other thing to be observed is to give the plants sufficient room. In eight years they may be about twenty feet high, and their lateral shoots extend two yards every way from the trunk; and they should not then be suffered to continue nearer than five or six yards; and what are left may continue to be useful building timber. At first planting a distance of about seven feet should be allowed; they will then be furnished with sufficient lower branches, which give the tree a steady and tapering trunk. The knife should never be applied to them. There is no tree of quicker growth. I have Larches that are twenty feet high in seven years growth, and sixteen or eighteen inches round. At thirty years growth they measure from four to five feet round, at five feet from the earth^a.

The Rev. Charles Hope, of Derby, who has made considerable plantations of mixed trees on rough stony land in Yorkshire, says, that the Larch, of all, is his favourite. It not only outgrows every other tree, and that in the most exposed situations; but he has reason to think it a most valuable wood, and that it will be taken out, as it grows, without damaging those near it, which it has been the means of training straight.

Some that were planted in 1785, were above twenty feet high in 1793.

Planting from the seed-bed is most advantageous, from the cheapness both in raising and planting, as well as from their succeeding so much better than in any other way^b.

Mr. White, who has made such noble plantations at Buttsfield in Durham, says that the Larch is not only superior in beauty and hardiness to the Scotch Pine, but furnishes more durable and valuable timber; and is likewise a more tender and friendly nurse to more delicate trees, being furnished with a great number of small pliant branches well garnished with leaves; and which from their flexible quality will yield to the adjacent trees, and are not subject to lash and buffet them; they also more readily admit the rains than the Scotch Pine does, and are not liable to receive injury in snowy seasons, when the branches of the latter are frequently mutilated, and trees sometimes totally destroyed.

Probably planters may have been often misled by a mistaken idea of the superior hardiness and nurturing quality of the Scotch Pine; or from not being acquainted with any other more proper tree to substitute in its place, have adopted it: in respect to shelter, it must be allowed to contribute in the winter more than deciduous trees; but as far as relates to the propaga-

^z Agricultural survey of Westmoreland, Prelim. observ.

^a Young's Annals, 13. 99.

^b Transact. Soc. Arts, vol. 12. for 1794.

tion of the plantations themselves, internal shelter at this dreary season, when the powers of vegetation are totally locked up, is of much less consequence, than in the more genial months, when the trees are making their shoots; the internal warmth of a plantation must then greatly facilitate the operations of nature, and the Larch, being one of the most early trees we have in the spring, is at that time in full foliage; and it is the most promising tree to aid those operations.

The Larch also will thrive where few other trees will live; and when we consider the many excellencies of this invaluable and pleasing tree, it must be looked upon as a great misfortune to this country, that its introduction was not of an earlier date. About fifty years ago, I am told, this alpine plant was treated as a tender exotic, and planted out, with the utmost care and diligence, in our hot-beds and hot-houses^c.

In this Mr. White must have been misinformed, for my memory will carry me back half a century, and I never saw or heard of the Larch being treated otherwise than as a hardy tree; Miller, Evelyn, &c. certainly hint at no such thing; and we have accounts of Larches planted in Scotland near seventy years since.

Mr. Marshall informs us, that a striking proof of the superiority of the Larch in waterworks occurred on the estate of Athol. A weir or river dam, which, while constructed with Oak, required to be renewed every four or five years, was formed with Larch, and in 1792 had stood nine or ten years, the timber then remaining in a sound firm state. In gate-posts the Larch has been found very durable.

In 1792, the Duke of Athol had a thousand Larch trees then growing on his estates of Dunkeld and Blair only, of not less than from two to four tons of timber each; and had at that time a million of Larches, of different sizes, rising rapidly on his estate: which alone, if properly trained, would supply the British navy with ship-timber, for a length of years. The Highlands of Scotland alone, will henceforward be able to furnish the whole commerce of the island with timber for its shipping.

Mr. Marshall adds with great judgment—We have lands in England, and nearer to our ship yards, which will probably pay a hundred fold in Larch, compared with any other crop they are capable of producing. The barren heaths which occupy no inconsiderable portion of the kingdom; but more particularly, the singularly infertile plats of heath, in the southern counties of Surrey, Suffex and Hampshire; lands, which at present, lie in a manner useless to the community; yet on which the Larch rises with luxuriance.

If these wastes should be planted progressively with the Larch, properly trained for ship-building, the several yards of Portsmouth, Deptford, Chatham, &c. could not experience a want of timber for ages to come.

Were other wastes of a similar nature, lying in different parts of the island, particularly the mountain brows of the English highlands, in Yorkshire, Westmoreland, &c. and also the Cornish and Devonshire mountains, with the Welsh and Salopian hills, with other barren heights, at present merely blank surfaces, converted to the same valuable purpose, a supply of foreign timber might, in half a century, become unnecessary; and this, with little or no abridgment of agricultural produce.

The Larch not only flourishes in bleak and barren sites, but increases with a rapidity unknown to every other durable wood. In the grounds of Blair of Athol, a Larch at five feet high girted upwards of eight feet, and contained by estimation four tons of timber, which was not, at the time it was measured, in 1792, fifty-four years old. At Dunkeld, another little more than fifty years old, girted at the same height eight feet six inches; its height was near one hundred feet, and its contents were from four to five tons of timber.

On the subject of the Larch we may safely conclude with Mr. Marshall: that though we should be very cautious how we are carried away by novel ideas and upstart practices, however specious; yet in the mul-

titude of evidence here stated in favour of this tree, there seems sufficient ground for decision; and that no time ought to be lost in recommending it to the attention of government, and men of property in every district of the island, where barren heathy lands are found^d.

PINUS INDICA. See *Croton*.

PIPA. See *Cratægus Bibas*.]

PIPER. (Πεπέρη of *Theophrastus* and *Dioscorides*. Derived από του πεπέρην, *concoquere*. But it is probably of Indian origin.)

Lin. gen. n. 43. Reich. n. 47. Schreb. n. 59.

Gertn. t. 92. Juss. 405. Saururus. Plum. 12.

Class. 2. 3. Diandria Trigynia.

Nat. order of *Piperitæ*. *Urticæ*, Juss.

GENERIC CHARACTER.

CAL. Spathe none perfect.

Spadix filiform, quite simple, covered with florets.

Perianth none.

COR. none.

STAM. Filaments none. Anthers two, opposite, at the root of the germ, roundish.

PIST. Germ larger, ovate. Style none. Stigma three-fold, hispid.

PER. Berry roundish, one-celled.

SEED single, globular.

ESSENTIAL CHARACTER.

Cal. none. Cor. none. Berry one-seeded.

SPECIES.

[1. *Piper nigrum*. Black Pepper.

Lin. spec. 40. syst. 74. Reich. 1. 75. Willd. 159.

fl. zeyl. n. 26. mat. med. 41. Woodv. med. bot.

513. t. 187. Lour. cochinch. 30. Mill. illustr.

Plenck, ic. 25. Marsd. Sumatra, 105.

P. rotundifolium nigrum. Baub. pin. 411. Pluk.

phyt. t. 437. f. 1. Mor. hist. 3. 602. f. 15. t. 1.

f. 1. Blackw. t. 348. Raii hist. 1341.

P. nigrum. Park. theat. 1603. Ger. emac. 1538.

Molago codi. Rheed. mal. 7. 23. t. 12.

Leaves ovate commonly seven-nerved smooth, petioles quite simple.

2. *Piper Betle*. Betel.

Lin. spec. 40. Reich. 1. 75. Willd. 159. fl. zeyl.

n. 27. Lour. cochinch. 31. Burm. zeyl. 193.

t. 83. f. 2. Mor. hist. 3. 603.

Beetla-codi. Rheed. mal. 7. 29. t. 15.

Betre f. Betelle. Baub. hist. 437. Raii hist. 1913.

Clus. exot. t. 176.

Leaves somewhat oblong acuminate seven-nerved, petioles two-toothed.

3. *Piper Cubeba*. Cubebs.

Lin. syst. 74. Willd. 159. suppl. 90. Gertn. fruct.

2. 67.

P. caudatum. Besl. mus. 7. t. 3.

Cubebæ. Baub. hist. Ger. & Park. Raii hist. 1813.

Leaves obliquely ovate or oblong veined acute, spike solitary, peduncles opposite to the leaf, fruits pedicelled.

4. *Piper clusiæfolium*.

Lin. spec. ed. Willd. 159. Jacqu. ic. rar. vol. 2.

t. 212. collect. 3. 209.

Leaves obovate blunt veined, spike solitary terminating.

5. *Piper capense*. Cape Pepper.

Lin. syst. 74. Willd. 160. suppl. 90.

Leaves ovate nerved acuminate, nerves villose.

6. *Piper Malamiris*.

Lin. spec. 41. Reich. 1. 75. Willd. 160. fl. zeyl.

n. 28. Pluk. phyt. t. 215. f. 2.

Sirium. Rumph. amb. 5. 336. t. 116. f. 2.

Amolago. Rheed. mal. 7. 31. t. 16. Raii app. 641.

Leaves ovate sharpish rugged underneath, nerves five raised underneath.

7. *Piper discolor*.

Lin. spec. ed. Willd. 160. Swartz prodr. 15. descr.

52.

Leaves broad-ovate five-nerved very smooth, discoloured on the hinder part, spikes more lax, florets more remote.

8. *Piper medium*.

Lin. spec. ed. Willd. 160. Jacqu. ic. rar. 1. t. 8.

collect. 1. 141.

^c Transact. Soc. Arts, vol. 5. for 1787.

^d Planting, vol. 1. 178 to 181.

- Leaves ovate acuminate oblique subcordate at the base five-nerved, spikes axillary nodding.*
9. *Piper Amalago*. Rough-leaved Pepper.
Lin. spec. 41. Reich. 1. 76. Willd. 160. Swartz obs. 19. Sloan. jam. 1. 134. t. 87. f. 1. Brown. jam. 121. n. 1. Pluk. phyt. t. 215. f. 2.
Saururus foliis lanceolato-ovatis quinquenerviis rugosis. Lin. hort. cliff. 40.
Leaves lanceolate-ovate five-nerved wrinkled.
10. *Piper Siriboa*.
Lin. spec. 41. Reich. 1. 76. Willd. 161. fl. zeyl. n. 29.
Siriboa. Rumph. amb. 5. 340. t. 117.
Betela quem Sirii-boia vocant. Bont. jav. 91. t. 91. Raii hist. 1913.
Leave cordate commonly seven-nerved veined.
- [11. *Piper excelsum*.
Lin. spec. ed. Willd. 161. Forst. prodr. n. 20.
Leaves orbicular-cordate commonly seven-nerved, peduncles terminating solitary bifid, stem arboreous.
12. *Piper longum*. Long Pepper.
Lin. spec. 41. Reich. 1. 76. Willd. 161. fl. zeyl. n. 30. mat. med. 41. Woodv. med. bot. 516. t. 188. Plenck, ic. t. 26. Blackw. t. 356. Rumph. amb. 5. 335. t. 116. f. 2. Pluk. phyt. t. 104. f. 4. Raii hist. 1343. Ger. emac. 1539. Park. theat. 1604.
P. longum orientale. Baub. pin. 412.
Cattu-tirpali. Rheed. mal. 7. 27. t. 14. Raii hist. 3. 640.
Leaves cordate petioled and sessile.
13. *Piper methysticum*. Intoxicating Pepper or Ava.
Lin. spec. ed. Willd. 161. Forst. prodr. n. 21. escul. 76. n. 50.
Sirtum decumanum. Rumph. amb. 5. 45. t. 27?
Leaves cordate acuminate many-nerved: spikes axillary solitary very short peduncled spreading very much.
14. *Piper latifolium*. Broad-leaved Pepper.
Lin. spec. ed. Willd. 161. suppl. 91. Forst. prodr. n. 22.
Leaves orbicular-cordate nine-nerved, spikes axillary aggregate peduncled.
15. *Piper decumanum*. Plantain-leaved Pepper.
Lin. spec. 41. Reich. 76. ed. Willd. 162.
Piper marginatum. Jacqu. collect. 4. 128. icon. rar. 2. 215.
Saururus frutescens foliis plantagineis, fructu breviori. Plum. amer. 59. t. 76. Raii hist. 3. 642.
Leaves cordate nine-nerved netted.]
16. *Piper reticulatum*. Netted-leaved Pepper.
Lin. spec. 41. Reich. 1. 76. Willd. 162. Swartz obs. 19.
Saururus botryoides major arborefcens, foliis plantagineis. Plum. amer. 57. t. 76. Raii hist. 3. 643. 17.
Jaborandi. Pis. bras. 216. med. bras. 97.
Leaves cordate seven-nerved netted.
17. *Piper aduncum*. Hooked-spiked Pepper.
Lin. spec. 41. Reich. 1. 76. Willd. 162. Jacqu. collect. 5. p. 6. icon. rar. 2. 210. Sloan. jam. 1. 135. t. 87. f. 2. Brown. jam. 122. n. 3.
Saururus foliis ovato-lanceolatis, nervis alternis. Lin. hort. cliff. 140.
S. arborefcens fructu adunco. Plum. amer. 58. t. 77. Raii hist. 3. 643. 18.
Leaves oblong-ovate acuminate unequal at the base veined, spikes solitary axillary uncinatc.
- [18. *Piper macrophyllum*.
Lin. spec. ed. Willd. 163. Swartz prodr. 15. descr. 54. Brown. jam. 122. n. 4.
P. longum arboreum fol. latissimis. Sloan. jam. 1. 135. t. 33. Raii hist. 3. 644. 19.
Leaves elliptic-ovate acuminate smooth unequal at the base veined, petioles appendicled, spikes axillary solitary.
19. *Piper geniculatum*. Jointed Pepper.
Lin. spec. ed. Willd. 163. Swartz prodr. 15. descr. 57.
Leaves oblong acuminate oblique many-nerved smooth, stem and branches jointed.
20. *Piper verrucosum*. Warted Pepper.
Lin. spec. ed. Willd. 163. Swartz prodr. 15. descr. 56.
P. tuberculatum. Jacqu. ic. rar. 2. t. 211? collect. suppl. 7?
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- P. arboreum. Aubl. guian. 1. 23.*
P. longum arb. foliis latissimis. Sloan. jam. 1. 135. t. 88. f. 1.
Arborefcens, leaves oblong acuminate obliquely many-nerved veined smooth coriaceous, stem and branches warted.
21. *Piper hispidum*. Hairy-leaved Pepper.
Lin. spec. ed. Willd. 163. Swartz prodr. 15.
P. hirsutum. Swartz descr. 60.
Leaves ovate acuminate oblique hirsute wrinkled, nerves alternate veined, spikes erect.
22. *Piper nitidum*. Shining-leaved Pepper.
Lin. spec. ed. Willd. 163. Swartz prodr. 15. descr. 58.
Leaves lanceolate-ovate oblique at the base smooth shining.]
23. *Piper pellucidum*. Pellucid-leaved Pepper.
Lin. spec. 42. Reich. 1. 77. Willd. 163. hort. cliff. 6. t. 4. Jacqu. obs. 1. 16. Kniph. orig. cent. 10. n. 70.
Saururus minor procumbens botryitis, folio crasso cordato. Plum. amer. 54. t. 72. Raii hist. 3. 642. 12.
Leaves cordate petioled, stem herbaceous.
- [24. *Piper alpinum*.
Lin. spec. ed. Willd. 164. Swartz prodr. 15. descr. 62.
Herbaceous, stem erect nearly simple, leaves ovate-roundish acute veinless underneath, spikes axillary.
25. *Piper hispidulum*.
Lin. spec. ed. Willd. 164. Swartz prodr. 15. icon. t. 4. descr. 63.
Herbaceous, almost upright, leaves roundish petioled very thin rough-haired above.
26. *Piper tenellum*.
Lin. spec. ed. Willd. 164. Swartz prodr. 16. descr. 65.
Herbaceous simple decumbent, leaves distich ovate veinless ciliate at the edge, spike ascending.
27. *Piper acuminatum*.
Lin. spec. 42. Reich. 1. 77. Willd. 164. Swartz obs. 20. Sloan. jam. 1. 136.
Saururus alius humilis, folio carnosio & acuminato. Plum. amer. 54. t. 71. Raii hist. 3. 643.
Herbaceous, leaves lanceolate-ovate nerved fleshy, stem almost upright.
28. *Piper blandum*.
Lin. spec. ed. Willd. 164. Jacqu. collect. 3. 211. icon. rar. 2. 218.
Leaves in threes lanceolate acuminate three-nerved ciliate dotted underneath.
29. *Piper amplexicaule*.
Lin. spec. ed. Willd. 165. Swartz prodr. 16. descr. 67.
Subherbaceous, leaves lanceolate-ovate embracing nerved fleshy, stem erect simple.
30. *Piper pallidum*.
Lin. spec. ed. Willd. 165. Forst. prodr. n. 24.
Leaves alternate obovate commonly three-nerved, spikes solitary subterminating.]
31. *Piper obtusifolium*. Blunt-leaved Pepper.
Lin. spec. 42. Reich. 1. 77. Willd. 165. Trew. chret. 54. t. 96.
Saururus humilis folio carnosio subrotundo. Plum. amer. 53. t. 70. Raii hist. 3. 643. 14.
Leaves obovate nerveless.
- [32. *Piper retusum*.
Lin. suppl. 91. spec. ed. Willd. 165.
Leaves obovate retuse.
33. *Piper glabellum*.
Lin. spec. ed. Willd. 165. Swartz prodr. 16. descr. 68.
Herbaceous, leaves ovate acuminate, stem declined rooting very much branched.
34. *Piper serpens*.
Lin. spec. ed. Willd. 165. Swartz prodr. 16. descr. 69.
Herbaceous, leaves roundish-acute flat discoloured, stem creeping.
35. *Piper cordifolium*.
Lin. spec. ed. Willd. 165. Swartz prodr. 16. descr. 71.
 3 M
 Herbaceous

- Herbaceous, leaves obcordate petioled plano-convex fleshy, stem creeping.*
36. *Piper nummularifolium.*
Lin. spec. ed. Willd. 166. Swartz prodr. 16. descr. 72.
Herbaceous, leaves orbicular concavo-convex, stem filiform creeping rooting.
37. *Piper rotundifolium.*
Lin. spec. 42. syst. 74. Reich. 1. 77. Willd. 166. Swartz obs. 20. Jacqu. obs. 1. 17. Sloan. jam. 1. 137.
Saururus repens, folio orbiculari nummulariæ facie. Plum. amer. 52. t. 69. Raii hist. 3. 641. 7.
S. minimus rep. fol. orbic. tumentibus. Brown. jam. 204. n. 6.
Herbaceous, leaves roundish flat fleshy, stem filiform creeping.
38. *Piper maculofum.*
Lin. spec. 42. Reich. 1. 77. Willd. 166.
Saururus hederaceus caulibus maculosis major. Plum. amer. 50. t. 66. Raii hist. 3. 642. 8.
Leaves peltate ovate.]
39. *Piper peltatum.*
Lin. spec. 42. Reich. 1. 77. Willd. 166.
Saururus arborefcens, foliis amplis rotundis & umbilicatis. Plum. amer. 56. t. 74. Raii hist. 3. 643. 16.
S. fol. ampl. orbiculato-cordatis peltatis, petiolis vaginantibus. Brown. jam. 203. n. 2.
Leaves peltate orbicular-cordate blunt repand, spikes umbelled.
- [40. *Piper subpeltatum.*
Lin. spec. ed. Willd. 166.
Lomba. Rumph. amb. 6. 133. t. 59. f. 1.
Leaves subpeltate orbicular-cordate acuminate, spikes umbelled.
41. *Piper distachyon.*
Lin. spec. 42. Reich. 1. 78. Willd. 167. Swartz obs. 21.
Saururus hederaceus caulibus maculosis minor. Plum. amer. 51. t. 67. Raii hist. 3. 642. 9.
Leaves ovate acuminate, spikes conjugate, stem rooting.
42. *Piper umbellatum. Umbelled Pepper or Santa Maria leaf.*
Lin. spec. 43. Reich. 1. 78. Willd. 167. Swartz obs. 21. Jacqu. collect. 2. 335.
Saururus arborefcens, foliis amplis cordatis non umbilicatis. Plum. amer. 53. t. 73. Raii hist. 3. 643. 13.
S. fol. ampl. orbiculato-cordatis, sinu aperto, petiolis vaginantibus. Brown. jam. 203. 1.
Leaves orbicular-cordate acuminate veined, spikes umbelled, stem erect grooved pubescent.
43. *Piper trifolium. Three-leaved Pepper.*
Lin. spec. 43. Reich. 1. 78. Willd. 167.
Saururus hederaceus triphyllus, folio rotundo. Plum. amer. 52. t. 68. Raii hist. 3. 641. 6.
Leaves in threes roundish.
44. *Piper pereskiaefolium.*
Lin. spec. ed. Willd. 167. Jacqu. collect. 4. 125. icon. rar. 2. 219.
Leaves in whorls of three or four elliptic three-nerved smooth, spike terminating solitary, stem spotted.
45. *Piper polystachyon. Many-spiked Pepper.*
Lin. spec. ed. Willd. 167. Ait. kew. 1. 49.
P. obtusifolium. Jacqu. collect. 1. 141. icon. rar. 1. t. 9.
Leaves in whorls rhomb-ovate quite entire, petioled three-nerved pubescent.
46. *Piper quadrifolium.*
Lin. spec. 43. Reich. 1. 78. Willd. 168. Swartz obs. 22. Plum. amer. t. 242. f. 3.
Leaves in fours wedge-form obovate emarginate subsessile, stem erect.
47. *Piper verticillatum. Whorl-leaved Pepper.*
Lin. spec. 43. Reich. 1. 78. Willd. 168. amoen. 5. 391.
Saururus erectus minor, foliis orbiculatis verticillatis tumentibus, spicis terminalibus. Brown. jam. 204. n. 8.
Leaves in whorls four together elliptic blunt three-nerved.
48. *Piper stellatum. Starry-leaved Pepper.*
Lin. spec. ed. Willd. 168. Swartz prodr. 16. descr. 74. Jacqu. collect. 2. 212. icon. rar.

- Leaves in whorls three, four or five together oblong acuminate three-nerved.*
49. *Piper reflexum. Reflex-leaved Pepper.*
Lin. spec. ed. Willd. 168. suppl. 91. Swartz obs. 23.
P. tetraphyllum. Forst. prodr. n. 25.
Leaves in fours rhombed fleshy reflex and patulous, stem creeping.
50. *Piper pulchellum. Small-leaved Pepper.*
Lin. spec. ed. Willd. 169. Ait. kew. 1. 50.
Leaves in fours subsessile oblong nerveless quite entire, stem round, spikes terminating.
51. *Piper filiforme.*
Lin. spec. ed. Willd. 169. Swartz prodr. 16. icon. t. 6. descr. 73.
Herbaceous, leaves linear blunt, the uppermost in whorls, stem filiform creeping.
- Species from Vahl's Eclogæ.*
52. *Piper ovatum.*
Vahl ecl. 1. 3.
Leaves ovate veined many-nerved equal at the base, berries pedicelled distant, branches even.
53. *Piper caudatum.*
Vahl ecl. 1. 3.
P. caudatum f. Nhandu. Marcgr. bras. 75. Raii hist. 1343.
Nhandi. Pif. bras. 96. hist. 97.
Leaves cordate nine-nerved veined smooth attenuated with a deep sinus at the base.
54. *Piper rugosum.*
Vahl ecl. 1. 4.
Leaves ovate-oblong veined smooth nearly equal at the base netted underneath, branches even, petioles simple.
55. *Piper æquale.*
Vahl ecl. 1. 4.
Leaves elliptic-lanceolate veined attenuated equal at the base smooth, branches even knee-jointed.
56. *Piper præmorsum.*
Vahl ecl. 1. 4. Rotboell surin. 16.
Leaves lanceolate-elliptic attenuated smooth, shorter on one side at the base, spikes recurved at top.
57. *Piper obovatum.*
Vahl ecl. 1. 5.
Leaves in threes petioled obovate emarginate smooth, stem creeping.
58. *Piper microstachyum.*
Vahl ecl. 2. 3.
Leaves oblong acuminate equal at the base veined underneath, spikes very short mucronate.
59. *Piper grande.*
Vahl ecl. 2. 3.
Leaves ovate-oblong acuminate many-nerved, equal at the base and petioles.
60. *Piper scabrum.*
Swartz descr. 59.
Leaves broad-ovate acuminate oblique wrinkled rugged, spikes erect.

DESCRIPTIONS, &c.

Most of the Peppers are perennial. Stems herbaceous or frutescent, often scandent and dichotomous; the branches as it were jointed. Leaves on an embracing petiole, most alternate, others opposite, with one of them frequently caducous or abortive. Spikes axillary when the leaves are opposite, opposite when the leaves are alternate, commonly solitary and naked, seldom several in bundles, and accompanied with bractes, as in *Piper peltatum* and *umbellatum*.

Forster remarks, that in many species the number of stamens is indeterminate: and that the number and forms of the stigmas differ in most. Loureiro also observed the difference of the stigmas to be variable, but not to recede much from the number three. In those sorts which have a separate fruit he remarked two stamens; but in those which have a concrete fruit, lengthened out into a spike like a mouse's tail, such as are enumerated by Linneus from Plumier, and by Aublet, he could not number the stamens even with a microscope, and he doubts whether any one ever numbered them. Both he and Jussieu hesitate to admit

* Jussieu, gen.

these

these as species of Piper. The numerous species of this genus are natives of the East and West Indies, a few of the islands in the South Seas, two or three of the Cape of Good Hope, none of Europe.

1. Stem shrubby, very long, round, smooth, jointed, swelling towards each joint, slender, branched, scandent or trailing, rooting at the joints. Leaves acuminate, quite entire, equal at the base, flattish, bent back a little at the top and edges, alternate, of a dark green colour, at the joints of the branches upon strong sheath-like footstalks. Flowers sessile, lateral and terminating, in simple, longish spikes, opposite to the leaves. Calyx always four-leaved, imbricate: leaflets thick, concave, very blunt, unequal. Filaments two, awl-shaped, flat, equal to the calyx, and hid by its leaflets. Anthers ovate, prominent above the calyx. Germ globular, superior. Stigmas sessile, commonly four, sometimes but seldom three or five, oblong, reflex, sharp. Berry globular, of a red brown colour^f.

Black Pepper grows spontaneously in the East Indies and Cochinchina. It is cultivated with such success in Malacca, Java, and especially in Sumatra, that it is thence exported to every part of the world, where a regular commerce has been established. It is exported also from Cochinchina.

White Pepper was formerly thought to be a different species from the Black; but it is nothing more than the ripe berries deprived of their skin, by steeping them about a fortnight in water; after which they are dried in the sun. The berries falling to the ground when over-ripe lose their outer coat, and are sold as an inferior sort of White Pepper.

Black Pepper is the hottest and strongest, and most commonly used for medicinal as well as culinary purposes. It differs from most of the other spices in this, that its pungency resides not in the volatile parts or essential oil, but in a substance of a more fixed kind, which does not rise in the heat of boiling water. This fixed substance is probably the resinous part: the aromatic odorous matter seems to depend upon the essential oil. The distilled oil smells strongly of the Pepper, but has very little acrimony; the remaining decoction inspissated yields an extract of considerable pungency. A tincture made in rectified spirit is extremely hot and fiery.

Some have supposed Pepper to be less heating to the system than other aromatics. It is generally used as an aromatic and stimulant; and has been successfully employed in some cases of vertigo, in paralytic and arthritic disorders. Given in large doses, it has been found a remedy for intermittents; but it is said, in some instances to have produced fatal consequences, in this disorder^g.

Loureiro has a species, which he calls *Piper sylvestre*, growing wild in the woods of Cochinchina, but not applied to any purpose. He suspects it to be the same with *Piper caninum* of Rumphius (*l. 7. c. 26. t. 28. f. 2.*)

He has also a second species, with pinnate leaves, consisting of three pairs of leaflets; which he therefore names *Piper pinnatum*. The stem is erect and prickly. He proposes this species with doubt, because he had no opportunity of examining the plant whilst it was in flower. In China, where it grows naturally, both leaves and fruit are applied to culinary uses: it is also used medicinally.

2. Stems smooth and even, striated, angular. Leaves acuminate, a little oblique at the base; the three middle of the seven nerves run to the end of the leaf, the outmost are very short. Peduncle longer than the petiole, and opposite to it. Spike cylindrical, frequently together with the peduncle pendulous. Petiole channelled at the base^h.

Stem shrubby, manifold, very long, trailing and rooting at the joints. Leaves unequal at the base, curved in, veined, shining, alternate, aromatic, hottish; the petioles seldom two-toothed. Spike slender, long, solid: peduncle solitary, simple, opposite to the leaf. Stigmas four or five, linear, sessile, spreading out.

^f Loureiro, ^g Woodville. ^h Linn. zeyl.

Berries flattened-angular, united, half-concealed, inseparableⁱ.

Native of the East Indies.

It is the leaf of this species of Pepper plant which is called Betle or Betel, and serves to inclose a few slices or bits of the Areca, thence erroneously called the Betel-nut, these together with a little Chunam or shell-lime are what the southern Asiatics so universally chew to sweeten the breath and strengthen the stomach: the lower people there use it as ours do tobacco in Europe to keep off the calls of hunger. The consumption of Betel is so great in the East as to occasion a considerable branch of commerce: it is there deemed the height of unpoliteness to speak to a superior without some of it in the mouth. The women of Canara on the Malabar coast stain their teeth black with Antimony, and thus preserve them good to old age; whereas the contrary is the case with the men, who ruin theirs by the Betel, and the Chunam or lime, which they take along with it. Ulloa asserts that the Coca (or Koka) of Peru is the same with the Betel^k.

3. This is a very smooth shrub, with a jointed flexuose stem. Leaves mostly oblong, seldom ovate or lanceolate, not tender as in most species of this genus, quite entire, petioled, veined; the veins simple, alternate; the margin of the leaf does not run down so far on one side as on the other. Spikes solitary, peduncled, short, on which are those pedicelled berries known in the shops and the kitchen by the name of *Cubebs*^l.

The berry is fleshy, globular, obscurely umbilicate at top, red or when old of a smoky colour, smooth, one-celled: pulp moderately thick, finally drying up into a coriaceous pellicle. Seed single, subglobular, umbilicate at top with a small excavation, ferruginous-brown, a little wrinkled: cover single, membranaceous, fastened closely to the albumen; which is of the same shape with the seed, somewhat granular, friable, pale yellow, aromatic, acrid, having a very small excavation near the top: embryo very minute, inverted, milky, placed in the proper cavity of the albumen, which is closed only by the integument, as in the Palms: cotyledons two very minute, papillary, diverging: radicle discoid with a middle point, superior, fastened to the cover of the seed^m.

Native of the island of Java, in woods. Bergius also communicated it from Guinea.

4. The whole of this is smooth. Stem perennial, thicker than a quill, branched, a foot high, at first upright, but afterwards becoming decumbent from the weight of leaves and branches, and throwing out roots from the joints; by which perhaps in its native soil it fastens itself to trees. Leaves alternate, quite entire, sometimes emarginate, thick, somewhat fleshy, obscurely veined, nerveless, very dark green with the edges sometimes of a dirty blood colour, on very short petioles, channelled at the base, with the nerve at the back projecting; they are about four inches in length. Spike round, upright, green, four inches long, about half the thickness of a quill; on a peduncle an inch in length, purplish, jointed at the base, and often rolled back at the top. Anthers oblong, grooved, brown, sessile. Germ green, ending in an acute erect little bracte. Stigmas three, oblong, brown, somewhat hispid, sessile on the outside at the base of the bracte.—Native of the West Indiesⁿ.

5. This is distinguished from the other larger species of the genus, which it resembles very much, by having the veins of the leaves villose on the lower surface.

Found at the Cape of Good Hope by Thunberg^o.

6. Stems round, striated, twining. Leaves thin, green above, subcinereous-rugged underneath: they have five nerves, and no more, not at all raised above: the petioles are round^p.—Native both of the East and West Indies.

7. This is a shrub, a fathom in height, with alternate, erect, subdivided, jointed, round, smooth branches.

ⁱ Loureiro.

^l Linn. suppl.

^k M. S. information from Rev. G. Asby.

^m Gartner.

ⁿ Jacquin.

^o Linn. suppl.

^p Linn. zeyl.

Leaves alternate, broad-cordate or ovate, with a blunt point, entire, thickish, veined, whitish or very pale green underneath, shining; two of the five nerves are marginal: joints swelling: petioles channelled, short. Spikes pedicelled, solitary, opposite to the petiole, shorter than the leaves, slender. Peduncles longer than the petioles, round, smooth. There is no calyx, but an oblong scale, within which are two very short evanescent filaments, and two obovate, whitish anthers. Germ oblong, within the scale: style short, thickish: stigmas three, small, acute. Berry minute, oblongish. It is distinct from *P. Amalago* in its wide very smooth leaves, looser spikes, and more remote flowers.

Native of high mountains in Jamaica; flowering in autumn.

It varies with leaves attenuated at the base, and blunt, ovate, oblique¹.

8. This species is sufficiently different from *P. decumanum* and *reticulatum*, on account of the five-nerved leaves, and the base of the leaves being very shortly and not always cordate. It seems more allied to the next succeeding species; but differs from that in having the leaves subcordate at the base, oblique and not so roundly ovate².

It has several trunks, eight feet high, two inches in diameter at the base, upright, jointed, knobbed, ash-coloured. Branches numerous, round, swelling at the joints. Leaves alternate, three or five-nerved, quite entire, smooth, netted underneath with transverse veins, petioled, having a bitterish aromatic taste, and the same smell when bruised. Spikes solitary, peduncled, slender, opposite to a leaf, upright, three or four inches long. Germ angular. Stigma triple, quadruple or quintuple. Anthers from two to five, surrounding the germ in no fixed situation. It seems to be a middle species between *decumanum* and *reticulatum*, and derives its trivial name from that circumstance.—The native country is unknown³.

9. This is a shrub from three to ten feet in height. Stem even: branches dichotomous, jointed, subdivided, round, brownish green. Leaves alternate, acuminate, not oblique, nerved and veined, very thin, bright green, smooth, paler underneath. Petioles round, smooth. Joints swelling. Spikes peduncled, opposite to the leaves, filiform, loose, many-flowered. Flowers clustered. No calyx, corolla, or filament. Anthers from two to four, at the base of the germ, cordate-ovate, sessile, two-celled. Germ ovate: style none: stigmas three, oblong, sessile. Berry sessile, containing a single seed, double the size of Hempseed, black when ripe, of a taste slightly pungent⁴.]

It has several crooked stems, which rise to the height of twelve or fourteen feet, are jointed, hollow and pithy; they divide into many small branches. Leaves three inches and a half long, and one inch and a half broad, and rough. Spikes at the end of the branches, slender, three inches long, having many small sessile flowers, succeeded by small berries.

[Browne calls it small-grained Black Pepper, and says that it grows very common in most of the hilly parts of Jamaica, looking very bushy, and spreading on account of its slender flexile branches; it begins to divide very near the root, and rises in tufts, frequently to the height of six or eight feet or more. The berries differ from the Black Pepper of the East Indies only in size, being seldom bigger than a large Mustard seed; but the taste and flavour is in every respect the same: the leaves and growth of the shrub very nearly resemble that delineated in the Hortus Malabaricus, but the plant is neither so luxuriant nor succulent.

Browne used it for many months, and could not perceive any sensible difference between it and that of the East either in cookery or seasoning.

It should be picked when full grown, but before it ripens; for, like the Pimento and other spicy grains, it grows soft and succulent by maturity, and demits the pungent flavour: it may then be dried in the sun like the Pimento, and left adhering to the spikes, which

¹ Swartz descr.

² Willdenow.
³ Swartz obs.

⁴ Jacquin.

seem to have the same flavour and pungency with the grain itself, and are as easily ground in the mill.

The leaves and tender shoots are used in discutient baths and fomentations, and sometimes are pounded and applied to foul ulcers: the root is warm, and may be successfully administered as a resolutive, sudorific or diaphoretic; but it answers best in infusions or light decoctions, which may be varied in strength as occasion requires. There is no deobstruent of this nature that answers better in dropsies, or lighter obstructions from a lentor or inertia.

Native not only of Jamaica but of Hispaniola, Barbadoes, and probably other parts of the West Indies. Cultivated by Mr. Miller in 1759⁵.

10. Stem even, not very hard. Leaves alternate, a span long, petioled, acute; nerves alternate (seven or) nine; the three inner ones running to the tip; the outmost very short, the rest gradually longer; all with anastomosing veins. Peduncle opposite to the petiole. Spike slender, narrow. Petioles round, not sheathing⁶.]

Stems hollow, shrubby, about four feet high, dividing into many small branches. Leaves about five inches long, and four broad near their base, ending in long acute points; they have seven veins at the base, but the two outer soon diverge to the borders of the leaves, and unite with them, the other five are extended almost to the length of the leaves, diverging from the midrib towards the sides, and unite near the top. The spikes come out from the side of the branches; they are slender, and about four inches long, bending in the middle like a bow, and are closely set with small herbaceous flowers, which are succeeded by small berries, inclosing a single seed. Mr. Robert Millar sent it from Panama.

[Native of the East Indies, and New Caledonia. Cultivated by Mr. Miller in 1759.

11. Native of New Zealand⁷.

12. Stems shrubby, round, smooth, branched, slender, climbing, but not to any considerable height. Leaves differing much in size and form; but commonly heart-shaped, pointed, entire, smooth, nerved, deep green, alternate. Flowers small, in short dense terminating spikes, which are nearly cylindrical⁸.

Linneus remarks, that this species has the appearance of *Aristolochia Pistolochia*; that the petioles of the leaves are quite simple; that the upper leaves are very oblong, often sessile, blunter and narrower than the lower ones, and some embracing; and that the branches are dichotomous⁹.

Native of the East Indies, especially Java, Malabar and Bengal.

The berries are very small, and lodged in a pulpy matter: like those of Black Pepper they are first green, and become red when ripe: they are hottest to the taste in the immature state, and are therefore gathered whilst green, and dried in the sun; when they change to a blackish or dark gray colour.

Dr. Cullen observes, that long Pepper has the same qualities with the Black, but in a weaker degree. Bergius also judges Black Pepper to be hotter than this. The contrary however is asserted by Lewis and Murray¹⁰.

13. Stem dichotomous, spotted, attaining the height of a fathom. Leaves oblong-cordate, not roundish-cordate, as in the next species. Spikes straight, short, solitary, and not aggregate, long, nodding, as in that.

The root of this plant bruised, or more frequently chewed in the mouth, and mixed with the saliva, yields that nauseous, hot, intoxicating juice, which is so acceptable to the natives of the South Sea islands, and is spoken of with so much detestation by our voyagers. They pour the liquor of the Cocoa-nut or pure water into it; but the less it is diluted, the more this acrid, poisonous, nauseous beverage is esteemed among the chiefs, to whom the use of it is mostly confined, because they become intoxicated, and then fall asleep the sooner. The consequences of using

⁵ Hort. kew.

⁶ Linn. zeyl.

⁷ Forster.

⁸ Woodville.

⁹ Linn. zeyl.

¹⁰ Woodville.

this detestable liquor too freely are described as dreadful. The eyes and the whole body are enflamed, the skin becomes parched up, exfoliates in scales, and throws out leprous ulcers, till at length decay and consumption ensue: and yet even those who are accustomed to it, cannot take the nauseous draught without making wry faces, and their limbs quaking with horror. In Otaheite it is called *Ava*, in the Friendly and Sandwich islands, with a strong aspiration *Kava*. It is cultivated in all the islands of the South Sea, except the New Hebrides and New Caledonia^c.

14. Leaves large, roundish, deeply cordate, acute, quite entire, very smooth, tender, with from eleven to thirteen nerves. Petioles dilated at the base and embracing. Spikes five or more^d.

Native of the Society and Friendly islands, the New Hebrides, in short of almost all the islands of the South Sea, within the Tropics. It has none of that intoxicating quality which *P. methysticum* possesses, nor is it ever put to any use by the natives^e.

15. Stems several, shrubby, upright, branched, smooth, a little knobbed, the height of a man and more, an inch and upwards in thickness at the base, when old brown, when young green. Leaves alternate, cordate, acuminate, quite entire, having nine or eleven nerves, somewhat villose on the veins when examined by a glass, in other parts smooth, the longer ones a foot in length including the petioles; these are winged with a pale channelled membrane, in the longer leaves four inches in length. Spikes opposite to a leaf, solitary, round, three inches long, upright, slender, pale, on a green peduncle an inch in length. Anthers twin, grooved, first pale yellow, then brown. Germ roundish, with a ciliate stigma occupying its upper margin. When adult it throws out roots from the joints. It has an aromatic smell, but an unpleasant taste^f.

Linneus remarks, that it is so nearly allied to *reticulatum*, as almost to seem a variety; and that it is a native of both Indies. Jacquin ascribes it to the Caraccas^g.

16. This is a shrub, a fathom in height and more. Stem round, upright, smooth. Branches somewhat jointed. Leaves alternate, large, cordate-rounded, acuminate, nine-nerved, smooth. Petioles smooth, striated, sheathing. Spikes long, peduncled, opposite to the leaves, round, upright. Peduncles shorter than the petioles. Stamens and pistils inserted spirally into the spike. Filaments scarcely any. Anthers two, subsessile, opening transversely at top. Germs under the anthers. Styles three, thickish. Stigmas blunt^h.]

Stem about five feet high, sending out several side branches which have protuberant joints. Leaves six inches long and five broad near their base: they have five veins springing from the foot-stalk, the middle one going in a direct line to the point; the two side veins diverge towards the edges of the leaves in the middle, but approach again at the top; the surface of the leaves is full of small veins, which form a sort of net-work. The spikes come out from the side of the branches opposite to the leaves; they are slender, and about five inches long, a little bending in the middle, and are closely set with very small herbaceous flowers.

Native of Jamaica, [Martinico, Hispaniola, Brasil. Cultivated by Mr. Miller in 1759.

17. Stems several, shrubby, round, knobbed at the joints, smooth, an inch and more in thickness, branched, ash-coloured, upright, eight feet high. Branchlets green, the thickness of a quill, spreading very much. Leaves alternate, on short petioles, in a double row, a little shorter at the inner base, deep green above, rugged backwards, rough-haired when examined by a glass; underneath pale green, villose but not rugged; quite entire, netted with numerous veins, many-nerved if the principal veins be considered as nerves; they are about half a foot in length, and have little taste or smell. Stipule lanceolate, acute, converging,

smooth, striated, caducous. Peduncles alternate, opposite to a leaf, solitary, erect, round, somewhat villose, half an inch long. Spikes solitary, slender, yellowish, two or three inches in length, towards the origin of the branchlet bowed; so closely covered with minute fructifications, that it is scarcely possible to detect their structure even with a microscopeⁱ.]

Stalks many, hollow, about five feet high, with joints pretty close and protuberant; they divide into smaller branches. Leaves seven inches long, and three broad in the middle, rough; the veins come out alternately from the midrib, diverging to the sides, and join the borders of the leaf at the top. The spikes of flowers come out from the side of the branches, opposite to the leaves; they are slender, five inches long and incurved, closely set with flowers their whole length. It is called Spanish Elder in Jamaica, of which island it is a native, [as also of Barbadoes, Domingo, and the Caraccas. Cultivated by Mr. Miller in 1759.

18. This is a large shrub, two fathoms in height. Stem round, striated. Branches almost erect, smooth. Leaves alternate, large, bluntly acuminate, oblique at the base, having ten or twelve nerves transversely oblique, veined, quite entire. Petioles short, broadish, channelled, membranaceous with a leafy margin, appendicled at the base of the leaf. Spikes pedicelled, long, erect, opposite to the leaves. Flowers very close, not distinct. Filaments four to six, very short, or else the anthers sessile, twin, round the germ. Styles none. Stigmas three sessile. The stem and branches are less brittle than in the other species.

Native of the West Indies, on rocky mountains: Jamaica, Martinico, &c.

19. This shrub is also two fathoms high and more. Stem subdivided towards the top, round, smooth. Branches and branchlets long, rod-like, round, smooth, very brittle. Joints swelling. Leaves alternate, half a foot long and more, attenuated but blunt at the top, rounded and unequal at the base, entire. Petioles short, channelled, smooth. Spikes solitary, opposite to the leaves, long, pedicelled. Flowers spiral, as in *P. verrucosum*. Stem, though often thick, yet so weak as to require support from other shrubs. It is distinguished from *P. macrophyllum*, which it resembles very much, by its jointed habit, brittleness, &c.—from *P. verrucosum*, by its joints, thinner leaves, and even stem and branches.—Native of Jamaica, in stony woods^k.

20. This is a tree the trunk of which is from fifteen to twenty feet in height, upright, with the bark much warted. Branches simple, terminating, leafy, round, with white warts. Leaves ovate, acuminate, blunt, alternate, veined, the margin rolled in; the largest from one foot to two feet in length. Petioles short, channelled, with the margins at the base of the leaf membranaceous, warted. Spikes pedicelled, half a foot long, opposite to the leaf, upright. Flowers in a spiral, the males and females in a manner distinct. Germs between the upper and lower circuit of stamens. Anthers two ovate, placed obliquely. Stigmas three, sessile. It is known by its habit, its warted stem and branches, and its large coriaceous leaves.

Native of Jamaica, on calcareous rocks in the interior of the island^l: Guiana, &c.

21. This is a shrub: the stem is a fathom in height, upright, round, hirsute, hispid. Branches patulous, flexuose, jointed, round, hirsute: joints hirsute and hispid. Leaves alternate, many-nerved, hirsute, hispid; nerves alternate, raised on the back of the leaf: petioles short, round, not channelled. Spikes pedicelled, opposite to the leaves, solitary, two inches long, cylindrical, thick, brown. Peduncles thick, round, hispid, shorter than the petioles. Flowers aggregate. Calyx none: but small, roundish, ciliate scales; by the sides of which are two very short filaments. Anthers extremely minute, roundish, twin. Germ ovate. Styles none. Stigmas three, reflex, very small. Berry sessile, roundish, very small. It differs from *P. scabrum* by its remarkable hirsute and hispid habit. To avoid being confounded with *P. hispidulum*, Swartz changed

^c Forster. Cook's last voy. 1. 318.

^d Linn. suppl.

^e Forster.

^f Jacquin.

^g Collect.

^h Swartz obs.

ⁱ Jacquin.

^k Swartz descr.

^l Idem.

the name from *hispidum*, which he first gave it, to *hirsutum*.

Native of Jamaica, on the cooler mountains; flowering in autumn.

22. This also is a shrub, the height of a man, very much branched, with a smooth round trunk. Branches and branchlets always jointed at the insertion of the leaves, brittle. Leaves alternate, oblique at the base on the outer side, veined, dark green; from two to three inches long. Petioles very short, round. Spikes peduncled, shortish; round, upright, very even, whitish. Peduncles opposite to the leaves, short. Flowers very much crowded.

Native of Jamaica, in mountain woods; flowering in spring*.]

23. This is annual. Stalks succulent, seven or eight inches high. Leaves an inch and half long, and three quarters of an inch broad. The spikes of flowers come out at the end of the stalks; they are slender, about an inch long and straight; the flowers are very small, and sessile, appear in July, and are succeeded by very small berries, each containing a small seed like dust.

[Native of South America and the islands, on the gravelly banks of torrents and rivers, being fond of moisture. In Martinico they eat the leaves as salad, with lettuce or alone, with oil and vinegar, and call it Cresson; but it has too powerful a smell and taste to be agreeable to Europeans^m. It was cultivated in 1759 by Mr. Miller; and flowers from April to Septemberⁿ.

24. This is a herbaceous plant, with filiform, descending, simple roots. Stem about a foot high, round, succulent, smooth. Leaves rather large, entire, nerved, smooth on both sides, paler underneath, thickish. Petioles longish, compressed, smooth, widening at the base. Spikes solitary, the length of the leaves, round, thick, with the flowers close. Calyx none, but lanceolate, acute scales. Filaments two, very short, at the base of the pistil. Anthers very small, whitish. Germ oblong, acuminate. Style simple. Stigma acute. It is distinct from *P. obtusifolium*, which has a creeping stem.

Native of the highest mountains of Jamaica. It flowers in February and March.

25. This also is a herbaceous plant, small and bright green. Roots small, capillary, divided, whitish. Stem two or three inches high, jointed, diffused, round, striated, smooth, pellucid, succulent, brittle. Branchlets diffused, opposite to the leaves. Leaves alternate, emarginate at the base, entire, veined, green above and somewhat hispid with pale pellucid bristles thinly scattered over them, dotted, beneath very smooth, paler, very tender. Petioles short. Spikes minute, pedicelled, opposite to the leaves, solitary. Flowers very minute, naked, distant. Calyx none, but scales scarcely visible at the base of the germ. Filaments two by the side of the germ at its base, very minute, patulous, horizontal, in a manner club-shaped. Anthers roundish, whitish. Germ oblong, hispid. Style thick, short. Stigma blunt, brown. Fruit pedicelled, the size of a small pin's head, roundish, black, somewhat hirsute-hispid. It is very distinct from *P. pellucidum*, in its tenderness, leaves, pubescence and flowers. The taste also is bitter, not aromatic.

Native of Jamaica, in moist woods on the blue mountains. It is an annual plant, and flowers early in the spring.

26. This also is a herbaceous plant. Root small, annual, simple, filamentose. Stem three or four inches high, very seldom divided, jointed, round, scarcely striated, somewhat hirsute, having very minute red dots on it, and a scattered shagginess among the petioles, grooved, brittle. Leaves small, on very short petioles, alternate, attenuated towards the top, blunt, entire, veinless, nerveless, bristly-ciliate on the upper surface towards the edge, somewhat succulent, smooth, pale underneath. Spike terminating, filiform, simple. Flowers very minute. Calyx none; but a roundish little scale covering the germ; by the sides of which are two filaments, the length of the germ, upright.

* Swartz descr.

^m Jacq. obs.

ⁿ Hort. kew.

Anthers roundish, twin, white. Germ oblong, attenuated at the base. Style none. Stigma villose, oblique. Berry on a pedicel three times as long as the germ, containing one seed; when ripe it is the size of a small pin's head, of a blackish colour, and an aromatic flavour.

Native of Jamaica, on the cool mountains, on trunks of trees, especially such as are rotten, hanging down among the moss, and flowering in summer^o.

27. Native of South America, in moist woods, commonly on the trunks of rotten trees^p.

28. Stems several, a foot and half high, almost upright, weak, fleshy, villose, thicker than a quill, round, blood-red, at top flexuose and branched; branches alternate, opposite or in threes. Leaves petioled, acute, quite entire, thickish, flat, villose on both sides and at the edges, dark green above, underneath almost veinless and very pale green with the edges blood-red; on the middle of the stalk the nerves are also blood-red; the larger ones are four inches in length; the lowest are much less, and entirely blood-red underneath. Spikes smooth, filiform, almost upright, green, from one to four inches in length, both solitary from the axils, and terminating from two to four, and sometimes one or two opposite to a leaf. Bractes or orbicular pale green scales closely surround the spikes, from the upper edge of which come out the ovate germs, bearded at the top, and below the beard is the villose brown stigma. At the base of the germ on each side is an antheriferous little bracte.

Native of the Caraccas^q.

29. This is a subherbaceous plant. Stem almost simple, a foot high, hardish, slightly flexuose, angular, compressed, grooved, smooth, rigid. Leaves alternate, narrower below, blunt at the tip, quite entire, thickish, bright green. Peduncles subterminating, axillary, solitary, erect; on very long, nearly upright, round spikes, sometimes conjugate. Flowers very minute. It is easily distinguished by the leaves embracing the stem.

Native of Jamaica and other islands of the West Indies, on rotten trees, and among the remains of those which have fallen^r.

30. Native of the Society isles^s.]

31. This sends out from the root many succulent herbaceous stalks almost as large as a man's little finger; they are jointed, and divide into many branches, never rising above a foot high, but generally spread near the ground, putting out roots at each joint, propagate very fast, and soon cover a large space of ground. The leaves are very thick and succulent; they are about three inches long and two broad, very smooth and entire. The peduncle comes out at the end of the branches; this is also very succulent, and the whole length, including the spike, is about seven inches. The spike is straight, erect, and about the size of a goose-quill, closely covered with small flowers which require a glass to be distinguished, the whole spike much resembles the tail of a lizard, for which Plumier gave it the name of *Saururus*.

It is a native of South America, and many of the islands in the West Indies: [was cultivated by Mr. Miller in 1739; and flowers from April to September^t.

32. Found at the Cape of Good Hope by Thunberg^u.

33. This is a herbaceous plant. Stems very long, crowded, procumbent or declining, rooting, leafy, roundish, even. Leaves alternate, quite entire, flat, thickish, even. Nerves five, distinct at the back of the leaf. Petioles channelled, shortish, red at the base. Spikes filiform, nearly upright, sometimes hooked, terminating or lateral, opposite to the petioles, peduncled, solitary or conjugate. The colour of the whole plant is pale green. It is nearly allied to *P. acuminatum*; but differs in having a weak stem, very much branched, somewhat creeping and rooting; the leaves ovate, acuminate, less and not so thick; spikes smaller, shorter.

^v Swartz descr.

^w Swartz descr.

^p Plumier.

^q Forster.

^r Linn. suppl.

^s Jacquin.

^t Hort. kew.

Native of Jamaica and other islands of the West Indies; flowering in the spring.

Piper scandens of the Prodrum is a variety of this.

34. This also is herbaceous. Stem puts forth capillary fibres on every side; is filiform, subdivided, angular, smooth, leafy. Leaves alternate, roundish, but greater in width than length, retuse as it were at the base, blunt with a very short point, half an inch in breadth, entire, flat, somewhat succulent, veinless, smooth on both sides, paler underneath. Petioles shorter than the leaves, spreading, round, smooth. Spikes peduncled, round, half an inch in length, upright. Peduncles axillary, longer than the leaves, round, smooth, solitary. Flowers so minute as not to be distinguished by the naked eye, separated by ovate scales. Filaments scarcely any. Anthers two by the side of the germ. Germ ovate, acute. Style none. Stigmas three. Fruit very minute, ovate, acute, sessile.

It may be distinguished from *P. rotundifolium* by the leaves not being orbiculate or ovate; the stem not divaricate, but more simple and thicker; the leaves underneath pale and thicker; broad-ovate at the base, with a very short point.

Native of Jamaica, in rocky woods among moss.

35. This also is herbaceous. Stem filiform, climbing, rooting, divaricate, round, succulent. Leaves alternate, entire, smooth. Petioles longish, reflex. Spikes on the lateral branches pedicelled, opposite to the leaves, filiform, an inch long, solitary. Peduncles shorter than the spikes. Flowers very minute, whitish. The whole plant has a sharp taste. It is very distinct from the others in the leaves.

Native of Jamaica, in old woods, on decaying trees.

36. Herbaceous. Stems two or three feet long, subdivided, roundish, very smooth, soft. Leaves petioled, alternate, small, shining, somewhat succulent, very minutely hairy on the entire margin. Spikes peduncled, terminating, short. Peduncles scarcely longer than the leaves, upright. Flowers hardly discernible, whitish. It resembles *P. rotundifolium*, but differs in having a filiform, divaricating stem, and orbicular concavo-convex leaves.

Native of the interior of Jamaica on old trees^{*}.

37. Stems herbaceous, very long, subdivided, round, succulent, throwing out short capillary fibres on all sides from the stems. Leaves petioled; the lower orbiculate, entire, small, smooth, somewhat succulent, pubescent at the edge, with red spots below; the upper or terminating ones somewhat oblong, smooth on both sides. Spikes terminating, shortly peduncled, round, solitary, small^r.

Jacquin mentions, that the leaves are greasy to the touch, bright green, with a peculiar fragrant reviving odour, entitling them to be ranked among the aromatics and cephalics, and which they retain for several years, when dried; he has seen a distilled water of them yielding the pleasant scent of the plant.

Native of Jamaica and Martinico, in close moist woods, covering the entire mossy trunks of old trees, and stones covered with moss.

38. Native of Dominica.]

39. This has a pretty thick spongy stalk fifteen feet high, dividing into many jointed pithy branches. Leaves about a foot in diameter. Spikes small. [This species is readily distinguished by its large, petate leaves.—Native of Jamaica and Dominica.]

40. This holds a middle place between *P. peltatum* and *umbellatum*; but differs from the first in its subpelate acuminate leaves; from the second, in its subpelate leaves, and smooth stem.

Native of Amboina and Baley in woods among the mountains^z.

41. Stem from two to three feet high, climbing, subdivided, compressed a little, smooth, marked with rufous spots or dots, succulent. Leaves entire, very smooth, not fleshy, three-nerved, paler underneath. Petioles very long, inserted by little sheaths into the

stem. Peduncles terminating or axillary, two-parted. Spikes upright, linear. Stamens and pistils inserted spirally into the spike.

Native of the mountains of Jamaica, Hispaniola^a, and Dominica.

42. Root annual. Stem herbaceous, from one to two feet high, round, simple, jointed, hoary. Leaves terminating, distant, spreading, entire, nerved and veined, wrinkled, somewhat hirsute underneath, the lobes of the base converging forwards; the nerves radiate from the petiole, which is almost in the middle of the leaf. Petioles long, round, smooth, sheathing at the base, embracing. Spikes axillary, in umbels; umbellules pedate, with from three to six spikes, on short pedicels, upright, whitish. Calyx and corolla none; but roundish ciliate scales, whence the spikes appear subtomentose to the naked eye. Filaments approximating, two for each scale, very short. Anthers roundish, white. Germ oblong, longer than the scale. Style none. Stigmas three, reflex, thick, black: visible only with a glass^b.

Native of the West Indies. Browne says it is very common in the woods of Jamaica, and is seldom more than three or four feet high; that the leaves are very large and round, the foot-stalks embracing the stem at the insertion; that Piso affirms the root to be a warm active remedy against poisons, and that a syrup is made of it in many parts of our sugar-colonies, which is much used by the inhabitants in colds and catarrhs.

Browne has ten species of *Saururus*, which he separates from *Piper*; attributing six filaments and three pistils to the former, and two filaments only with three pistils to the latter.

43. Native of South America.

44. Stems subherbaceous, almost upright, not rooting, jointed, weak, the thickness of a quill, when adult leafless, round, a foot high and more, green or dirty purple; the younger ones somewhat angular. Leaves on short petioles red above, acute, quite entire, not shining, dotted on both sides, thick, somewhat fleshy, about two inches long. Spikes slender, upright, green, about three inches long, on a reddish peduncle, an inch in length. Flowers covering the spike very closely. Below the germ an oblong bracte. It differs from *P. verticillatum* in being much higher, with acute leaves, and a perennial root.—Native of Venezuela.

45. Root perennial, creeping. Stems annual, ascending at the base and then upright, round, panicled, about the thickness of a quill, fleshy, smooth, purple, flexible, a foot high. Branches upright. Leaves opposite, on the branches three or four, roundish or obovate, blunt, thickish, underneath very obscurely three-nerved, there and on the edge somewhat villose, and pale; but very smooth above. Spikes terminating, sessile, from one to four, upright, two inches long, slender, round, green. Germ green. Filaments short, brown. Anthers oblong, incumbent, brown or white. The whole plant has an unpleasant taste, but scarcely any smell^c.

Native of the West Indies. Introduced in 1775, by John Fothergill, M. D.^d

46. Stem half a foot high, herbaceous, subdivided, stiff, even, thick. Leaves on short petioles, obcordate, a little concave, thickish, very smooth. Spikes terminating, peduncled, solitary, an inch long, round, whitish, thickish. Peduncles short. Flowers crowded. Calyx and corolla none; only a scale. Filaments two, very short. Anthers globular, twin. Germ ovate. Style none. Stigma oblique, villose^e.

Native of South America and Jamaica, on very lofty woody mountains.

47. Herb tender, upright, a finger's length. Leaves three, four, or five together, succulent, quite entire, petioled. Spikes simple, several times longer than the leaves.—Native of Jamaica^f.

48. This is a herbaceous plant, a foot high and more. Root simple, filamentose, whitish. Stem

^a Swartz obs.

^b Idem.

^c Jacquin.

^d Hort. kew.

^e Swartz.

^f Linn. amoen.

^{*} Swartz descr.

^r Swartz obs.

^z Willdenow.

round; leafy, pubescent, sometimes ferruginous. Branches opposite: Leaves four or five on a petiole, entire, smooth, paler underneath, scarcely succulent: the upper leaves are commonly three, the lower four, seldom five. Spikes terminating, long; four or five conjugate, filiform, loose. Flowers very minute, green. Calyx none; but an ovate, smooth scale covering the germ; at the base of which are two very short filaments. Anthers roundish, twin. Germ ovate. Style none. Stigma oblique, villose. Berry sessile, oblong.

P. trifolium differs from this in being creeping, with roundish leaves. Native of mountain woods in Jamaica^g.

Mr. Dryander believes the *P. stellatum* of Swartz to be the same with *P. verticillatum*, at least he can see no other difference than in the length of the spikes, between Browne's specimen of the latter in Linneus's herbarium, and a specimen from Jamaica, in Sir Joseph Banks's herbarium, which Swartz has marked as his *P. stellatum*^h.

Willdenow on the other hand is of opinion, that this differs from the preceding, on account of its acuminate leaves, and the spikes being three times as long, and much thicker.

49. Roots long, filiform. Stems filiform, loose, very long, creeping or pendulous, subdivided, angular, channelled, smooth, spotted. Branches long, four-sided, jointed. Leaves on very short petioles, smaller, obtusely or obliquely four-sided, spreading horizontally, sometimes reflex, concavo-convex, veinless, thick, shining. Spikes peduncled, terminating, solitary, short. Peduncles short. Fructification as in *P. quadrifolium*, n. 46.

Native of the East Indies, on the trunks of old trees. Thunberg found it at the Cape of Good Hope; Solander and Forster in the South Sea islandsⁱ.

50. Native of Jamaica. Found there by Thomas Clark, M. D. Introduced in 1778, by Mr. William Forryth. It flowers from July to September^k.

51. Herbaceous. Roots capillary. Stem creeping far and wide, four-cornered, smooth, striated and spotted. Branches short, ascending, filiform, loose, nearly upright, four-sided, spotted, smooth. Leaves small, the lower ones opposite, decussated, in fours at top, linear-oblong, entire, underneath paler and spotted with pale red, smooth on both sides. Petioles shortish. Spikes terminating, peduncled. Peduncles upright, solitary, terminating, the length of the leaves, round, smooth. Calyx none; but a roundish scale. Filaments two, very short, at the sides of the scale. Anthers twin. Germ oblong, covered with the scale. Style none. Stigma villose. Berry oblong, minute.

Native of Jamaica, among moss, at the roots of trees, on the high mountains^l.

According to Willdenow, this is very nearly related to the preceding.

52. Branches smooth, jointed, rounded below, above a little angular, slightly striated. Joints knobbed. Leaves alternate, gradually attenuated towards the outside, acute, smooth, paler underneath. Petiole short, keeled. Spikes opposite to the leaves, peduncled, solitary, straight, three inches long. Peduncles the length of the petiole. Berries distinct, the size of a mustard-seed, ovate, four-cornered, acuminate.

Found in the island of Trinidad by Ryan.

53. Stem shrubby, round, smooth, even. Joints equal. Leaves three or four inches long, exactly cordate, even, with the veins not much branched. Petioles equal. Spikes peduncled, opposite to the leaves, about three inches in length, slender. Peduncle shorter than the petiole. Flowers very much crowded together. It differs from *P. reticulatum* in having the leaves exactly cordate, with a deep sinus at the base, and the lobes more distant. It recedes also from Plumier's figure of *P. decumanum*, both in the form of the leaves, and thickness of the spikes, as also in the greater slenderness of the stem and branches.—Native of Brasil.

54. Branches smooth, straight, round at bottom, angular at top, jointed, with the help of a glass having a mealy appearance. Joints knobbed. Leaves alternate, five or six inches long, sharp at the tip, somewhat wrinkled, especially underneath from the protuberant veins. Petioles short, channelled above, sharply keeled underneath. Spikes opposite to the leaves, peduncled, solitary, half an inch long, probably longer as they advance in age, round, terminated by a short point without flowers. Peduncles the length of the petiole.—Found in Cayenne by von Rohr.

55. Branches round, smooth: the joints a little broken, an inch and half long. Joints knobbed. Leaves alternate, with very slender veins and many nerves, paler underneath, with the nerves standing a little out, bluntish at the base and tip. Petiole short, simple, channelled above, sharply keeled underneath. Spikes opposite to the leaves, peduncled, an inch and half long, round, blunt; when young a little curved, when more advanced straight. Peduncle the length of the petiole.—Found in the island of Montserrat by Ryan.

56. Branches round, smooth, knobbed at the joints. Leaves alternate, remote, quite entire, very finely obliquely and remotely many-nerved, somewhat veined, a little paler underneath, sharp, five or six inches long. Petiole very short. Spike opposite to a leaf, peduncled, four or five inches long, spreading, the size of a small packthread, curved back at the tip. Peduncle twice as long as the petiole. Flowers crowded together very close. It seems to be allied to *P. nitidum* of Swartz.—Native of Surinam.

57. Stem branched. Branches diffused, rooting, smooth, the size of a small packthread, alternate, except that sometimes the lowest are opposite, brown. Leaves petioled, small, sharp at the base, obscurely three-nerved, veinless. Spike at the end of the branches, solitary, straight, three inches long, the same thickness with the branches, round, peduncled. It differs from *P. cordatum* of Swartz, and *P. retusum* of Linneus, in having three leaves at each joint. It approaches to the figure of *P. trifolium* in Plumier; but differs in having emarginate leaves, acute at the base. Perhaps it is only a variety?—Found in the island of Montserrat by Ryan.

58. Stem branched. Branches dichotomous, round, striated above, appearing slightly pubescent towards the top when magnified, often flexuose; the internodes two or three inches long; the joints knobbed. Leaves three inches long, sharp at both ends, even, obscurely veined above, very finely veined underneath. Petioles very short, equal, simple. Peduncles opposite to the leaves, a little longer than the petiole. Spikes scarcely longer than the peduncle. It approaches to *P. rugosum*, but the leaves are smaller, very smooth and even on the upper surface, veined indeed underneath, but not wrinkled as in that, sharp at the base, peduncles shorter than the petiole.—Found in Cayenne by von Rohr.

59. Branches striated, smooth, the thickness of a goose quill; joints knobbed, internodes three or four inches long. Leaves alternate, the lower ones subcordate at the base, half a foot long, six or seven inches wide, tender, even on both sides; nerves oblique, bowed; the lower ones opposite, the rest alternate, veined, pale green; the uppermost a little narrower on one side, and running down obliquely towards the base. Petiole an inch long, without any appendicle. Peduncle opposite to the leaf, shorter than the petiole. Spikes longer than the internodes, three or four inches long, the thickness of a packthread. Flowers very minute. It differs from *P. macrophyllum* in there being no appendicles to the peduncles.—Gathered by von Rohr at St. Martha^m.

60. This is a shrub five or six feet high. Stem upright, round, somewhat rugged. Branches spreading, round, jointed, rugged. Leaves alternate, many-nerved, veined: nerves rigid, on the lower surface more raised. Petioles short, round. Peduncles op-

^g Swartz descr.

^h Linn. trans. 2. 215.

ⁱ Swartz obs.

^k Hort. kew.

^l Swartz descr.

^m Vahl eclogæ.

posite to the leaves, shorter than the petioles, thick, round, rugged, solitary. Spikes two inches long, cylindrical. Flowers crowded. Calyx none; but a minute, roundish scale, at the sides of which are two very short filaments. Anthers very minute, roundish, twin. Germ ovate. Styles none. Stigmas three, recurved, permanent. It differs from *P. aduncum*, which it resembles very much, in having wider leaves, brownish-green not paler; and upright not hooked spikes.

Native of Jamaica, in the mountains of the more temperate partⁿ.

Mr. Miller has thirteen species, all American, except *P. Siriboa*, which is a native of the East Indies. His species are chiefly the *Saururi* of Plumier, with three found by Houftoun. He has not mentioned the common East-Indian Peppers, having probably never cultivated them.

He has the following species not mentioned above.]

1. *Piper humile*.

Mill. dict. n. 4.

P. longum humilius, fructu e summitate caulis prodeunte. Sloan. cat. 45.

Saururus. Brown. jam. 204. 4.

Leaves lanceolate nerved rigid sessile.

2. *Piper laurifolium*.

Mill. dict. n. 6.

Saururus frutescens, laurocerasi folio, fructu brevior & crassior. Houst. MSS.

Leaves lanceolate-ovate nerved, spikes short.

3. *Piper tomentosum*.

Mill. dict. n. 7.

Saururus arborescens latifolia villosa, fructu gracili. Houst. MSS.

Leaves ovate-lanceolate tomentose, stem arborecent.

4. *Piper decumanum*.

Mill. dict. n. 9.

Saururus frutescens plantaginis folio ampliore, fructu brevior & graciliore adunco. Houst. MSS.

Leaves cordate-ovate nerved acuminate, spikes reflex.

5. *Piper glabrum*.

Mill. dict. n. 12.

Saururus racemosus, f. botryoidis minor. Plum. cat. 51.

Leaves ovate-lanceolate acuminate smooth three-nerved.

6. *Piper racemosum*.

Mill. dict. n. 13.

Saururus racemosus, f. botryoides major. Plum. cat. 51.

Leaves lanceolate-ovate wrinkled, nerves alternate.

DESCRIPTIONS, &c.

1. Stalks slender, frequently trailing, and putting out roots from the joints. Leaves five inches long, and two broad in the middle, drawing to a point at each end; they have one strong midrib, with several veins on the under surface, running from the midrib to the sides. Spike very slender, five inches long.—Native of Jamaica.

2. Stalks shrubby, jointed, nine or ten feet high, dividing into smaller branches. Leaves seven inches long and three broad, ending in acute points; they are veined and rough, of the same consistence with Laurel leaves. Spikes from the sides of the branches at the joints, opposite to the leaves, not more than an inch and half long, the thickness of a small quill, closely set with flowers.—Native of Vera Cruz in America.

3. This has hollow pithy stalks, twelve or fourteen feet high, dividing into many crooked branches, having swelling joints. Leaves five inches long and three broad, having many veins, and covered with a woolly down. Spikes from the sides of the branches opposite to the leaves, slender, and about three inches long, turning downwards.—Discovered by Dr. Houftoun at Vera Cruz.

4. This rises with several shrubby stalks fifteen feet high, dividing into many slender branches, with protuberant joints. Leaves five inches long and three broad, smooth, and at their base have five veins, but the two outer join the borders of the leaves soon; the other three run to the top, the middle one in a right line; the two side ones diverge, and join at the top: they are of a dark green on their upper side, but pale

ⁿ Swartz descr.

on their under. Spikes from the sides of the branches, extremely slender, an inch and half long.—Sent from Carthage by Dr. William Houftoun.

5. This has many shrubby stalks ten feet high, dividing into many crooked branches towards the top, having swelling joints. Leaves near four inches long, and two and a half broad, of a lucid green, with three large veins or nerves, the middle one straight, the two outer diverging towards the sides in the middle of the leaf, but drawn together again at the point. Spikes from the sides of the stalks opposite to the leaves, pretty long, slender, and a little incurved.—Sent from Campeachy by Dr. Houftoun.

6. Stalk shrubby, ten or twelve feet high, dividing towards the top into a great number of small branches, which are hollow, and having protuberant joints. Leaves five inches long, two inches and a half broad, some having long, others very short foot-stalks; they are of a deep green on their upper side, but pale on their under, ending in acute points. Spikes from the side of the stalks opposite to the leaves, long and slender, closely set with very small flowers.—Native of Campeachy.

PROPAGATION AND CULTURE.

All these plants require a warm stove to preserve them in England. They may be propagated by seeds; if they can be procured fresh from the countries where the plants grow naturally; these should be sown upon a good hot-bed in the spring, and when the plants come up and are fit to transplant, they should be each put into a separate small pot filled with light fresh earth, and plunged into a hot bed of tanner's bark, shading them every day from the sun till they have taken fresh root; then they must be treated in the same way as other tender exotic plants, admitting fresh air to them daily in proportion to the warmth of the season, to prevent their drawing up weak; and when the nights are cold, the glasses of the hot-bed should be covered with mats to keep them warm. As the stalks of most of these plants are tender when young, they should not have much wet, which would rot them; and when water is given to them it must be with caution, not to beat down the plants; for when that is done, they seldom rise again.

In autumn the plants must be plunged into the tan-bed of the bark-stove, and during the winter they must be sparingly watered; they require the same warmth as the Coffee-tree. In the summer they require a large share of fresh air in hot weather, but they must be constantly kept in the stove, for they are too tender to bear the inclemency of our weather in summer.

[1. *Black Pepper*.

From Dalrymple's Orient. Repert. I.

The introduction of this valuable plant into cultivation in the Circars, was effected by Dr. William Roxburgh in 1787. He found that the Black Pepper grew wild in the hills fifty miles to the N. of Samul Cotah, about 17° N. Lat. and 82° E. Long. from Greenwich*. (See Marsden's Sumatra.)

For prop-trees he used *Erythrina Corallodendron*, called Moochy Wood-tree, or Muricu.

In 1788 he had completed three plantations containing 4750 prop-trees, with two Pepper-vines to each; and had besides about 10,000 plants in the nurseries. The trees were set in quincunx order, at six, eight and ten feet asunder. One thousand plants will yield from 500lb. to 1000lb.

In 1789 his plantations contained between forty and fifty thousand Pepper-vines, occupying about fifty acres of land. The soil they thrive best on, is a mixture of red clay and sand.

Method of planting and cultivating the Pepper Vines at Tellicherry, on the Malabar coast.

The Pepper-vine should be planted in a low firm ground. In the beginning of June, when the rain falls incessantly, at the foot of a Jack, Mango, Cajou,

* About thirty miles among the hills, at a place called Rumphah. It grows wild not only there, but in almost every valley among these hills.

Muricu, or any other tree, whose bark is rough or prickly, dig a hole one foot deep, the breadth and length six inches; into this hole put a piece taken from the extremity of one of the branches of a Pepper-vine; then fill it up with earth, taking care no water is therein, and that none may remain after planting; in the month of july the roots will extend themselves in the ground, and the sprouts will appear on the surface, when they are to be tied to a tree, and a circular bank of earth thrown up round them, that they may enjoy the moistness of the water which remains on the ground, and thereby kept from being inflamed by the heats, which subsist from the month of july till october; when the rains are over, cover the root of the vine with fresh leaves, it matters not from what tree, so they have the quality of cooling: if the ground is too dry, water the same, morning and evening; but if it is entirely cool, twice in eight days is sufficient: then plant five or six sprigs at the foot of the same tree, taking particular care they no ways touch one another.

Ten days after the rains are set in, remove the leaves that cover the root of the vine, pull up the grass that may have grown near them, and demolish the circular bank of earth, made to contain the water, that none may remain at the foot of the tree; in the month of august repeat the same. The vines are to be cherished in this manner for three years.

It must be observed, that the foot of the vines should be covered every year, in the manner before mentioned.

If the vine is once smothered by the heat, it will begin to languish and produce no fruit, so it is necessary to follow the above instructions.

The leaves ought likewise to be removed in the month of june, to prevent the white ant from eating the root of the vine, those vermin being much given to eat the leaves, which the rain draws into the ground, and thereby come to the roots of the vine, which they prey upon likewise.

Observe also, that the vine is not too much affected by the heat of the sun, on account of the proximity of the water.

These Pepper-vines ought not to be planted at the foot of trees whose bark is smooth, as they will in consequence fall to the ground: therefore always make choice of those that are rough and prickly.

The manner of planting the Pepper-vine in the month of february, where the ground is low and firm.

Having made a hole ten inches from the tree, the depth thereof being fifteen inches, the length and breadth twelve inches each, take seven branches from the extremity of the vine, cut them thirty inches long, and put them into the hole; then fill it three-fourths with earth, and the remainder with fresh leaves, observing to put water thereon, morning and evening, till the commencement of the rains, when fill the hole with earth, and throw up the bank as before directed. The time for planting those vines, in the rainy season, is in the month of june, and the month of february in the dry season: if they are planted at any other time they will bear no fruit; the reason is, that they will extend their roots in the ground at these times, and no other, and therefore particular care ought to be taken of them, as before directed.

Trees, planted for the support of Pepper-vines, ought to be fifteen or sixteen feet asunder; if closer, the branches will shade the vines from the sun; as they ought to receive a moderate heat.

Manner of planting the Pepper-vine in higher situation and firm ground.

Make a square hole of fifteen inches, the same distance from the tree; take ten branches from the extremity of the vine, of seven inches length each, put them into the hole at a certain distance, filling it with earth, and treating them as before directed. In a high place, the trees planted for the support of Pepper-vines, ought not to be more than thirteen feet distant on account of the heat. Two years after they are planted, it is necessary to throw up a square bank of

earth round every five plants, that the rain-water may soak in, and nourish the roots; if this is omitted during the rains, the vine will not subsist during the dry season, on account of the heat.

This square is to be repaired every three years, by which means the vines will live a long time, and produce plenty of Pepper; it ought to be done during the rains, in the month of july, for, at that time, should the spade happen to touch the root, it will be of no inconvenience, but should it do so at any other time, the vine will certainly die.

The manner of planting Pepper-vines in very high grounds.

Make a square hole two feet and a half deep, at the same distance from the tree, take twelve slips from the extremity of one of the vines, two feet nine inches long, put them into the hole at a certain distance, and cover them as before directed, throwing up the square bank. It is necessary to plant those vines at the time before mentioned. The reason for making the hole deeper, is on account of the great heats which prevail in high places, to prevent the vine from dying.

Vines, planted in stony soil, will not produce any fruit, because the roots cannot extend themselves with facility.

A sandy soil is equally prejudicial to them, because it is naturally hot, and the heat of the sun penetrates with more facility than in any other ground, consequently the vines are not able to resist, though watered three or four times a day.

You may plant vines in a place where fresh water communicates itself in the same manner as in ground entirely low and firm, but I doubt very much if they will produce Pepper; if they really yield any, I am certain the grapes will be of no great account, because of the continual moisture the plant will receive. I have already remarked, it is absolutely necessary that those vines enjoy an equal degree of heat and moisture, if you think of gathering a good crop.

Manner of planting the Pepper grain.

Take ripe Pepper and put it into water for three days, at the end of which take off the skin, and after you have mixed good red earth, with cow-dung and water, put the Pepper into it, exposing the same to the sun for three days, only early in the morning and evening; it is necessary this mixture be neither too thick or thin. After this, plant the same in an earthen pot, every grain at a certain distance, taking care to water them every day, with a water-pot, until the stalk has four leaves; then dig a hole at the foot of a tree, two feet deep and nine inches long and broad, take cow-dung and ashes of all sorts of fire-wood, put it in the hole, and mix the same with ground dug out of it, taking care to fill it in such a manner that there only remains five inches of elevation; fifteen days after, plant four Pepper-vines in every hole, cover them with earth two inches deep; during the summer water them every day, morning and evening, and cover them during the rains; likewise take care no water remains at their feet, by covering them with earth, as they ought to be; as soon as the rains are over, throw up a circular bank of earth round them, to contain the water they are watered with; in this manner they must be nourished for three years, in the fourth year they will begin to give fruit.

These instructions are to be followed every year; these Pepper plants are planted either in high or low ground, but it is necessary it be very firm.

Manner of planting Pepper-vines where salt water is.

After having made a hole thirteen inches square, at the foot of a tree, fill the same half up with good red earth, without mixing it in the least with salt water, then plant therein ten slips of those vines, at a certain distance, and cover the same with good red earth; when the rains are over, throw again red earth at their feet, and make a circular bank round them, to form a conservatory for watering them every other day, taking particular care to cover the feet of the branches with fresh leaves: in the beginning of the rains fill the conservatory,

conservatory, and take away the leaves, observing to pull up the grafts that sprouts at their feet, covering them with red earth, at the same time spreading some round about; they are to be nourished every year, as is pointed out at the beginning of these instructions.

Signed M. Firth.

Dr. Anderson adds that the vines generally bear fruit every fourth year, but often in the third, if soils and seasons are favourable. The flowers appear in June, and the berry is ripe in September. It is cut down when the berry is blood-red, dried in the sun five or six days, winnowed and sorted. White Pepper is prepared by bruising the berry with the feet, so as to take off the outer skin, washed with water, and afterwards dried in the sun.

According to Mr. Marsden, in his history of Sumatra, (p. 107.) the ground chosen there for a Pepper-garden, is marked out into regular squares of six feet, the intended distance of the plants, of which there are usually a thousand in each garden. The next business is to plant the chinkareens, which serve as props to the Pepper-vines, and are cuttings of a tree of that name, which is of quick growth. When the chinkareen has been some months planted, the most promising upright shoot is reserved for growth, and the others lopped off; this shoot having acquired two fathoms in height, is deemed sufficiently high, and its top is cut off. Two Pepper-vines are usually planted to one chinkareen, round which the vines twist for support, and after being suffered to grow three years, by which time they are eight or twelve feet high, they are cut off about three feet from the ground, and being loosened from the prop are bent into the earth in such a manner that the upper end is returned to the root. This operation gives fresh vigour to the plants, and they bear fruit plentifully the ensuing season. The fruit is four or five months in coming to maturity: the berries are at first green, turn to a bright red when ripe, and soon fall off if not gathered in proper time. As the whole cluster does not ripen at the same time, part of the berries would be lost in waiting for the latter ones; the Sumatrans therefore pluck the bunches as soon as any of the berries ripen, and spread them to dry upon mats, or upon the ground. By drying they become black, and more or less shrivelled, according to their degree of maturity.

13. No plant is cultivated with so much care and assiduity in the South Sea islands as the intoxicating Pepper or Ava. The ground is dug over several times and well cleared from weeds, and then it is manured with shell or coral lime.

23. If the seeds are permitted to scatter, the plants will come up without trouble; or if the seeds are sowed, and sown upon a hot-bed in the spring, the plants will rise easily. Transplant these into separate pots, and plunge them into a hot-bed of tanner's bark; treating them as other tender plants; but they should not have much wet.

31. Seeds of this are rarely produced in England; but it increases very fast by the stalks, which put out roots; as do many other species. It should have little wet, especially in winter. If the plants are plunged into the tan-bed in the stove, the stalks will strike new roots into the tan, and may be cut off to make new plants.

[This will apply to several other sorts. Most of them will also grow by cuttings, laid a few days in the shade to dry; being of a succulent nature.]

PIPER. See *Capficum*, *Fagara*.

—— aggregatum. See *Lacistema*.

—— jamaicense. See *Myrtus Pimenta*.

PIPERELLA. See *Thymus*.

PIPERI SIMILIS. See *Vitex*.

PIPERIDGE TREE. See *Berberis*.

PIPERITA. See *Fagara*.

PIPERODENDRON. See *Schinus*.

PIRIGARA. See *Gustavia*.

PIRIPEA. See *Buchnera*.

PIRIQUETA. See *Turnera*.

• Forster.

PIRUS. See *Pyrus*.]

PISCIDIA. (From *Piscis* and *Capio*; the leaves and twigs being bruised and thrown into water to intoxicate the fish, and thus make them an easy prey.)

Lin. gen. n. 856. Reich. n. 927. Schreb. n. 1164.

Jacqu. amer. 209. Juss. 358. Piscipula. Loeft.

it. 275. Ichthyomethia. Brown. 276.

Class. 17. 4. Diadelphia Decandria.

Nat. order of *Papilionaceæ* or *Leguminosæ*.

GENERIC CHARACTER.

CAL. Perianth one-leafed, bell-shaped, five-toothed: the upper teeth nearer.

COR. Papilionaceous. Banner ascending, emarginate. Wings the length of the banner. Keel crescent-shaped, ascending.

STAM. Filaments ten, uniting in a sheath cloven above. Anthers oblong, incumbent.

PIST. Germ pedicelled, compressed, linear. Style filiform, ascending. Stigma acute.

PER. Legume pedicelled, linear, with four longitudinal membranaceous angles, one-celled, separated by doubled isthmuses.

SEEDS some, subcylindric.

ESSENTIAL CHARACTER.

Stigma acute. Legume winged four ways.

SPECIES.

1. *Piscidia Erythrina*. Jamaica Dogwood Tree.

Lin. spec. 993. Syst. 642. Reich. 3. 397. Jacqu.

amer. 206. pict. 103. Loeft. it. 275. Swartz

obs. 276.

Ichthyomethia. Brown. jam. 296.

Coral arbor. Sloan. jam. 2. 39. t. 176. f. 45. Raii dendr. 108.

Pseudo-Acacia filiquis alatis. Plum. spec. 19. ic. 233. f. 2.

Leaflets ovate.

2. *Piscidia carthagenensis*.

Lin. spec. 993. Syst. 642. Reich. 3. 397. Jacqu.

amer. 210. pict. 103.

Phaseolis accedens, Coral arbor, &c. Pluk. phyt. t. 214. f. 4.

Leaflets obovate.

DESCRIPTIONS, &c.

1. This rises with a stem to the height of twenty-five feet or more, almost as large as a man's body, covered with a light-coloured smooth bark, and sending out several branches at the top without order. Leaves pinnate, with seven leaflets for the most part, two inches long, and one inch and a half broad, commonly opposite. Flowers of a dirty white colour, succeeded by oblong pods, which have four longitudinal wings, and are jointed between the cells.

[Swartz describes it as a middle-sized tree, with an unarmed trunk, and spreading branches. Leaflets quite entire, pubescent, deciduous. Racemes thyrsoid, terminating, many-flowered, with decussated branchlets. Flowers peduncled, numerous, rather large. Calyx goblet-shaped, five-cleft, unequal, of a dusky-purplish colour, hoary; the two upper segments scarcely divided, the three lower ovate, the middle one acute. Banner of the corolla roundish, compressed, covering the wings and keel, keeled at the back: wings ovate, clawed, oblique, white with blood-red veins: keel curved in, gibbous, bifid, blood-red at the tip. Germ striated, pubescent: style curved in, awl-shaped. Legume membranaceous, compressed; the wings not lateral, but marginal in pairs. Seeds roundish.]

This tree is a native of Jamaica, and grows chiefly in the low lands (by way sides, Jacqu. on dry calcareous hills, Swartz) where it generally rises to the height of twenty or thirty feet; sometimes more. It flowers about May or June (March and April, Swartz) and throws out all its blossoms before the appearance of the foliage; (or sometimes with it, Jacqu.) but the leaves succeed pretty soon. The bark of the root (leaves and twigs, Jacqu.) is used for the same purposes, and with the same effects, as the leaves and branches of Surinam poison; (Cytisus 2. 296.) it is pounded, and mixed with the water, in some deep and convenient part of a river or creek, whence it may spread itself; in a few minutes the fish, that lie hid under the rocks or banks, rise to the surface, where they float as if

if they were dead; most of the large ones recover after a time, but the smaller fry are destroyed. The eel is not intoxicated with common doses, though it is affected very sensibly; for the moment the particles spread where it lies, it moves off with great agility. Jacquin observes, that this quality of intoxicating fish is found in many other American plants.

This is generally considered as one of the best timber-trees in the island. The wood is very hard and resinous; and lasts almost equally in or out of water. It is of a light brown colour, coarse, cross-grained and heavy^p.

It makes excellent piles for wharfs. The stakes soon form a good live fence. The bark of the trunk is very refringent; a decoction of it stops the immoderate discharge of ulcers, especially when it is combined with the Mangrove bark; it cures the mange in dogs; and would probably answer well for tanning leather^q.

It was cultivated in 1690, in the Royal Garden at Hampton Court^r.]

2. This differs from the first in the shape and consistence of the leaves, which are more oblong and of a firmer texture; in other respects they are very similar.

Native of the West Indies. [Jacquin found it on the coast in woods, near Carthagea.

He remarks that it has the habit of the preceding, but that it is double the size in all its parts. The leaflets are obovate and very blunt, sometimes with a point and sometimes without. It seems never to have flowered in Europe. Plumier's synonym, which Linneus attaches to the first, Jacquin gives to the second species.]

PROPAGATION AND CULTURE.

Both sorts are equally propagated by seeds, when they can be obtained fresh from the countries where they naturally grow, for in Europe these plants do rarely flower; there are plants now in the Chelsea Garden which are more than twenty years old, and if they had not been two or three times shortened, would have been more than twenty-five feet high, yet have not attempted to flower though they are in perfect health.

The seeds must be sown upon a good hot-bed in the spring, and when the plants come up and are fit to transplant, they should be each planted in a small pot filled with light earth, and plunged into a hot-bed of tanner's bark, and afterward treated in the same way as hath been directed for the ERYTHRINA.

PISCIPULA. See *Piscidia*.

PISHAMIN. See *Diospyros*.

PISONIA. (So named by Plumier, in honour of William Piso, a physician at Amsterdam, author of the *Natural History of Brasil*, 1648 fol.

Lin. gen. n. 1162. *Reich. n.* 1279. *Schreb. n.* 1603.

Plum. gen. 11. *Houst. Gartn. t.* 76. *Juss.* 91.

Pentagonotheca. Vaill. act. gall. Jacq. amer. 274.

Class. 23. 2. Polygamia Dioecia.—Heptandria Monogynia. Swartz.

Nat. order of *Nyctagines*, Juss.

GENERIC CHARACTER.

* Male.

CAL. scarcely any.

COR. one petalled, bell-shaped, five-cleft: segments acute, patulous.

STAM. Filaments five, six or seven, awl-shaped. Anthers roundish, twin.

PIST. Germ oblong. Style short. Stigma pencil-shaped.

* Female.

CAL. and COR. as in the Male.

PIST. Germ oblong. Style simple, cylindrical, longer than the corolla, erect. Stigmas bifid.

PER. Berry oval, often five-cornered, valveless, one-celled.

SEED single, smooth, oblong.

ESSENTIAL CHARACTER.

Cal. scarcely any. Cor. bell-shaped (funnel-shaped, G.) five-cleft. Stam. five or six. Pist. one.

^p Browne.

^q Long, 824.

^r Hort. kew.

Capf. superior, one-celled, valveless. (Berry, Gen.) one-seeded.

Male and Female on the same or on different plants.

SPECIES.

1. *Pisonia aculeata*. Prickly Pijonia.

Lin. spec. 1511. *syst.* 920. *Reich.* 4. 361. *hrt. cliff.* 457. *Jacqu. amer.* 274. *piet.* 133. *Brown. jam.* 358. *Gartn. fruct.* 1. 367. *Plum. gen.* 7. *ic.* 227. *f.* 1. *Pluk. phyt. t.* 108. *f.* 2. (Rhamnus) *Sloan. jam.* 2. 25. *t.* 167. *Raii dendr.* 95. (Paliuro affinis.)

Spines axillary spreading very much.

[2. *Pisonia subcordata*.

Swartz prodr. 60.

Unarmed, leaves cordate-roundish, fruits dry subclavate five-cornered, angles muricate at the tip.

3. *Pisonia nigricans*.

Swartz prodr. 60.

P. inermis. Jacqu. amer. 275. 2. *piet.* 133.

Unarmed, leaves ovate-acuminate, flowers cymed erect, fruits berried.

4. *Pisonia coccinea*.

Swartz prodr. 60.

Unarmed, leaves lanceolate-ovate, peduncles terminating loose, flowers nodding, fruits berried.

5. *Pisonia inermis*.

Lin. syst. 920. *Reich.* 4. 361.

P. mitis. Lin. spec. 1511.

P. malabarica non spinosa. Amm. herb. 582.

Stem unarmed.]

DESCRIPTIONS, &c.

1. The male plants of the prickly *Pisonia* differ so much in appearance from the female, that those who have not seen them rise from the same seeds, would suppose they were different species, I shall therefore give short descriptions of each.

The male plants have stalks as thick as a man's arm, which rise ten or twelve feet high; the bark is of a dark brown colour, and smooth; these send out many branches by pairs opposite, which are much stronger than those of the female, and do not hang about so loose. They are garnished with obovate stiff leaves, an inch and a half long, and an inch and a quarter broad, standing opposite on short foot-stalks. From the side of the branches come out short spurs, like those of the Pear-tree, having each two pairs of small leaves at bottom, and from the top comes out the peduncle, which is slender, about half an inch long, dividing at the top into three; each of these sustain a small corymb of herbaceous yellow flowers, each having five stamina standing out beyond the petal, terminated by obtuse anthers.

The stalks of the female plants not being so strong as those of the male, require support. These rise eighteen or twenty feet high, sending out slender weak branches opposite, which are armed with short, strong, hooked spines, and have small oval leaves, about an inch and three quarters broad; these stand opposite on the larger branches, but on the smaller they are alternate, and have short foot-stalks. The flowers are produced in small bunches at the end of the branches, sitting upon the germ; they are shaped like those of the male, but have no stamina; in the center is situated a cylindrical style, crowned with five spreading stigmas. The germs afterwards turn to a channelled, five-cornered, glutinous capsule, armed with small crooked spines, each containing one oblong, oval, smooth seed.

[Jacquin describes it as an inelegant tree, with round, reclining branches, wanting support. Spines awl-shaped, acuminate, axillary, opposite, perpendicular to the branch, strong, recurved at the points. Leaves oval, acute, quite entire, smooth, petioled, opposite. Racemes corymbed, branched, axillary and terminating, not reaching beyond the leaves, but when in fruit very much elongated. Flowers small, numerous, yellowish green, supported by three awl-shaped bractes, if the flower terminates the branchlet of the raceme, but with two only, if it is placed at the side of it, the raceme itself then serving for the third.

Jacquin observed many plants of this species about Kingston in Jamaica, where they are abundant, and always

always traced the hermaphrodite and female flowers to different individuals.

Browne affirms that the flowers are very various; being sometimes hermaphrodite on every branch, sometimes male in one branch and female in another, and sometimes male, female and hermaphrodite on the different parts of the same plant; but most commonly they are all of one kind. It is a strong withey climber, the main trunk being sometimes no less than five or six inches in diameter; but this is generally in the woods, where it thrives best, and is commonly supported by the help of some of the neighbouring trees. It is frequently cut for hoops, when there is a scarcity of other wood.

Gærtner describes the fruit as a superior capsule, oblong, blunt, five-cornered, coriaceous, muricate with little barbed glutinous prickles, in a double row at the angles; it is of a very dark brown colour, one-celled and valveless. Seed oblong, roundish, slightly attenuated downwards, striated, having a depressed longitudinal groove on one side, of a very dark colour. A bristle-shaped cord connects the top of the seed and of the capsule. Skin of the seed single, membranaceous, dry, thin. Albumen central, cylindrical, marked with a deep groove, farinaceous, very white. Embryo the size of the seed, yellowish: lobes leafy, rolled longitudinally into a cylinder about the albumen, and inclosing it entirely: radicle conical, short, inferior.—The capsule is certainly valveless, though Linneus described it otherwise, being misled by Plumier's figure. Jacquin remarked only a single row of barbed prickles, in the plants from Domingo.

In Jamaica it is called Cock's-spur or Fingrigo. Mr. Miller cultivated it here in 1739. It flowers in march and april.]

This plant is very common in the savannas, and other low places in the island of Jamaica, as also in several other islands in the West Indies, where it is very troublesome to whoever passes through the places of their growth, fastening itself by the strong crooked thorns to the clothes; and the seeds being glutinous and burry, also fasten themselves to whatever touches them: so that the wings of the ground-doves and other birds, are often so loaded with the seeds, as to prevent their flying, by which means they become an easy prey.

[2. Native of Antigua.

3. Swartz refers the *P. inermis* of Jacquin to this species. Jacquin describes it as a small tree without thorns, upright, twelve and sometimes twenty feet in height, with a trunk five inches in diameter: when it grows in thick coppices it acquires an inelegant habit, not much unlike the first species. Leaves oblong-lanceolate, acuminate. Racemes like those of the prickly sort, but not elongated when in fruit; continuing after the fruit is fallen, and then becoming red. Bractes the same. Flowers small, greenish yellow, having a slight odour. Berry black, soft, containing a whitish pulp, which is often wanting, being probably eaten by insects, for it is always found in the unripe fruit. This tree does not at all agree with that which is figured in the *Hortus Malabaricus*, under the name of *Katu-kara-walli*; for it is prickly. *P. inermis* of Jacquin is common in the woods and coppices about Carthagen in New Spain. Swartz found his *P. nigricans* in Jamaica.

4. Native of Hispaniola.

5. This species rests on the authority of Ammann. The figure in *Hortus Malabaricus* cannot be this species, being thorny. Swartz refers the *P. inermis* of Jacquin to his *P. nigricans*, n. 3. which see.

According to Linneus, it is a native of the East Indies. Forster ascribes it to the Society islands.]

PROPAGATION AND CULTURE.

In Europe this plant is preserved in the gardens of some curious persons for variety; it is propagated by seeds, which should be sown in pots filled with light rich earth, and plunged into a hot-bed of tanner's bark; and when the plants come up, they should be transplanted into separate pots, and plunged into the hot-bed again, where they may remain till Michaelmas, when they should be removed into the stove, and

plunged into the bark-bed, and treated in the same manner as has been directed for several tender plants of the same country; observing in hot weather to give them plenty of water, but in winter they should have it more sparingly. They are too tender to thrive in the open air of this country at any season of the year, wherefore they should be constantly kept in the stove. They retain their leaves most part of the year in England.

PISTACHIA and PISTACHIA NUT. See *Pistacia*.

PISTACIA. (Πιστάκια of Theophrastus and Dioscorides. Derivation unknown.)

Lin. gen. n. 1108. Reich. n. 1212. Schreb. n. 1511.

Terebinthus. Tournef. t. 345. Juss. 371.

Lentiscus. Tournef.

Class. 22. 5. Dioecia Pentandria.

Nat. order of *Amentaceæ*. *Terebintaceæ*, Juss.

GENERIC CHARACTER.

* Male.

CAL. Ament loose, scattered, composed of small one-flowered *scalelets*.

Perianth proper, five-cleft, very small.

COR. none.

STAM. Filaments five, very small. Anthers ovate, four-cornered, erect, patulous, large.

* Female.

CAL. Ament none.

Perianth trifold, very small.

COR. none.

PIST. Germ ovate; larger than the calyx. Styles three, reflex. Stigmas thickish, hispid.

PER. Drupe dry, ovate.

SEED. Nut ovate, smooth.

Obs. Terebinthus Tournef. has pinnate leaves with an odd leaflet. Lentiscus Tournef. has pinnate leaves without any odd leaflet.

ESSENTIAL CHARACTER.

MALE an ament. Cal. five-cleft. Cor. none.

FEM. distinct. Cal. trifold. Cor. none. Styles two. Drupe one-seeded.

SPECIES.

1. *Pistacia officinalis*. *Pistacia Tree*.

Ait. hort. kew. 3. 398.

P. trifolia. Lin. spec. 1454. Reich. 4. 245. hort. cliff. 456. Sauv. meth. 219. Gouan illustr. 79.

Pistacium mas ficulum, folio nigricante. Bocc. mus. 2. 139. t. 93.

Terebinthus f. *Pistacia trifolia*. Tournef. inst. 580.

Leaves simple ternate and pinnate, leaflets oval.

2. *Pistacia narbonensis*.

Lin. spec. 1454. Reich. 4. 246. Gron. orient. 313.

Gouan monsp. 503. illustr. 79. Sauv. monsp. 219.

Terebinthus peregrina fructu majore Pistacii simili eduli. Baub. pin. 400. Tournef. inst. 579.

T. indica major fructu rotundo. Baub. hist. 1. 277.

β. Terebinthus major, Pistaciæ folio. Lob. adv. 412. Leaves pinnate and ternate suborbiculate.

3. *Pistacia vera*.

Lin. spec. 1454. Juss. 884. Reich. 4. 246. mat. med.

212. Gron. orient. 312. Desfont. atlant. 363.

Gouan illustr. 79. Blackw. t. 461. Kniph. cent. 2. n. 58, 59. Regn. bot.

P. Terebinthus. Mill. dict. n. 1.

P. peregrina fructu racemoso f. Terebinthus indica. Baub. pin. 407.

Pistacia. Baub. hist. 1. 275. Ger. 1248. emac. 1436.

Park. theat. 1417. Raii hist. 1682. Camer. epit.

170. Matth. 222. Dod. pempt. 817.

Terebinthus indica Theophrasti, Pistacia Dioscoridis.

Lob. adv. 413. Tourn. inst. 580. Dubam. arb. 2.

306. t. 88.

Leaves unequally pinnate, leaflets subovate recurved.

4. *Pistacia Terebinthus*. Common Turpentine Tree.

Lin. spec. 1455. Reich. 4. 246. hort. cliff. 456.

ups. 296. mat. med. 212. Woodv. med. bot. 415.

t. 153. Sauv. monsp. 219. Gouan hort. 503.

Gron. orient. 311. Desfont. atlant. 364. Scop.

carn. n. 1218. Villars dauph. 2. 547. Gouan

illustr. 79. Forsk. ægypt. cent. 8. p. 219. Blackw.

t. 478. Regn. bot.

P. vera. Mill. dict. n. 4.

- Terebinthus*. *Clus. hist.* 1. 15. *Dod. pempt.* 871.
Ger. emac. 1433. 1. *Raii hist.* 1577. *Baub. hist.*
 1. 279. *Camer. epit.* 51.
T. vulgaris. *Baub. pin.* 400. *Tournef. inst.* 579.
Dubam. arb. 2. 306. t. 87.
T. angustiore folio vulgarior. *Park. theat.* 1527. 2.
Leaves unequally pinnate, leaflets ovate-lanceolate.
 [5. *Pistacia atlantica*.
Desfont. atlant. 364.
Leaves deciduous unequally pinnate, leaflets lanceolate
somewhat waved, petioles winged.]
 6. *Pistacia Lentiscus*. *Mastick Tree*.
Lin. spec. 1455. *Reich. 4.* 247. *hort. cliff.* 456.
upf. 996. *mat. med.* 213. *Woodv. med. bot.* 412.
t. 152. *Sauv. monsp.* 219. *Gron. orient.* 310.
Gouan monsp. 503. *illustr.* 79. *Desfont. atlant.*
 365. *Ludw. cët. t.* 41. *Blackw. t.* 195. *Kniph.*
cent. 1. n. 64 & 5. n. 67. *Regn. bot.*
α. Lentiscus vulgaris. *Baub. pin.* 399. *Tournef. inst.*
 580. *Dubam. arb.* 1. 354. t. 136. *Jonst. hist.*
 297. t. 84.
Lentiscus. *Clus. hist.* 1. 14. *Dod. pempt.* 871.
Camer. epit. 50. *Lob. ic.* 2. 96. *Tabern. ic.* 1026.
Matth. 105. *Ger.* 1243. *emac.* 1432. *Park.*
theat. 1524. 1. *Raii hist.* 1579.
Common Mastick Tree.
β. Pistacia massiliensis *Mill. dict. n.* 6.
Terebinthus angustifolia massiliensis. *Tourn. H. R.*
par.
Narrow-leaved Mastick Tree.
Leaves abruptly pinnate, leaflets lanceolate.

DESCRIPTIONS, &c.

1. In the Levant, where the *Pistacia* is a native, this tree grows to the height of twenty-five or thirty feet; the bark of the stem and old branches is of a dark russet colour, but that of the young branches is of a light brown. The leaves in the *vera* of Linneus (n. 3.) are composed of two or three pairs of leaflets, terminated by an odd one; they approach towards an ovate shape, and their edges turn back: in the *trifolia* of Linneus, the leaves, for the most part have three, but sometimes four ovate leaflets, of a dark green colour: and the *narbonensis* has three or five roundish leaflets, of a light green colour. The leaves in all these, which seem not to be distinct species, emit an odour like that of the nut, when they are bruised. Some of the trees produce male flowers, others female; and some, when they are old, have both on the same tree. The male flowers come out from the side of the branches in loose bunches, and are of an herbaceous colour. The female flowers come out in the same manner in clusters.

[Mr. Swinburn observes, that the male tree of the *Pistacia* (*trifolia*. *Lin.*) has small oblong blunt leaves, of a dusky green; the flowers thick and in bunches; the female blossoms are more scattered, the leaves larger, harder, rounder, and of a lighter colour. The male puts forth its flowers first, and some gardeners pluck them whilst yet shut, dry them, and afterwards sprinkle the pollen over the female tree: but the method usually followed in Sicily, when the trees are far asunder, is to wait till the female buds are open, and then to gather bunches of male blossoms ready to blow; these are stuck into a pot of moist mould, and hung upon the female tree, till they are quite dry and empty. This operation is called *tuchiarare*, and never fails to produce fructification; sometimes the gardeners ingraft the male bud upon the female tree. The male tree is called in the Sicilian language *Scornabecco*, and the fruit *Fastugo**. Our old writers call it *Fisticke nut*.

Though one variety of the *Pistacia* tree has the appellation of *narbonensis*, and *P. trifolia* is said to be a native of Sicily, yet there is no doubt of its having originally been brought into Europe, with most of our valuable fruits, from the eastern countries. Pliny relates, that the Emperor Vitellius introduced it into Italy from Syria, when he was Legate in that province.

Gouan thus distinguishes the three species or rather varieties of the *Pistacia* tree.

* Travels in the Two Sicilies, vol. 2. p. 255.

1. *P. trifolia* has two or three flowering buds from the ends of the branches, below the branching bud. These have no leaves. Racemes compound, naked or leafless. The branching bud puts forth pubescent, almost silky leaves, the first ternate, the next quinate and simple, or in an inverted order, the primary ones quite simple: all the leaflets are orbiculate, fleshy, very smooth, rugged and netted with veins, acuminate, but not unfrequently blunt and emarginate, two inches wide and a little more in length; the odd leaflet largest, at the base acuminate, and as it were running down into the petiole; which is flat, thick and almost winged: the lateral leaflets sessile, alternate and opposite. Racemes in both sexes similar. According to Linneus it is a native of Sicily.

2. *P. narbonensis* agrees with the preceding in the manner of flowering, and the situation of the buds: but the racemes are larger. Leaflets ovate-oblong, acuminate, narrower, on short petioles but not sessile, with a longitudinal nerve sometimes making one side of the leaf narrower. Foliation as in *P. Terebinthus*. Fruit twice as large as those of *Terebinthus*, subovate, reddish, the skin netted and wrinkled, on one side gibbous downwards, or sometimes from the middle only.

According to Linneus it grows about Montpellier, as well as in Persia, Mesopotamia and Armenia, where it was found by Rauwolf.]—Mr. Miller says it grows in Italy and the South of France, but is supposed to have been transplanted from some other country.

3. [*P. vera* has the appearance of the preceding. The flowering and branching buds are in the same respective situation. Racemes less compound, and almost as in *P. trifolia*, one to four, alternate. The scalelets separating the florets are concave, larger and deciduous. Leaflets five at most, very sharp-pointed, not unfrequently obliquely ovate-lanceolate, or wider downwards on one side.

According to Linneus, this is a native of Persia, Arabia, Syria and India. It is frequent about Aleppo, and Rauwolf says that there are whole woods of it near Sermin and Basilo.] Mr. Miller affirms that it grows naturally in Barbary, Spain, Italy and the Levant. [But he confounds the *Pistacia* and Turpentine tree. His *Pistacia Terebinthus* is the former, and his *P. vera* is the latter.—Desfontaines says it is cultivated in the kingdom of Tunis; and that Linneus's *P. trifolia* seems to be nothing more than a variety of it.

The *Pistacia* tree was cultivated in England in 1570, by Mr. Gray, as appears from Lobel; it flowers here in april and may[†].

4. The situation of the buds is similar to that in the three preceding species. Leaflets seven, the middle ones for the most part larger, or the odd leaflet and the two inmost smaller than the four others; each ovate-oblong, by no means acuminate but yet styled, most of them also are wider on one side. Fruit like that of *P. narbonensis*, but only half or a third of the size, not at all wrinkled, and towards the top gibbous on one side, (but not downwards, as in *P. narbonensis*) with the style, and having sometimes a concave circle near the base[‡].

Monf. Villars describes it as a low shrub, but very thick. The wood is odorous and balsamic. The leaves have two pairs of leaflets, terminated by an odd one which is larger; they are firm, and shining on the upper surface. The flowers form branching catkins at the axils of the leaves, and are reddish.

Native of Barbary and the South of Europe. Cultivated in England in 1730. It flowers here in june and july[§].

Cyprus or Chian Turpentine, which this tree furnishes, is procured by wounding the bark of the trunk in several places, during the month of july, leaving a space of about three inches between the wounds; from these the Turpentine is received on stones, upon which it becomes so much condensed by the coldness of the night, as to admit of being scraped off with a knife, which is always done before sun-rise: in order to free

† Hort. kew.

‡ Gouan illustr.

§ Hort. kew.

it from all extraneous admixture, it is again liquified by the sun's heat, and passed through a strainer; it is then fit for use. The quantity produced is very considerable; four large trees, sixty years old, only yielding two pounds nine ounces and six drams; but in the eastern part of Cyprus and Chio the trees afford somewhat more, though still so little as to render it very costly, and on this account it is commonly adulterated, especially with other turpentine. The best Chio Turpentine is generally about the consistence of thick honey, very tenacious, clear and almost transparent, white inclining to yellow and of a fragrant smell, moderately warm to the taste, but free from acrimony and bitterness. For the medicinal qualities of Turpentine, see *Pinus Larix*^y.

5. This is a large tree, with a thick wide roundish head. Bark on the small branches gray. Leaflets seven or nine, very smooth, quite entire, waved and subrepand on the edge, bluntish. Petiole compressed above, surrounded here and there with a very short wing. Male flowers terminating, in thyrsoid racemes; with a small, ovate, deciduous, silky scale, excavated above, at the base of each branchlet. Calyx three or five-parted; the segments awl-shaped and pubescent. Stamens five, but sometimes though seldom seven; filaments very short; anthers oblong, two-lobed, blunt, deep red, with the pollen yellow. Females in loose paniced racemes. Scales narrower than in the males. Calyx three or five-parted, with acute segments. Styles purple, often unequal. Germ very small, ovoid. Drupe somewhat fleshy, roundish, nearly the size of a pea, when ripe blueish; containing a roundish nucleus. In younger trees the leaves are sometimes elliptic.

Native of Barbary: very common in sandy uncultivated fields near Cossa, where many being in rows, it is plain, that this tree was once cultivated there. At the foot of the mountains near Mayane, Tlemsen, &c.

From the bark of the trunk and branches flows at different seasons of the year, but especially in summer, a resinous juice, hardening in the air, of a pale yellow colour, of an aromatic smell and taste that is not unpleasant, scarcely to be distinguished from oriental Mastick, and known by the same name *Heulc* among the Moors. It is inspissated into lamellæ round the branchlets, or into irregular globules, differing in thickness and shape, frequently as big as the end of the finger or thumb, some of which drop from the tree and are found scattered on the ground. The Arabs collect this substance in autumn and winter, and make the same use of it as of the Mastick from Scio; chewing it to give a pleasant smell to the mouth, and brightness to the teeth.

At the foot of mount Atlas this tree is larger than any other which grows there, but the resinous juice is softer, and of a much less pleasant smell and taste, than that which flows from the trees of the desert, which is probably occasioned by the climate being cooler, and the soil more moist and fertile. The leaves have frequently thick round red galls on them, resembling berries. The Moors eat the drupes; and bruise them to mix with their dates^z.]

6. The Lentiscus or common Mastick tree rises to the height of eighteen or twenty feet, the trunk being covered with a gray bark. It sends out many branches, which have a reddish-brown bark. The leaves have three or four pairs of small leaflets, of a lucid green on their upper, but pale on their under side: the midrib has two narrow borders or wings running from one leaflet to another. The male flowers come out in loose clusters from the sides of the branches, are of an herbaceous colour, appear in may, and soon fall off: they are generally on different plants from the fruits, which also grow in clusters, and are small berries, of a black colour when ripe.

[Fabricius remarks, that the male plant in time produces hermaphrodite flowers with three stamens and five styles, which are followed by fruit.

It is observed by Gouan that the buds are different from those of the other sorts; the branch-bearing

buds being terminating; the flowering-buds in both sexes axillary and in pairs: hence the aments are also in pairs, close, almost united at the base, and equal: the female aments are longer and narrower, the males thicker and shorter. The leaves have five leaflets on each side, which are nearly equal but variable; some being lanceolate, or oblique, so that one side is gibbous downwards, the other upwards, some emarginate, and most frequently alternate. The petioles are so much winged, that the leaves may be called articulately pinnate. There is frequently a thread between the outer leaflets.

Desfontaines describes the trunk as covered with a wrinkled and tubercled bark; the branches as numerous, twisted, and forming a roundish head: the leaves as perennial; the petiole channelled and compressed above; the leaflets smooth, opposite or alternate, even, rigid, paler underneath, attenuated at the base, quite entire, obtuse or acute, mucronate. Male flowers small, crowded, sessile, racemed, axillary. Filaments longer than the calyx; anthers purple, two-lobed, two-celled. Female flowers axillary, racemed; racemelets a little longer and looser. Berry roundish, at first red, but when ripe brownish.

Lentiscus or Mastick tree is a native of the South of Europe, and the Levant. Desfontaines informs us that it is very common in Barbary both wild on the hills and cultivated in gardens; but that it is little if at all resinous, though the branches and bark of the trunk were wounded at different seasons of the year; that the wood however yields an aromatic smell in burning; and that the berries yield an oil fit both for the lamp and the table.

In the island of Chio the officinal Mastick is obtained most abundantly, by making transverse incisions in the bark of the tree, whence the Mastick exudes in drops, which are suffered to run down to the ground, and after they are concreted they are collected for use. These incisions are made at the beginning of august, when the weather is very dry, and are continued till the end of september.

Mastick is a resinous substance, brought to us in small yellowish transparent brittle grains or tears: it has a light agreeable smell, especially when rubbed or heated: on being chewed, it first crumbles, soon after sticks together, and becomes soft and white, like wax, without impressing any considerable taste. It totally dissolves, except the earthy impurities, which are commonly in no great quantity, in rectified spirit of wine, and then discovers a degree of warmth and bitterness, and a stronger smell than that of the resin in substance. Boiled in water, it impregnates the liquor with its smell, but gives out little or nothing of its substance; distilled with water, it yields a small quantity of a limpid essential oil, in smell very fragrant, in taste moderately pungent. Rectified spirit brings over also in distillation the more volatile odoriferous matter of the Mastick.

It is a common practice with the Turkish women to chew this resin, especially in the morning, not only to render their breath more agreeable, but to whiten the teeth, and strengthen the gums; they also mix it with their fragrant waters, and burn it with other odoriferous substances in the way of fumigation. It is used in Europe by japanners, in some of their varnishes.

As a medicine, Mastick is considered to be a mild corroborant and astringent; and as possessing a balsamic power, it has been recommended in hæmoptylis, proceeding from ulceration, fluor albus, debility of the stomach, and in diarrhoeas and internal ulcers. Chewing this drug has likewise been said to be of use in pains of the teeth and gums, and in some catarrhal complaints; it is now however seldom used either externally or internally.

The wood of this tree is received into the *Materia Medica* in some foreign Pharmacopœias, and is highly extolled in dyspeptic, gouty, hæmorrhagic, and dysenteric affections^a.

It was cultivated here in 1664; as appears in Evelyn's kalendar; and flowers in may^b. The only

^y Woodville.

^z Desfontaines.

^a Woodville.

^b Hort. kew.

tree which Dr. Woodville observed to flower in England, was a male plant in the Apothecaries Garden at Chelsea.]

β. This rises to the same height as the preceding; but differs from it in having a pair or two of leaflets more to each leaf, much narrower and of a paler colour. [Gouan says it differs from the common Mastick only in having the leaflets smaller by half, five or seven on each side, sharper, more alternate, and the petioles more concave above.]

Native of the country about Marfeilles and some other places in the South of France.

PROPAGATION AND CULTURE.

The Pistacia-nut tree is propagated by the nuts, obtained from abroad, planted in pots filled with light kitchen-garden earth, and plunged into a moderate hot-bed: when the plants appear, admit a large share of air to them, to prevent their drawing up weak; and by degrees harden them to bear the open air, to which expose them the beginning of June till autumn, when they should be placed under a hot-bed frame to screen them from the frost in winter; for while they are young, they are too tender to live through the winter in England without protection, but they should always be exposed to the air in mild weather; these plants shed their leaves in autumn, and therefore should not have much wet in winter; and in the spring, before the plants begin to shoot, they must be transplanted each into a separate small pot; and if they are plunged into a very moderate hot-bed, it will forward their putting out new roots; but as soon as they begin to shoot, they must be gradually hardened, and placed abroad again; these plants may be kept in pots three or four years till they have got strength, during which time they should be sheltered in winter; and afterwards they may be turned out of the pots, and planted in the full ground, some against high walls to a warm aspect, and others in a sheltered situation, where they will bear the cold of our ordinary winters very well, but in severe frosts they are often destroyed. The trees flower and produce fruit in England, but the summers are not warm enough to ripen the nuts.

4. The Turpentine tree may be treated in the same manner, and is as hardy. There was a tree of this sort growing in the garden of the Bishop of London at Fulham, against a wall, which was planted there in Bishop Compton's time, and endured the winters without cover: and some trees of this sort which were planted in the open air in the garden of his Grace the Duke of Richmond, at Goodwood in Suffex, survived several winters without any protection.

6. The plants of this sort are generally propagated by laying down their young branches, which, if properly managed, will put out roots in one year, and may then be cut off from the old plants, and each transplanted into separate small pots. These must be sheltered in winter, and in summer placed abroad in a sheltered situation, and treated in the same way as other hardy kinds of green-house plants. It may also be propagated by seeds in the same way as the others; but if the seeds are not taken from trees growing in the neighbourhood of the male, they will not grow; and if they are kept out of the ground till spring, the plants rarely appear till the spring following. When these plants have obtained strength, some of them may be turned out of the pots, and planted against warm walls; where, if their branches are trained against the walls, they will endure the ordinary winters very well, and with a little shelter in severe winters they may be preserved.

[PISTACIA. See *Bursera*, *Hamamelis*, *Royena*, *Staphylea*.

PISTACIA SIMARUBA. See *Bursera gummifera*.

PISTACIO-VITEX. See *Vitex*.

PISTACIUM. See *Pistacia*.

PISTIA. (Πίσια, *alveus*.)

Lin. gen. n. 1023. Reich. n. 1112. Schreb. n. 1112.

Jacqu. amer. 234. Juss. 69. Korda-pail. Plum.

39.

Class. 16. 3. *Monadelphia OEtandria*.

Nat. order of *Miscellaneæ*. *Hydrocharides*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. one-petalled, unequal, erect, permanent. *Tube* short, closely embracing the germ. *Border* cordate-roundish, widened, acuminate, entire, contracted in the middle on both sides by a lateral plait bent inwards.

STAM. *Filament* round, thick, blunt, springing almost perpendicularly from the centre of the border of the corolla, hanging over the pistil, surrounded at the base by a membranaceous disk, augmented below on both sides by a fringe hanging down, the width of the anthers. *Anthers* six to eight, globular, placed in a ring on the margin of the filament at the top:—three to eight, but generally three. Swartz.

PIST. *Germ* subovate, twice as long as the tube of the corolla, fastened to the back of the petal by a longitudinal thickened line extending to the very origin of the filament. *Style* thick, erect, shorter than the filament. *Stigma* blunt, subpeltate.

PER. *Capsule* ovate, compressed, one-celled.

SEEDS very many, oblong, depressed at the top and there umbilicated with a dot, fastened horizontally to the back of the capsule where it adheres to the corolla.

OBS. This plant was placed by Linneus in the class *Gynandria*, but Swartz, after Jacquin, has placed it better in that of *Monadelphia*.

ESSENTIAL CHARACTER.

Cal. none. Cor. one-petalled, tongue-shaped, entire. *Anthers* six or eight, placed on the filament. *Style* one. *Caps.* one-celled, at the bottom of the corolla.

SPECIES.

1. Pistia Stratiotes.

Lin. spec. 1365. syst. 825. Reich. 4. 62. fl. zeyl. n. 322. Loeßl. it. 281. Jacqu. amer. 234. pist. 115. t. 225. Brown. jam. 329. Swartz obs. 343.

Plantago aquatica. Rumph. amb. 6. t. 74.

Korda-pail. Rheed. mal. 11. 63. t. 32.—*palustris folio oblongo specioso*. Plum. gen. 30.

β. *Stratiotes ægyptia*. Bauh. hist. 3. 787. Mor. hist. 3. 619. f. 15. t. 4. f. inf. Vess. ægypt. 44. t. 45. Raii hist. 1324.

S. Hai-alem-maoni. Alp. ægypt. 106. t. 108.

Lenticula palustris 6. f. ægyptia, f. *S. aquatica*, foliis fedo majore latioribus. Bauh. pin. 362.

Sloan. jam. 1. 15. t. 2. f. 2.

DESCRIPTION, &c.

This is a stemless, floating, elegant plant. Roots many, a foot and half long, put forth simple fibres from their circumference, an inch and half in length, numerous, not ill representing the leaves of *Ranunculus aquaticus*. Other capillary fibres, shorter and in clusters, come out at the base of the leaves and the origin of the principal roots. Leaves various in number and size according to the age of the plant, whilst the plant is in vigour about twenty, spread out in a circle or like a rose, a foot in diameter. They are obovate, attenuated at the base, for the most part quite entire, sometimes emarginate, sessile, patulous, lanuginose at the base, between the nerves and on the upper surface villose, thick, spongy, a little succulent, and therefore well adapted for floating; but on the back, from a thicker very large and subovate area they push forth ascending, very thick, and extremely prominent nerves. According to Swartz, the leaves are subsessile, wedge-shaped at the base, elliptic, radiate-veined, glaucous-velvety on the upper surface: the central leaves are smaller than the outer ones; the inmost erect, convoluted, tomentose. Runners are produced from the root under the leaves; they are long, and terminated by other smaller plants. The corolla of Jacquin is called by him a spathe.—Flowers whitish, inodorous, axillary, solitary and erect, on a short peduncle. The corolla shrivels up more or less, and bursts as the germ increases.

Adanson in his history of Senegal affirms, that the primary root is fixed strongly into the bank. Jacquin did not attend to this circumstance, but remarks, that in taking the plants out of the water, he never found any

any resistance: he suggests however that the young plants may be fixed at first, and afterwards break loose^c.

Native of Asia, Africa, South America, and the West Indian islands, in stagnant waters and quiet streams; flowering in april.]

PISTOLOCHIA. See *Aristolochia* and *Fumaria*.

PISUM. (Πισον of Theophrastus: from πισσω, *pinso*, tundo, decortico, the ancients being accustomed to bruise or grind their legumes. Others derive it απο του πισειν, because it lies on the ground unless supported. Some from the city Pifa, where it was supposed to abound. But the latter derivation is generally reprobated.)

Lin. gen. n. 870. Reich. n. 944. Schreb. n. 1184.

Tournef. t. 215. Juss. 360. Gært. t. 152.

Ochrus. Tournef. t. 219, 220.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-cleft, acute, permanent; the two upper segments shorter.

COR. Papilionaceous. Standard very broad, obcordate, reflex, emarginate with a point. Wings two, roundish, converging, shorter than the standard. Keel compressed, semilunar, shorter than the wings.

STAM. Filaments diadelphous: one simple, superior, flat-awl-shaped; and nine awl-shaped below the middle united into a cylinder which is cloven at top. Anthers roundish.

PIST. Germ oblong, compressed. Style ascending, triangular, membranaceous, keeled with the sides bent outwards. Stigma growing to the upper angle, oblong, villose.

PER. Legume large, long, roundish or compressed downwards, with the top acuminate upwards, one-celled, two-valved.

SEEDS several, globular.

OBS. The seeds of Ochrus Tournef. are marked with an oblong hilum or scar.

The seeds of Pisum Tournef. are fastened by a roundish hilum.

ESSENTIAL CHARACTER.

Style triangular, above keeled, pubescent. Cal. has the two upper segments shorter.

SPECIES.

1. Pisum sativum. Common Pea.

Lin. spec. 1026. Reich. 3. 457. hort. upf. 215. cliff. 369. mat. med. 172. Ludw. ed. t. 169. Gært. fruct. 2. 331.

Pisum. Camer. epit. 213. Blackw. t. 83. Rivin. tetr. t. 36—38. Fuchs. hist. 626. Park. parad. 522.

P. vulgatus. Lob. ic. 2. 65.

β. P. hortense majus. Baub. pin. 342. Mor. hist. 2. f. 2. t. 1. f. 1.

Common Marrowfat Pea.

γ. P. humile. Mill. dict. n. 2.

Dwarf Pea.

P. humile caule firmo. Tournef. inst. 394.

δ. P. arvense fructu viridi. Tournef. inst. 394.

Green Rouncival Pea.

ε. P. cortice eduli. Tournef. inst. 394. P. saccharatum. Park. parad. t. 523. f. 5.

Sugar Pea.

ζ. P. umbellatum. Baub. pin. 342. Mill. dict. n. 3. Ger. 1045. 3.

P. erectius comosum. Baub. hist. Raii hist. 894. Rose or Crown Pea.

η. P. quadratum.

P. majus quadratum. Baub. pin. 342. Raii hist. 894.

θ. P. arvense. Lin. spec. 1027. fl. suec. n. 638. Gunn. norv. n. 76.

Field Pea.

P. pulchrum, fol. anguloso. Baub. hist. 2. 297. Mor. 2. 1. 4. Raii hist. 894.

Petioles round, stipules rounded at bottom and crenate, peduncles many-flowered.

^c Jacquin.

2. Pisum maritimum. Sea Pea.

Lin. spec. 1027. Reich. 3. 458. fl. suec. n. 640. lapp. n. 272. Hudf. angl. 313. Wither. arr. ed. 3. 629. Fl. dan. t. 338. Smith spicil. t. 9. angl. 760.

P. maritimum. Ger. emac. 1250. Raii hist. 894.

syn. 319.—perpetuum. Munt. phyt. 44. t. 230.

P. spontaneum maritimum anglicum, & aliud marit. britannicum. Park. theat. 1060. 4 & 5.

P. spont. perenne repens humile. Mor. hist. 2. 47. f. 2. t. 1. f. 5.

Pisa sponte nascentia. Caii opusc. l. 2. 29. 2.

Petioles flattish above, stem angular, stipules sagittate, peduncles many-flowered.

3. Pisum Ochrus. Yellow-flowered Pea.

Lin. spec. 1027. Reich. 3. 458. hort. cliff. 370. upf. 215. Kniph. cent. 10. n. 71.

Ochrus folio integro capreolos emittente. Baub. pin. 343.

Ervilia sylvestria. Dod. pempt. 522.

O. f. Ervilia. Ger. emac. 1249. f. 1. Raii hist. 899.

—flore & fructu albo. Park. theat. 1066. f. 1.

Lathyr species quæ Ervilia sylvestria Dodonæo.

Baub. hist.

Petioles decurrent membranaceous two leaved, peduncles one-flowered.

DESCRIPTIONS, &c.

1. [Root annual, slender, fibrous. Stems hollow whilst young, brittle, branched, smooth, weak, climbing by terminating tendrils. Leaves abruptly pinnate, composed usually of two pairs of leaflets, which are oval and smooth. Stipules large, surrounding the stem or branch. Flowers lateral, two or three together on long peduncles. Corolla white, greenish white, purple or variegated. Legumes commonly in pairs, about two inches long, of an oblong form, smooth, swelling at the straight future, where the seeds are fastened, flattened next the other future, which arches especially towards the end. Seeds from five or six to eight or nine, commonly globular, but in some varieties irregular or approaching to a cubic form, smooth, white, yellow, blue, gray, brown or greenish, with a small oblong umbilicus. The colour of the whole plant is glaucous, or hoary green, from a white meal which covers it. Linneus remarks that the leaflets are conduplicate or doubled together.

It is said to be a native of the South of Europe. Loureiro informs us that it is found in China and Cochinchina, but that it is not frequent, and perhaps not indigenous. According to Thunberg, it is cultivated in most provinces of Japan.

Like other favoured plants, this has many varieties. The principal ones are given above.

Ray has sixteen.

1. Pisum vulgare parvum album arvense. Baub. hist. Common white field Pea.

P. minus. Ger. 1045. 2.

2. P. arvense flore roseo, fructu fusco aut ex cinereo nigricante. Gray Pea.

3. P. flore roseo, fructu variegato. Maple-pea.

4. P. minora ex purpureo variegata. Viciæ similia. Baub. hist.

5. P. parva viridia. Baub. hist.

6. P. sylvestre nigrum maculatum bæticum. Park.

7. P. erectius comosum. Baub. hist. Rose Pea.

8. P. sine tunicis durioribus in siliqua magna alba. Baub. hist. Sugar Pea.

P. excorticatum. Ger. 1045. 4.

9. P. siliqua carnosâ incurva f. falcata eduli. Sickie Pea.

10. P. flore rubente striato, pro coccineo missio. Scarlet Pea.

11. P. majus quadratum. Rouncival Pea.

P. majus. Ger. 1045. 1.

12. P. majora alba. Baub. hist. White Hasting Pea.

13. P. magna rubra variegata. Baub. hist.

14. P. virginiana. Baub. pin.

15. Pisi pulchra species folio anguloso. Baub. hist.

16. P. sylvestre. Clus. This is said to be perennial, and to have been observed by Clusius in various parts of Hungary and about Vienna, in mountain woods. All the other varieties are annual.

The varieties enumerated by Parkinson, in his *Paradisus*, 1629, are

1. The Rouncivall.
2. The green Hasting.
3. The Sugar Pease.
4. The Spotted Pease.
5. The Gray Pease.
6. The white Hasting.
7. The Pease without Skins.
8. The Scottish or Tufted Pease, which some call the Rose Pease.
9. The Early or French Pease, which some call Fulham Pease, because the grounds thereabouts bring them soonest forward for any quantity, although sometimes they miscarry by their haste and earliness.]

Out of the great variety of Garden Peas cultivated in England, Mr. Miller mentions only those which are commonly known, placing them according to the time in which they are gathered for the table:

- | | |
|-------------------------|-------------------------|
| 1. The Golden Hotspur. | 10. Sugar Dwarf. |
| 2. The Charlton. | 11. Sickie Pea. |
| 3. The Reading Hotspur. | 12. Marrowfat. |
| 4. Masters's Hotspur. | 13. Dwarf Marrowfat. |
| 5. Essex Hotspur. | 14. Rose, or Crown Pea. |
| 6. The Dwarf Pea. | 15. Rouncival Pea. |
| 7. The Sugar Pea. | 16. Gray Pea. |
| 8. Spanish Morotto. | 17. Pig Pea. |
| 9. Nonpareil. | |

[The *Hotspurs* and *Hastings* have their names from their coming to bear early in the season. The six first varieties are of this nature, and being low growers, require sticks of three or four feet only in height; and the Dwarf Pea not so much. New varieties of these are raised almost every year, which because they differ in some slight particular, are sold at an advanced price, and have frequently the names of the persons who raised them, or the place where they first grew. These varieties are not permanent, and without the greatest care will soon degenerate. Besides the above, we have the *early* Charlton Hotspur, the *early* Golden Hotspur, *Nicholas's earliest* Hotspur, &c. &c.]

Of the larger Peas (7 to 13 and 15) there are also several varieties; as the large and Dwarf Marrowfat; the large and Dwarf Sugar Pea; the Green, and White Rouncival Pea, &c. They all grow tall, and require sticks from five or six to seven or eight feet in height.

Besides the common Rose or Crown Pea, there is a variegated one—the Egg Pea—the Cluster Pea—the large Gray Pea—the crooked Gray Pea, and innumerable others of those which are used in Field culture.

Dr. Plott enumerated some of these in 1683. Henley Gray. Blue. Sandwich. Hampshire Kids. Horn Gray. Early White. Latter White. Blue and Green. Bowdies. Red-shanks. Cotswould. Partridge. Black-eyed Whites. Small Rath-ripe. Rose. Horn. Large Huscods.—These have had their day, and others have succeeded, to yield again to others.]

Mr. Miller has a perennial Pea, which he calls *Pisum americanum* or *Cape Horn Pea*, from its having been brought by Lord Anson's cook, when he passed that Cape, where this Pea was a great relief to the sailors; but it is not so good for eating as the worst fort. cultivated in England. It is a low trailing plant; there are two leaflets on each foot-stalk, those below spear-shaped and sharply indented on their edges; but the upper ones small and arrow-pointed. The flowers are blue, each peduncle sustaining four or five of them. Legumes taper, near three inches long. Seeds round, about the size of Tares.

2. [Sea Pea has a perennial root, running far and deep among the stones or into the sand in every direction. Stems procumbent, quadrangular, a little compressed, striated, smooth, leafy, many-flowered, glaucous, often reddish. Leaves alternate, alternately and abruptly pinnate, spreading. Leaflets sessile, oval, obtuse with a little point, entire, smooth, many-veined, glaucous: common footstalk flattish, striated, ending in a branched thread-shaped smooth tendril. Stipules two together, equal, acute, toothed at the base, of

the texture and colour of the leaflets, but smaller. Clusters of flowers axillary, solitary, as long as the leaves, erect, many-flowered. Common peduncle round, striated, smooth; pedicels alternate, short, single-flowered. Flowers rather large, a little drooping: corolla beautifully variegated with red and purple: standard obovate, notched, purple, with a red ridge and veins; wings and keel paler, blueish. Germ nearly cylindrical: style bluntish, uniform and not broader in the upper part: stigma reaching from its middle to the top on the fore part. Pod oblong, compressed, smooth, straight on the upper side, keeled below, terminated by the permanent style. Seeds several^d.

According to Mr. Woodward, the stems are slightly pubescent and short. Leaves numerous: leaf-stalks angular, pubescent: leaflets alternate, on the lower leaves five or seven, upwards nine or eleven; there being always one more on the lower than on the upper side of the leaf-stalk, which is terminated by a tendril, sometimes simple, but oftener bifid at the extremity. Stipules oval-lanceolate, broad, arrow-shaped at the base. Flowers crowded on the summit of the naked peduncle. Pods long and narrow. Linneus (*fl. suec.*) observes that the exterior leaflets are smallest: this does not seem to be by any means constant, though it is sometimes so. The figure in *Flora Danica* is bad. Muntingius's is very good. Morison's is moderate^e.

It is well remarked by Dr. Smith, that this species is almost as nearly allied to *Lathyrus* as to *Pisum*, both in habit and generic character; and that *Pisum sativum* is not more different in external appearance from the genus of *Lathyrus*, than *Vicia Faba* or the Bean is from the other *Viciae*. These however, he adds, are matters of opinion; and in so natural a class, it is very difficult to find out certain and obvious marks of distinction^f.

Sea Pea is a native of the sea shore, among stones or in sand in different parts of Europe, as Sweden, Denmark, England; in great plenty on the stony beach, between Orford and Aldborough in Suffolk; near Hastings, Rye, and Pevensey in Sussex; near Lyd in Kent; Guildford over against the Comber, and Ingolne mills in Lincolnshire; on the sharp ridge running from Portland island to Bridport, to the right of the ferry, among loose pebbles, fifteen or twenty feet above high water mark, but the cows eat it down so that it is difficult to procure a specimen in flower. It is found in Canada, quite smooth, and of double the size. Thunberg also says it grows in Japan, in the island of Nipon, by way sides, flowering in march, april and may. With us it flowers in july and august.

We learn from the epistles of the learned Caius that the Sea Pea was first observed in the year 1555, when in a great scarcity, the poor people on the coast of Suffolk about Orford and Aldborough supported themselves with it for some time. This story is retailed by Stow and Camden; with the addition, that they were supposed to spring up opportunely in that year of dearth, from a shipwrecked vessel loaded with Peas; whereas the Sea Pea differs from all the varieties of the garden or field Pea, in the length and continuance of its roots, the smallness and bitterness of its seed, and in the whole habit and appearance of the plant. It had probably grown a long time on Orford beach unobserved, till extreme want called it into public notice: the seed is so bitter, that it would not be eaten, except in a want of better food, and it is certainly not used at present, though it might be gathered in sufficient quantity; nay it is neglected by the very birds^g. The legend of the miraculous arrival of these Peas in a time of extreme scarcity, is still believed among the country people.]

3. Root annual. Stalk angular, near three feet high. Leaves on winged foot-stalks, each sustaining two oblong leaflets. Flowers pale yellow, small. Pods two inches long; containing five or six roundish seeds, a little compressed on their sides; these may be eaten green, but unless they are gathered very young

^d Smith.

^e MSS.

^f Spicil. p. 9.

^g Raii hist. 893. Ger. emac. 1250.

they are coarse, and at best not so good as the common Pea.

[Native of the South of Europe and the Levant. Ray observed it among the corn near Leghorn in Italy. —Johnson the editor of Gerard's herball (1633) says, it is found with us only in gardens. It flowers in june and july.]

PROPAGATION AND CULTURE.

Culture in Hotbeds.

It is a common practice with the gardeners near London, to raise Peas upon hot-beds, to have them very early in the spring; in order to which, they sow their Peas upon warm borders under walls or hedges, about the middle of October; and when the plants come up, they draw the earth up gently to their stems with a hoe, the better to protect them from frost. In these places they let them remain till the latter end of january, or the beginning of february, if they are preserved from frosts, observing to earth them up from time to time as the plants advance in height, as also to cover them in very hard frost with Peas-haulm, straw, or some other light covering, to preserve them from being destroyed; then, at the time before-mentioned, they make a hot-bed (in proportion to the quantity of Peas intended) which must be made of good hot dung, well prepared and properly mixed together, that the heat may not be too great. The dung should be laid about three feet thick, or somewhat more, according as the beds are made earlier or later in the season; when the dung is equally levelled, then the earth (which should be light and fresh, but not over rich) must be laid on about six or eight inches thick, laying it equally all over the bed. This being done, the frames (which should be two or two and a half feet high on the back side, and about eighteen inches in front) must be put on, and covered with glasses: after which it should remain three or four days, to let the steam of the bed pass off, before you put the plants therein, observing every day to raise the glasses to give vent for the rising steam to pass off; then when you find the bed of a moderate temperature for heat, you should, with a trowel, or some other instrument, take up the plants as carefully as possible, to preserve the earth to the roots, and plant them into the hot-bed in rows about two feet asunder; and the plants should be set about an inch distant from each other in the rows, observing to water and shade them until they have taken root; after which you must be careful to give them air at all times when the season is favourable, otherwise they will draw up very weak, and be subject to grow mouldy and decay. You should also draw the earth up to the shanks of the plants as they advance in height, and keep them always clear from weeds. The water they should have must be given them sparingly, for if they are too much watered it will cause them to grow too rank, and sometimes rot off the plants at their shanks just above ground. When the sun shines hot, cover the glasses with mats, otherwise their leaves will flag, and their blossoms fall off without producing pods; as will also keeping the glasses too close at that season. But when the plants begin to fruit, they should be watered oftener, and in greater plenty than before; for by that time the plants will have nearly done growing, and the often refreshing them will occasion their producing a greater plenty of fruit.

The sort of Pea which is generally used for this purpose is the Dwarf, for all the other sorts ramble too much to be kept in frames; the reason for sowing them in the common ground, and afterwards transplanting them on a hot-bed, is also to check their growth, and cause them to bear in less compass; for if the seeds were sown upon a hot-bed, and the plants continued thereon, they would produce such luxuriant plants as are not to be contained in the frames, and would bear but little fruit.

Culture of Peas in the open air.

The next sort of Pea which is sown to succeed those on the hot-bed is the Hotspur, of which there are reckoned three or four sorts; as the Golden Hotspur,

the Charlton Hotspur, the Masters's Hotspur, the Reading Hotspur, and some others, which are very little differing from each other, except in their early bearing, for which the Golden and Charlton Hotspurs are chiefly preferred; though if either of these sorts are cultivated in the same place for three or four years, they are apt to degenerate and be later in spring-fruiting, for which reason most curious persons procure their seeds annually from some distant place; and in the choice of these seeds, if they could be obtained from a colder situation and a poorer soil, than that in which they are to be sown, it will be much better than on the contrary, and they will come earlier in the spring. These must also be sown on warm borders, towards the latter end of october; and when the plants are come up, you should draw the earth up to their shanks in the manner before directed; which should be repeated as the plants advance in height (always observing to do it when the ground is dry) which will greatly protect the stems of the plants against frost; and if the winter should prove very severe, it will be of great service to the plants to cover them with Peas-haulm, or some other light covering; which should be constantly taken off in mild weather, and only suffered to remain on during the continuance of the frost; for if they are kept too close, they will be drawn very weak and tender, and thereby be liable to be destroyed with the least inclemency of the season.

In the spring you must carefully clear them from weeds, and draw some fresh earth up to their stems; but do not raise it too high to the plants, lest by burying their leaves you should rot their stems, as is sometimes the case, especially in wet seasons. You should also observe to keep them clear from vermin, which, if permitted to remain amongst the plants, will increase so plentifully as to devour the greatest part of them. The chief of the vermin which infest Peas are the slugs, which lie all the day in the small hollows of the earth, near the stems of the plants, and in the night time come out, and make terrible destruction of the Peas; and these chiefly abound in wet soils, or where a garden is neglected, and over-run with weeds; therefore you should make the ground clear every way round the Peas to destroy their harbours, and afterwards in a fine mild morning very early, when these vermin are got abroad from their holes, you should slack a quantity of lime, which should be sown hot over the ground pretty thick, which will destroy the vermin wherever it happens to fall upon them, but will do very little injury to the Peas, provided it be not scattered too thick upon them. This is the best method I could ever find to destroy these troublesome vermin.

If this crop of Peas succeeds, it will immediately follow those on the hot-bed; but for fear this should miscarry, it will be proper to sow two more crops at about a fortnight's distance from each other, so that there may be the more chances to succeed. This will be sufficient until the spring of the year, when you may sow three more crops of these Peas; one toward the beginning of january, the other a fortnight after, and the third at the end of january. These two late sowings will be sufficient to continue the early sort of Peas through the first season, and after this it will be proper to have some of the large sort of Peas to succeed them for the use of the family; in order to which, you should sow some of the Spanish Morotto, which is a great bearer, and a hardy sort of Pea, about the middle of february, upon a clear open spot of ground. These must be sown in rows about three feet asunder, and the Peas should be dropped in the drills about an inch distance, covering them about two inches deep with earth, being very careful that none of them lie uncovered, which will draw the mice, pigeons, or rooks, to attack the whole spot; and it often happens by this neglect, that a whole plantation is devoured by these creatures; whereas, when there are none of the Peas left in sight, they do not so easily find them out.

About a fortnight after this you should sow another spot, either of this sort, or any other large sort of Pea, to succeed those, and then continue to repeat sowing

sowing once a fortnight, till the middle or latter end of may, some of these kinds, only observing to allow the Marrowfats, and other very large sorts of Peas, at least three feet and a half, or four feet between row and row; and the Rose Pea should be allowed at least eight or ten inches distance from plant to plant in the rows, for these grow very large; and if they have not room allowed them, they will spoil each other by drawing up very tall, and will produce no fruit.

When these plants come up, the earth should be drawn up to their shanks (as was before directed) and the ground kept entirely clear from weeds; and when the plants are grown eight or ten inches high, you should stick some rough boughs, or brushwood, into the ground close to the Peas, for them to ramp upon, which will support them from trailing upon the ground, which is very apt to rot the large-growing sorts of Peas, especially in wet seasons; besides, by thus supporting them, the air can freely pass between them, which will preserve the blossoms from falling off before their time, and occasion them to bear much better than if permitted to lie upon the ground, and there will be room to pass between the rows to gather the Peas when they are ripe.

The dwarf sorts of Peas may be sown much closer together than those before-mentioned, for these seldom rise above a foot high, and rarely spread above half a foot in width, so that these need not have more room than two feet row from row, and not above an inch asunder in the rows. These produce a good quantity of Peas, provided the season is not over dry, but they seldom continue long in bearing, so that they are not so proper to sow for the main crop, when a quantity of Peas is expected for the table, their chief excellency being for hot-beds, where they will produce a greater quantity of Peas, provided they are well managed, than if exposed to the open air, where the heat of the sun soon dries them up.

The Sickle Pea is much more common in Holland than in England, it being the sort mostly cultivated in that country; but in England they are only propagated by curious gentlemen for their own table, and are rarely brought into the markets. This sort the birds are very fond of, and if they are not prevented, many times destroy the whole crop. This should be planted in rows about two feet and a half asunder, and should be managed as has been directed for the other sorts. Although I have directed the sowing of the large sorts of Peas for the great crop, yet these are not so sweet as the early Hotspur Peas; therefore it will also be proper to continue a succession of those sorts through the season, in small quantities, to supply the best table, which may be done by sowing some every week or ten days; but all those which are sown late in the season, should have a strong moist soil, for in hot light land they will burn up and come to nothing.

The large-growing sorts may be cultivated for the common use of the family, because these will produce in greater quantities than the other, and will endure the drought better, but the early kinds are by far the sweeter tasted Peas.

The best of all the large kinds is the Marrowfat, which if gathered young, is a well-tasted Pea, and this will continue good through the month of august if planted on a strong soil.

The Field Culture.

The Gray and other large winter Peas are seldom cultivated in gardens, because they require a great deal of room, but are usually sown in fields in most parts of England. The best time for sowing these is about the beginning of march, when the weather is pretty dry, for if they are put into the ground in a very wet season, they are apt to rot, especially if the ground be cold; these should be allowed at least three or four feet distance row from row, and must be sown very thin in the rows; for if they are sown too thick, the haulm will spread so as to fill the ground, and ramble over each other, which will cause the plants to rot, and prevent their bearing.

The common White Pea will do best on light sandy land, or on a rich loose soil. The usual method of

sowing these Peas is with a broad-cast, and so harrow them in; but it is a much better way to sow them in drills about three feet asunder; for less than half the quantity of seed will do for an acre, and the ground may be hoed, both to destroy the weeds, and earth up the Peas. The usual time for sowing these Peas is the middle of march or the beginning of april, on warm land; but on cold ground they should be sown a fortnight or three weeks later. In the common way of sowing they allow three bushels or more to an acre; but if they are drilled, one bushel and a half will be full enough.

The Green and Maple Rouncivals require a stronger soil than the white, and should be sown a little later in the spring; the drills also should be at a greater distance, as two feet and a half or three feet, for this sort is apt to grow rank, especially in a wet season. The ground between the rows should be hoed two or three times.

The Gray Peas thrive best on a strong clayey land: these are commonly sown under furrow; but by this method they are always too thick, and do not come up regularly, they therefore should also be sown in drills. Being much hardier than the former sorts, these may be sown towards the end of february.

The best method to sow these Peas is to draw a drill with a hoe by a line two inches deep, and having scattered the seeds in it, to draw the earth over them with a rake. This is a quick method for gardens; but where they are sown in fields, they commonly make a shallow furrow with the plough, and harrow in the seeds. Where labour is dear, it is a great expense to weed and earth up the plants by hand-hoeing; but it may be easily effected by a horse-hoe, which will not only kill the weeds, but by stirring the soil render it mellow, greatly promote the growth of the plants, and render the ground fitter to receive another crop the following season.

Saving Seed.

When any sorts are intended for seed, there should be as many rows left ungathered, as may be thought necessary to furnish a sufficient quantity; and when the Peas are in flower, they should be carefully looked over, to draw out all the plants which are not of the right sort; for there will always be some roguish plants, as the gardeners term them, which, if left, will cause the others to degenerate. The rest must remain until their pods are changed brown and begin to split; when the plants should be pulled up, and stacked till winter, or else threshed out as soon as they are dry, and put up in sacks. Let them not remain too long abroad after they are ripe, for wet will rot them; and heat after rain will cause the pods to burst and throw out the seeds.

By diligently drawing out bad plants, and marking those which come earliest to flower, the gardeners have greatly improved their Peas of late years, and are constantly endeavouring to get forwarder varieties.

As it is scarcely an object with gentlemen to save their own seed, except in the case of having a particular sort which they cannot purchase; so it is not advisable to continue sowing the same seed longer than two years on the same ground.

[Peas on Hotbeds.]

Sow under a south wall about the 24th of september; put them very near the wall, and when they peep out of the ground, cover them with earth as they advance, about an inch thick: in frost protect them with peas-haulm, wheat-straw, or dry fern. About the end of january, if the winter has been mild, the Peas will be some inches above ground: then make a hot-bed in the manner directed for Cucumbers; except that the dung may be only two feet thick.

Make the hot-bed four feet broad, level the dung well, and cover it with ten inches of light virgin earth. The frames should be two feet high in the back, sloping to fifteen inches in front. Having put these on the hot-bed; in the day time tilt up the glasses, that the steam may pass off. When the bed is become of a moderate temperature, take up the Peas with a ball of earth to their roots, and plant them

fourteen

fourteen inches row from row, and four inches plant from plant. Water them moderately at planting, but afterwards sparingly, for much water makes them grow to straw, and produce little fruit. Shade the beds from eleven until the sun is near off, and at the same time give them air in mild weather. Cover the dung which surrounds the frames with earth, that when the glasses are tilted up to give air, the Peas may not be blighted with the rancid steam of the dung.

Dwarf Peas, and some of the early Hotspurs may also be sown in pots in september, sinking the pots in the common earth; and when frost sets strong in, the pots may be set under cover, in a green-house or glass-case. Make a border in front of the green-house of good fresh earth; and about the beginning of december take the Peas out of the pots, and plant them in the border in rows at three feet distance, and ten inches asunder in the rows, watering them gently. Give them air, and draw the earth up to their roots. When they are in bloom give them a good portion of water, which has stood in the house twenty-four hours. A crop of Peas may be thus obtained about the middle of march.

Peas in the open ground.

It is better to sow two rows of Peas close together, that is, within ten inches or a foot of each other, leaving between each pair of those close rows an interstice of two feet for the dwarf Peas, of three feet for the early climbers, and three feet and a half or four feet for the larger sorts. The reason of this is, that the stakes or bushes being placed between two close rows will support both, whereas in the common way of sowing Peas, every row must have a row of bushes. Gardeners who vie with one another for the earliest Peas, never stake them, alledging that it gives them liberty to grow too much to haulm, and that the early fruit will thereby be prevented from ripening so soon. This may be the case in sandy soils; but in stronger lands, if the Peas, especially the larger sorts, are not supported, they will infallibly rot, before they can be fit for the table^b.

Field Culture of Peas.

Peas are cultivated by the farmer either alone or with Beans. In strong lands the Bean is the predominant crop, in lighter lands the Pea. In such lands the Pea is more frequently sowed alone. The sorts commonly sowed in fields are the Gray, the Blue, and the White. Of these there are innumerable transient varieties in our different counties. In Suffolk, where the culture of the Pea is well understood, they reckon 1. The common White. 2. The Forty-day. 3. The Charlton. 4. The Blue. 5. The large Gray. 6. The small Gray. 7. The Speckled. 8. The large Dutch. 9. The Dun.

Time of sowing.

The Gray Peas will bear being sown in autumn, and it is a common practice in Hertfordshire to begin Pea-sowing as soon as the Wheat-seed is over. The Peas which are sown in autumn or before Christmas are late sorts, and therefore are not proper where the crop is to be harvested time enough for Turneps.

The Forty-day, or the Charlton Pea, should be sown early in march; and if Turneps are intended, not later than that month: late sown crops are subject to the green fly or dolphin; and to avoid that it is recommended to sow in february. If Peas are not intended as a preparation for Turneps, many sow before Christmas; but this must be on dry land, and in a dry time; for if they are sown after rain or snow, the crop will suffer.

Tillage.

A common method in Suffolk is to put in Peas on a lay with only one ploughing; the seed to be pricked in with iron dibbles. This method succeeds greatly: but it should be practiced only on loams and good sand: very poor sand will not do for Peas; and on clay Beans answer far better.

When the crop is put on a stubble, the land should be ploughed in autumn, and, if the season requires it, twice in the spring; but one ploughing, judiciously

^b Justice's Brit. Gard p. 102 and 195.

timed, may do better than two. The seed may be either ploughed or harrowed in; if the former, it must not be above three inches deep: but harrowing in is safer, if the harrows let them in two inches; in this case they must be watched against rooks and pigeons.

Quantity of Seed.

Less than three bushels an acre ought not to be sown broadcast. One great object, perhaps the greatest in this crop, is to procure a thick cover over the soil, to destroy weeds, and breed a moist fermentation on the surface; which can never be effected with a thin crop. If the produce only be regarded, and the hoes are designed to be perpetually at work, two bushels and even less are enough.

Two bushels is the common allowance. Some few sow four bushels, but that is clearly too much.

Drilling and Dibbling.

When Peas are planted by hand, on a turf ploughed once, it is called dibbling. A man walking backwards, that he may not tread on the holes, strikes a dibble, that makes two holes, sometimes three, on a nine inch furrow, and is followed by boys, who drop a Pea in every hole. Both these operations are in Suffolk done for eight shillings an acre. They are covered by a bush-harrow. The Peas come up about four inches every way; and being so close neither want nor admit of hoeing. Seven pecks or two bushels of seed do an acre.

Drilling is used on land in tilth. The rows should be double at eighteen inches asunder, and then an interval of two feet: in the hoeing attention should be given to make the two rows clasp together.

Hoeing and Weeding.

Drilled Peas should be hand-hoed well whilst the crop is young, and afterwards in the intervals, taking care not to tread on the plants. If weeds get up afterwards, they ought not to be meddled with; for the crop will be pulled about and spoiled in getting them out. Even horse-hoeing should not be ventured after the plants are near maturity. Some hand-hoe once, and horse-hoe twice or thrice afterwards, as there may be occasion.

If broadcast Peas be hoed, it must be whilst they are very young: when they cling together, more mischief is done by going among them, than good by the hoe. If the land was in good order, and the seed sown thick enough, they will stand in no need of hoeing.

Harvesting.

Peas, when near ripe, are very apt to be devoured by rooks, pigeons, &c. they should therefore be well watched. They are generally cut with a tool called a *peas-make*, which is half an old scythe fixed in a handle, with which they are rolled as they are cut into small bundles called *wads*, in other places *wisps*. These should be small to dry well, and should lie out some days to wither. In some counties they are reaped with a hook. They are sometimes mown, but it is a very bad practice.

Preparation for Turneps.

By sowing the Charlton, or Forty-day Pea early in march, the crop will be cleared in june, or the first week in-july, which is a good season for Turneps, and on all dry soils, ought never to be neglected. If the harvest happens to be later, the wads should be laid in rows, and the ploughs sent in, by which a week or perhaps ten days may be gained. The advantages of this practice must be obvious, when it is considered that a thick smothering crop of Peas not only chokes weeds, but improves the soil, particularly in leaving the surface loose and friable, from the putrefactive fermentation carried on under the crop; by retaining moisture, and excluding the sun; and if the land be ploughed directly, which is a great point, though much neglected, proves a fine preparation for Turneps. The Peas are not the only gain, but the saving in tillage; for by this means the latter crop is put in upon one ploughing only, which can be effected no other way.

Produce.

Of all crops this is the most uncertain, and it is rarely considerable, two quarters and a half an acre are about the average produce: now and then four,

four and a half, and five quarters are gained, but probably not one year in ten.

The greatest burdens of Straw, in crops that perfectly cover the ground, do not yield a very large produce. If a man shades his land well, and gets two and a half or three quarters on an acre, he has reason to be satisfied with the produce.

Application.

The principal application of Peas is for fattening hogs. No other grain agrees better with them, especially when they are harvested dry and ground into meal.

Bread made of this meal was formerly much in use in some parts of Scotland, but of late it is said to have been almost wholly given up. It is reported to be mixed with wheat flour by the millers, when Peas are reasonable.

The Straw, if well harvested, is a very considerable object for fodder; it is little inferior to ordinary Hay, and all sorts of cattle thrive well on it; but it is apt to gripe some horses, if given too soon. It should not be used before January; and if it is found to have this effect, a few Turneps, Cabbages, Carrots or Potatoes, will correct it¹.

Culture in Kent.

The following varieties are commonly cultivated by Kentish farmers, viz. The Reading and Leadman's Dwarfs, for breaking Peas and fattening hogs; the Gray Polt; Nutmeg Gray; Early Dun, in East Kent called Sutton's Gray; and Shepherd's Gray: all which are for fattening hogs. Besides these, many others are cultivated for supplying the London seedsmen.

All are drilled in rows, about eighteen inches apart, from the middle of February to the end of March, and sometimes later. They are hand and horse-hoed, and are harvested from the middle of July till the end of September. They are reaped with a hook, called a podware hook. The produce is from one and a half to five quarters on an acre. Leadman's Dwarf, and the Early Gray are thought to be the most prolific. The Early Charlton is frequently off the ground in time to get a good crop of Turneps².

Culture in Middlesex.

About three thousand acres are annually cropped with Peas in this county; they are much on the increase, and are cultivated in the most clean and garden-like manner.

Preparation, &c.

On upwards of two thousand acres they succeed a clean crop of Beans; in which case the Bean stubble is ploughed up with a thin furrow about January, and during every dry time till March, and soon afterwards re-ploughed a full depth. The water-furrows are kept open, and the land remains in this state till seed time.

Peas sown with an intention of being sent to market green, succeed Clover, Corn or any other crop. In Essex they frequently follow Potatoes. As long as the land is cleared and properly prepared, which will generally be accomplished by the middle of November, White Hotspur Peas are planted for podding for the London market.

The land is generally a dry loamy sand, and manure is constantly ploughed in during January and February; after which it is harrowed, and is then fit for the reception of the seed, which is put into drills fifteen inches apart, mostly made across, but occasionally along the ridges; and the seed is covered in with the hoe. Some persons bush-harrow the whole. The quantity of seed sown is generally about three bushels an acre. Such as are intended for podding, are put into the ground every week or fortnight, during the months of January, February and March, for a regular succession of crops to supply the market daily. Gray Peas are sown during the whole of March.

Culture.

The intervals between the rows are twice hand-hoed, once when the plants are about three inches high,

¹ Young's Annals, n. 186. p. 113 to 122.

² Boys's survey, p. 90.

and again a short time before they are in blossom. The rows are laid down and well earthed up by the last hoeing, and they are carefully weeded by hand.

Harvesting.

Against the podding season poor people from every part of London apply to the farmers who have early Peas. Many of the richer sort sell their Peas by the acre to persons who employ the podders, and who gather by the sack of four bushels. About forty podders are set to ten acres. Carts are loaded and sent off so as to be delivered to the salesmen at market from three to five o'clock in the morning.

In Essex they are usually sold in the field at 5l. an acre, reserving the haulm for fodder.

The Peas are usually picked twice over, after which, if from a scarcity of hands any be left for seed, it is esteemed a loss. When hands are in plenty, the crop is picked clean, the haulm is cut up with hooks, removed on to every fifth ridge, or into a grass field to dry: it is then put into stacks for horse-feed, and the land is prepared as speedily as possible for Turneps. The podders are paid for the Marrowfats and other larger Peas about 1s. and for the smaller 16d. or 18d. per sack. They are sold in the market at from 5s. to 17s. per sack: so that this crop may be expected to return from less than 5l. to upwards of 20l. per acre.

The Gray and other late Peas stand to ripen their seed; they are then cut up with hooks, rolled into wads, turned once or twice, and then stacked up.

Application.

About one-third of the seed is eaten by men, and the rest by hogs. The haulm cut green, and dried quickly whilst in the full vigour of its sap is nearly as good as hay for cattle and horses¹.

2. Sea Pea may be propagated by seeds or by the roots. Though a native of the sea coast, it is easily cultivated in gardens.]

3. Yellow-flowered Pea may be managed in the same way with the Common Pea.

[PISUM. See *Paullinia*, *Vicia*, *Ulva*.]

—— cordatum & vesicarium. See *Cardiospermum*.

[—— quadratum. See *Lotus*.

PITAJAYA. See *Cactus*.

PITCAIRNIA. (So named by Mons. L'Heritier in honour of William Pitcairn, M. D. an eminent physician of London, and a collector of foreign plants, particularly from the Alps.)

L'Herit. fert. angl. 7. t. 11. Ait. kew. 1. 401.

Swartz descr. 578. t. 12. Hepetis. Soland.

Swartz prodr. 56. Lin. gen. ed. Schreb. n. 1741. p. 798.

Class. 6. 1. Hexandria Monogynia.

Nat. order of Coronariæ. Bromeliæ, Juss.

GENERIC CHARACTER.

CAL. one-leaved, three-parted, half superior, tubular, swelling at the base, permanent: segments lanceolate, erect.

COR. three-petalled. Petals linear, convoluted; with a nectariferous scale at the base.

STAM. Filaments six, inserted into the receptacle. Anthers oblong, erect.

PIST. Germ half superior, three-cornered. Style three-grooved. Stigmas three contorted.

PER. Capsules three, opening inwards:—three-cornered, trilocular, opening inwards three ways. L'Heritier.—three-celled, with the cells opening inwards. Swartz.

SEEDS very numerous, winged or membranaceous-appendicled on both sides, fastened to the receptacle.

OBS. The place of this genus is between *Tillandsia* and *Burmannia*, according to Swartz; between *Bromelia* and *Tillandsia*, according to L'Heritier.

ESSENTIAL CHARACTER.

Cal. three-leaved or three-parted, half-superior. Cor. three-petalled, with a scale at the base of each petal. Stigmas three, contorted. Caps. three, opening inwards. Seeds winged.

¹ Middleton's survey, p. 193 & 265. Vancouver's Essex, p. 89.

SPECIES.

1. *Pitcairnia bromeliæfolia*. *Scarlet Pitcairnia*.
L'Herit. fert. angl. 7. t. 11. Ait. kew. 1. 401.
Swartz descr. 580. Schneevogt. icon. fasc. 4. t. 11.
Hepetis angustifolia. Swartz prodr. 56.
Leaves ciliate-spiny, peduncles and germs very smooth.
2. *Pitcairnia angustifolia*. *Narrow-leaved Pitcairnia*.
Ait. kew. 1. 401.
Leaves ciliate-spiny, peduncles and germs tomentose.
3. *Pitcairnia latifolia*. *Broad-leaved Pitcairnia*.
Ait. kew. 1. 401.
Leaves quite entire somewhat spiny at the base.

DESCRIPTIONS, &c.

1. Root perennial, with long filiform subdivided fibres. Leaves radical, numerous, sheathing at the base, ensiform, three or four feet long, half an inch wide, membranaceous, somewhat glaucous, loose, serrate-spiny at the edge; spines recurved, shining, black. Scape upright, two feet high or more, round, covered with linear-lanceolate bractes, sheathing at the base, distant, long, the upper ones scarlet, flowering at the top. Peduncles scattered, distant, filiform, naked, smooth, an inch and half long, almost equal, one-flowered, have little membranaceous bractes under them. Petals and filaments blood-red. Stigmas red. Seeds brown, with one edge and the tip white.

Native of Jamaica, on the shady sides and precipices of the mountains^m. Cultivated in 1781, by Lord Ashburton. It flowers in Juneⁿ.

2. Native of the island of Santa Cruz. Introduced in 1777, by John Ryan, Esq. It flowers in December and January.

3. Native of the West Indies. Introduced in 1785, by Mr. Alexander Anderson. It flowers in August^o.

PITHYUSA. See *Euphorbia*.

PITSJEGAM. See *Jasminum*.

PITTONIA. See *Tournefortia*.

[PITTONIÆ SIMILIS. See *Ebretia*.

PITTOSPORUM. (From *πίτω*, to smear with pitch or turpentine, and *σπορος*, satio, the action of sowing. Should it not rather have been *Pittosperma*, from *σπερμα*, a seed?)

Banks. Lin. gen. Schreb. n. 379. Gært. t. 59.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

- CAL. Perianth five-leaved, inferior, deciduous.
COR. Petals five: claws concave, converging into a pitcher-shaped tube: borders ovate-oblong, spreading.
STAM. Filaments five.
PIST. Germ superior, roundish. Style filiform.
PER. Capsule subglobular-angular, mucronate, three-celled, three-valved: cells flowing with a liquid resin: partitions contrary to the valves.
SEEDS three or four, angular, fastened to the partition.

ESSENTIAL CHARACTER.

Cal. deciduous. Pet. five, converging into a tube.
Caps. two to five-valved, two to five-celled. Seeds covered with pulp.

SPECIES.

1. *Pittosporum coriaceum*. *Thick-leaved Pittosporum*.
Ait. kew. 3. 488. Vahl symb. 2. 43. Lin. spec. ed. Willd. 1145.
Leaves obovate obtuse very smooth coriaceous, capsules two-valved.
2. *Pittosporum tenuifolium*. *Thin-leaved Pittosporum*.
Gært. fruct. 1. 286.
Capsules three-valved.
3. *Pittosporum umbellatum*. *Umbelled Pittosporum*.
Gært. fruct. 1. 286.
Pittosporoides umbellata. Soland. mss.
Capsules two-valved.

DESCRIPTIONS, &c.

1. This is a tree with proliferous branches, three or four to each whorl, round, with an ash-coloured bark, from very short ovate imbricate buds. Leaves under each whorl three or four, two inches long, oblong, mostly obovate, quite blunt and entire, even, pale green, ending at the base in a petiole an inch in length. Peduncle from a distinct bud, solitary, an

inch in length, tomentose, many-flowered. Flowers on umbelled pedicels, the length of the peduncle, tomentose, five, the two middle ones two or five-flowered; the lateral one-flowered. Calyx tomentose, five-cleft: segments oblong, blunt. Corolla smooth, twice as long as the calyx. Petals linear, blunt.

Native of the Canary islands^p. Introduced in 1787, by James Webster, Esq. It flowers in May^q.

2. Capsule subglobular, dagger-pointed at the top, obscurely three-cornered, three-celled, three-valved, on the outside somewhat wrinkled, smoky; within bay-coloured, and having a yellowish resinous juice. Seeds three or four in each cell, variously angular, but commonly like the stones of the grape, marked on the back with a shallow groove, black, shining, anointed with turpentine.

3. Capsule subglobular, with two swellings, the transverse diameter longest, dagger-pointed at top, having a groove on both sides, and a ridge at both edges, from the prominent future, shagreened all over, two-celled, two-valved: cells resinous. Seeds four in each cell, very irregular, wrinkled, black, shining^r.

PLAGIANTHUS. (So named by Forster from *πλαγίος*, oblique, and *ανθος*, a flower. The petals being so disposed, that the flowers seem to be bent down sideways.)

Lin. gen. Schreb. n. 1121. Forst. gen. t. 43.

Class. 16. 5. Monadelphia Dodecandria.

GENERIC CHARACTER.

- CAL. Perianth five-cleft, short: segments very small.
COR. Petals five, ovate: two closer together, more remote than the rest.
STAM. Filaments collected into a cylinder. Anthers about twelve, ovate, clustered on the top of the cylinder.
PIST. Germ ovate, very small. Style filiform, concealed within the cylinder of stamens. Stigma club-shaped.
PER. Berry.

ESSENTIAL CHARACTER.

Cal. five-cleft. Pet. five, two approximating, remote from the other three. Berry.

SPECIES.

1. *Plagianthus divaricatus*.

Forst. prodr. n. 254.

Native of New Zealand.

PLANE TREE. See *Platanus*.

PLANTAGINELLA. See *Eriocaulon* and *Limnifella*.

PLANTAGINI ACCEDENS. } See *Pontederia*.

PLANTAGINIS FOLIIS. }

PLANTAGO. (*Planta tangenda*, Linn.—*A latitudine foliorum plantam pedis æmulantium*. Ray. From the broad leaves, like the sole of the foot.)

Lin. gen. n. 142. Reich. n. 148. Schreb. n. 186.

Tournef. t. 48. Juss. 90. Gært. t. 51.

Coronopus. Tournef. Psyllium. Tournef.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Plantagines*, Juss.

GENERIC CHARACTER.

- CAL. Perianth four-cleft, erect, very short, permanent.
COR. one-petalled, permanent, shrivelling: tube cylindric-globular: border four-cleft, reflex: segments ovate, acute.
STAM. Filaments four, capillary, erect, very long. Anthers somewhat oblong, compressed, incumbent.
PIST. Germ ovate. Style filiform, shorter by half than the stamens. Stigma simple.
PER. Capsule ovate, two-celled, opening transversely, having a loose partition.
SEEDS several or solitary, oblong.

OBS. The calyx in some species is irregular, in others regular.

ESSENTIAL CHARACTER.

Cal. four-cleft. Cor. four-cleft, with the border reflex. Stam. very long. Caps. two-celled, cut transversely.

SPECIES.

* With a naked scape.

1. *Plantago major*. *Great Plantain*.

Lin. spec. 163. syst. 155. Reich. 1. 319. Willd. 641.

hort. cliff. 43. fl. lapp. n. 62. succ. n. 122. mat.

med. 51. Woodv. med. bot. 39. t. 14. Gært.

fruct. 1. 236. Lamarck illustr. n. 1650. t. 85.

Huds. angl. 63. Wither. arr. ed. 3. 195. Curt.

^m Vahl.

ⁿ Hort. kew.

^o Gærtner.

to d.

^m Swartz descr.

ⁿ Hort. kew.

^o Idem.

- lond.* 2. 11. *Smith angl.* 182. *Relb. cant. n.* 115. *Sibth. oxon. n.* 174. *Fl. dan. t.* 461. *Hall. helv. n.* 660. *Scop. carn. n.* 161. *Pollich pal. n.* 159. *Leers herborn. n.* 106. *Neck. gallob.* 87. *Krock. files. n.* 231. *Villars dauph. 2.* 300. *Gmel. fib. 4.* 71. *n. 2. t.* 36. *Desfont. atlant.* 134. *Blackw. t.* 35. *Knorr. del. hort. 2. t. P.* *Berg. phyt.* 131. *Plenck, ic.* 58. *Fuchs. hist.* 38. *Dod. pempt.* 107. 1. *Camer. epit.* 261.
- P. major*, folio glabro non laciniato. *Baub. hist.* 3. 502.
- P. media.* *Matth.* 479.
- P. latifolia.* *Ger.* 338. 1. *emac.* 419. 1.
- P. latif. laevis.* *Lob. obs.* 162. 2. *ic.* 303.
- P. lat. vulgaris.* *Park. theat.* 493. *n.* 1, 2. *f.* 1. *Raii hist.* 876. *syn.* 314. *Petiv. brit.* 2. 4. 1.
- P. lat. glabra vulga.* *Mor. hist.* 3. *f.* 8. *t.* 15. *f.* 2.
- P. rubea.* *Brunf. herb.* 1. 25.
- β. *P. latif. glabra minor.* *Baub. pin.* 189. *Tabern. ic.* 731. *Raii hist.* 876. 2. *syn.* 314. 2. *Ger.* 339. 3. *Baub. hist.* 3. 505. 3. *With. arr. var.* 1.
- γ. *P. latif. glabra dentata.* *Petiv. brit. t.* 4. *f.* 2. *Park. theat.* 494. 5. *d.* *Wither. var.* 2.
- δ. *P. pyramidalis.* *Wither. arr. ed.* 3. 195. *var.* 3. *Ger.* 340. 5. *emac.* 420. 4. *Park. theat.* 494. 5 *b.* *Baub. hist.* 3. 503. 1. *Mor.* 8. 15. 3. *b, c.* *Petiv.* 4. 4.
- ε. *P. rosea.* *Rose Plantain.* *Baub. hist.* 3. 503. 1. *Raii hist.* 876.
- P. latif. rosea*, flor. quasi in spica dispositis. *Baub. pin.* 189. *Park.* 494. 5. *c.* *Ger. emac.* 420. 4. *Mor. hist.* 8. 15. 3. *a.* *Pet.* 4. 4. *Huds.* 63. *d.* *Wither. var.* 4.
- ζ. *P. major panicula sparsa.* *Baub. hist.* 3. 503. *Raii hist.* 877. *syn.* 314. 4. *Petiv.* 4. 5. *Huds.* 63. *Wither. var.* 5.
- P. latif. spica multiplici sparsa.* *Baub. pin.* 189. *Mor.* 8. 15. 4.
- P. latif. spiralis.* *Park. theat.* 494. 5. *a.*
- P. panic. sparsis.* *Ger. emac.* 420. 6. *Dod.* 107. 2. *Lob. obs.* 162. 4.
- Besom Plantain.*
- Leaves ovate smoothish shorter than the petiole, scape round, spike having the florets imbricate, seeds very many.
2. *Plantago crassa.* *Thick-leaved Plantain.* *Lin. spec. ed. Willd.* 641. *Willd. phytog.* 1. 3. *n.* 11. *P. crassifolia.* *Roth. catalect. bot.* 1. 29. *P. crispa.* *Jacqu. collect. suppl.* 34. *t.* 16. *P. bullata.* *Donn. hort. cant.* 15. *Leaves obovate shining waved somewhat fleshy subsessile, scape compressed below, flowers imbricate, remote at the base.*
3. *Plantago asiatica.* *Asiatic Plantain.* *Lin. spec.* 163. *Reich.* 1. 319. *ed. Willd.* 642. *Gmel. fib. 4. n. 2. t.* 37? *Leaves ovate smooth, scape angular, spike having the florets distinct.*
4. *Plantago maxima.* *Greatest Plantain.* *Lin. spec. ed. Willd.* 642. *Ait. kew.* 1. 151. *Jacqu. ic. rar.* 1. *t.* 26. *collect.* 1. 82. *Gmel. fib. 4. 71. t.* 35. *Leaves ovate somewhat toothblotted pubescent nine-nerved, spikes cylindrical imbricate, scape round.*
5. *Plantago media.* *Hoary Plantain.* *Lin. spec.* 163. *syn.* 155. *Reich.* 1. 319. *Willd.* 642. *hort. cliff.* 56. *fl. suec. n.* 129, 130. *Gartn. fruct.* 1. 237. *Huds. angl.* 63. *Wither. arr. ed.* 3. 196. *Smith angl.* 183. *Curt. lond.* 4. 14. 252. *Relb. cant. n.* 116. *Sibth. oxon. n.* 175. *Hall. helv. n.* 659. *Scop. carn. n.* 162. *Fl. dan. t.* 581. *Pollich pal. n.* 160. *Leers herborn. n.* 107. *Krock. files. n.* 232. *Villars dauph. 2.* 301. *Allion. pedem. n.* 295. *Berg. phyt. t.* 199. *Plenck, ic. t.* 59. *Camer. epit.* 262. *Dod. pempt.* 107. 4. *Fuchs. hist.* 39.
- P. incana.* *Ger.* 338. 2. *emac.* 419. 2. *Raii hist.* 877.
- P. major incana.* *Clus. hist.* 2. 109. 1. *Park. theat.* 493. 3. *Raii syn.* 314. *Petiv. brit. t.* 4. *f.* 3.
- P. major hirsuta.* *Baub. hist.* 3. 504. 1.

- P. latifolia incana.* *Baub. pin.* 189. *Mor. hist. f.* 8. *t.* 15. *f.* 6.
- P. major.* *Matth.* 480. *Brunf. herb.* 1. 23.
- β. *P. latifolia hirsuta minor.* *Baub. pin.* 189.
- P. lat. incana*, spicis variis. *Baub. pin.* 189. *Mor. hist.* 3. *f.* 8. *t.* 15. *f.* 7.
- Leaves ovate pubescent longer than the petiole, scape round, spike cylindrical, seeds solitary.
6. *Plantago virginica.* *Virginian Plantain.* *Lin. spec.* 164. *syn.* 155. *Reich.* 1. 320. *Willd.* 643. *Giseke ic. fasc.* 1. *n.* 4. *Gron. virg.* 16. *Mor. hist.* 3. 259. *f.* 8. *t.* 15. *f.* 8. *Pet. gaz. t.* 1. *f.* 10. *Leaves lanceolate-ovate pubescent somewhat toothblotted, spikes having the flowers remote, scape round.*
7. *Plantago altissima.* *Tall Plantain.* *Lin. spec.* 164. *Reich.* 1. 320. *Willd.* 643. *Jacqu. obs.* 4. *t.* 83. *Till. pis.* 146. *Krock. files. n.* 233. *Leaves lanceolate five-nerved toothed smooth, spike oblong-cylindrical, scape angular.*
8. *Plantago lanceolata.* *Ribwort Plantain.* *Lin. spec.* 164. *syn.* 155. *Reich.* 1. 321. *Willd.* 643. *vir. cliff.* 9. *hort. cliff.* 36. *fl. suec. n.* 131. *Huds. angl.* 64. *Wither. arr. ed.* 3. 196. *Lightf. scot.* 118. *Smith angl.* 184. *Engl. bot. t.* 507. *Curt. lond.* 2. 10. *Relb. cant. n.* 117. *Sibth. oxon. n.* 176. *Fl. rust. t.* 67. *Hall. helv. n.* 656. *Fl. dan. n.* 437. *Pollich pal. n.* 161. *Neck. gallob.* 87. *Scop. carn. n.* 163. *Leers herborn. n.* 108. *Krock. files. n.* 234. *Villars dauph. 2.* 301. *Desfont. atlant.* 134. *Blackw. t.* 14. *Berg. phyt. t.* 133. *Plenck, ic.* 60. *Trag.* 225. 2. *Baub. hist.* 3. 505. 1. *Tabern. ic.* 735. *Anderf. essays* 2. 253. *t.* 15.
- P. angustifolia major.* *Baub. pin.* 189. *Tournef. inst.* 127. *Mor. hist. f.* 8. *t.* 15. *f.* 9.
- P. longa.* *Matth.* 481. *Camer. epit.* 263.
- P. minor.* *Dod. pempt.* 107. 3. *Brunf. herb.* 1. 24.
- P. quinquenervia.* *Lob. ic.* 305. *Ger.* 341. 1. *emac.* 422. 1. *Raii hist.* 877. *syn.* 314.—major. *Park. theat.* 496. 1. *Petiv. brit. t.* 4. *f.* 6.
- β. *P. trinervia folio angustissimo.* *Baub. pin.* 189. *prodr.* 93. *Raii hist.* 878. 10. *Ger. prov.* 338. *t.* 12.
- P. angustifolia minor.* *Tabern. ic.* 732. *Ger.* 339. 4. *Park. theat.* 496. 3. *Raii syn.* 315. *Petiv. brit. t.* 4. *f.* 7.
- P. lanceolata minima.* *Baub. hist.* 3. 505. 2.
- γ. *P. angustifolia major*, caulium summitate foliosa. *Baub. pin.* 189. *Ger.* 341. 2. *Baub. hist.* 3. 506. 1. *Mor. hist. f.* 8. *t.* 15. *f.* 10.
- δ. *P. angust. minor prolifera.* *Pluk. alm.* 298. *Raii syn.* 315. *Clus. hist.* 2. 110. *Baub. hist.* 3. 506. 2. *Mor.* 8. 16. 10. *Petiv.* 4. 8. *Leaves lanceolate, spike subovate naked, scape angular.*
9. *Plantago capensis.* *Cape Plantain.* *Lin. spec. ed. Willd.* 644. *Thunb. prodr.* 29. *Leaves elliptic, flowers of the spike distinct.*
10. *Plantago Lagopus.* *Round-headed Plantain.* *Lin. spec.* 165. *Reich.* 1. 321. *Willd.* 644. *Desfont. atlant.* 135. *Poiret itin.* 2. 112. *P. angustifolia*, paniculis Lagopi. *Baub. pin.* 189. *prodr.* 98. *Tournef. inst.* 127. *Mor. hist. f.* 8. *t.* 16. *f.* 13. *Shaw specim. n.* 484.
- P. Catanance.* *Rauw. itin.* 4. *t.* 6. *Leaves lanceolate somewhat toothblotted, spike ovate hirsute, scape round.*
11. *Plantago lagopodioides.* *Desfont. atlant.* 135. *t.* 39. *f.* 2. *Leaves lanceolate nerved ciliate toothblotted, stem leafy, peduncles axillary, spikes ovate, bractes membranaceous.*
12. *Plantago lusitanica.* *Portugal Plantain.* *Lin. spec.* 1667. *syn.* 155. *Reich.* 1. 321. *Willd.* 644. *Desfont. atlant.* 135. *Barrel. rar. t.* 745. *Leaves broad-lanceolate three-nerved somewhat toothed and hairy, scape angular, spike oblong hirsute.*
13. *Plantago patagonica.* *Patagonian Plantain.* *Lin. spec. ed. Willd.* 645. *Jacqu. ic. rar.* 2. *t.* 306. *collect. suppl.* 35. *Leaves lanceolate-linear, somewhat channelled quite entire woolly-haired, scape round hirsute, spikes cylindrical, stamens not exceeding in length the tube of the corolla.*
- 9

14. *Plantago albicans*. Woolly Plantain.
Lin. spec. 165. *Reich.* 1. 322. *Willd.* 645. *hort. cliff.* 37. *Sauv. monsp.* 26. *Retz. obs.* 1. 11. *Forsk. descr.* 31. n. 4. *Desfont. atlant.* 136. *Villars dauph.* 2. 303.
P. angustifolia albida hispanica. *Tournef. inst.* 127.
P. ang. alb. *Dod. pempt.* 111.
P. mollis f. *Holosteum hirsutum albicans majus*. *Mor. hist. f.* 8. t. 16. f. 28.
Holosteum. *Camer. epit.* 707.
Holosteum hirs. alb. majus. *Baub. pin.* 190.
H. falmanticense majus. *Clus. hist.* 2. 110. *Lob. ic.* 307. *Tabern. ic.* 735. *Ger.* 342. 1. *emac.* 423. 1.
H. plantagini simile. *Baub. hist.* 3. 508. *Raii hist.* 880.
 β . *H. hirs. alb. minus*. *Baub. pin.* 190:—*falmanticense minus*. *Clus. Raii hist.* 880. n. 7.
Leaves lanceolate oblique villose, spike cylindrical erect, scape round.
15. *Plantago argentea*. Silvery Plantain.
Desfont. atlant. 136.
Leaves narrow-lanceolate quite entire silky hoary, scape not striated, spike round, flowers very much crowded.
16. *Plantago hirsuta*. Hairy Plantain.
Lin. spec. ed. Willd. 645. *Thunb. prodr.* 29.
Leaves linear ciliate, spike cylindrical, scape hirsute.
17. *Plantago alpina*. Alpine Plantain.
Lin. spec. 165. *synt.* 156. *Reich.* 1. 322. *Willd.* 645. *Hall. helv. n.* 657. *Bocc. mus.* 2. 22. *Gmel. fib.* 4. 72. *Jacqu. hort.* 2. t. 125. *Villars dauph.* 2. 302. *Krock. files.* n. 237.
Coronopus serpentina. *Baub. hist.* 3. 510. *Raii hist.* 880. 8.—& *omnium minima*. *Ejusd.* 511. *Raii hist.* 881. 9.
Holosteum hirsutum nigricans. *Baub. pin.* 190.
Leaves linear flat, scape round hirsute, spike oblong erect.
18. *Plantago Bellardi*.
Lin. spec. ed. Willd. 646. *Allion. pedem. n.* 300. t. 85. f. 3. *Vahl symb.* 2. 31.
P. Holostea. *Desfont. atlant.* 137. *Lamarck illustr.* n. 1667.
Holosteum falmanticum pusillum annuum. *Griff. virid. in Raii exter.* 382.
Leaves linear-lanceolate hairy, higher than the round hirsute scape, spike ovate erect.
19. *Plantago cretica*. Cretan Plantain.
Lin. spec. 165. *Reich.* 1. 322. *Willd.* 646. *hort. cliff.* 36. *Tournef. cor.* 5.
Holosteum f. *Leontopodium creticum*. *Baub. pin.* 190. *Raii hist.* 881. 13.
Leont. cret. *Clus. hist.* 2. 11.
Leaves linear, scape round very short woolly, spike roundish nodding.
20. *Plantago barbata*. Bearded-leaved Plantain.
Lin. spec. ed. Willd. 646. *Forst. in comm. gott.* 9. 25. t. 4.
Leaves oblong-lanceolate somewhat toothed bearded at the base, spike globular, four-flowered.
21. *Plantago ciliata*. Fringed Plantain.
Desfont. atlant. 137. t. 39. f. 3.
Leaves hoary narrow-lanceolate, scape about the same length with the leaves, hirsute, heads of flowers round leafless, corollas ciliate.
22. *Plantago maritima*. Sea Plantain.
Lin. spec. 165. *synt.* 156. *Reich.* 1. 322. *Willd.* 647. *fl. lapp. n.* 63. *succ. n.* 133. *Huds. angl.* 64. *Witber. arr. ed.* 3. 197. *Smith. angl.* 184. *Engl. bot. t.* 175. *Relb. cant. suppl.* 2. n. 1067. *Lightf. scot.* 118. *Fl. dan. t.* 243. *Pollich pal. n.* 162. *Scholl. barb. n.* 116. *Weber spicil.* 6. *Desfont. atlant.* 138.
P. marina. *Lob. obs.* 163. 2. *ic.* 306. *Ger.* 343. 3. *Raii hist.* 880. *syn.* 315. *Mor. hist. f.* 8. t. 17. f. 34.
P. marina vulgaris. *Park. theat.* 498. 1.
P. angustifolia. *Dod. pempt.* 108.
P. marit. major tenuifolia. *Tournef. inst.* 127.
P. montana. *Huds. angl. ed.* 1. 53.
Coronopus. *Ger. emac.* 425. 1. *Park. theat.* 499. 3.
C. marit. major. *Baub. pin.* 190.
P. an alpina angustifolia J. B? *Raii syn.* 315.
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- β . *P. Loeftingii*. *Huds. angl. ed.* 1. 52.
P. marina. *Ger. emac.* 423. 3.
Leaves linear almost quite entire channelled woolly at the base, spike cylindrical, scape round.
23. *Plantago subulata*. Awl-leaved Plantain.
Lin. spec. 166. *Reich.* 1. 323. *Willd.* 647. *Hoffm. germ.* 53. *Guett. stamp.* 2. 428. *Krock. files.* n. 238. *Villars dauph.* 2. 304. *Ger. prov.* 334. n. 9. *Desfont. atlant.* 138.
P. gramineo folio minor. *Tournef. inst.* 127.
Holosteum strictissimo folio minus. *Baub. pin.* 190.
Serpentaria omnium minima. *Lob. ic.* 439. *Ger.* 345. 3. *emac.* 426. 3. *Baub. hist.* 3. 511. *Raii hist.* 881. n. 9. v. *P. alpinam*, n. 17.
 β . *Holosteum massiliense*. *Baub. pin.* 190. *Raii hist.* 880. inf.
Leaves awl-shaped three-sided striated rugged, scape round.
24. *Plantago gracilis*. Slender-spiked Plantain.
Desfont. atlant. 139. *Poiret itin.* 2. 115.
Leaves lanceolate toothletted bluntish, scape round not striated, spike close very long.
25. *Plantago recurvata*. Recurved-leaved Plantain.
Lin. spec. *Reich.* 1. 323. *Willd.* 647. *mant.* 198.
P. incurvata. *Lin. syst.* 156. *Murr. in comm. gott.* 1780. p. 19. t. 6.
P. serpentina. *Villars dauph.* 2. 304?
P. orientalis Scorzoneræ folio. *Tournef. cor.* 5.
Leaves linear channelled recurved naked.
26. *Plantago macrorhiza*. Thick-rooted Plantain.
Lin. spec. ed. Willd. 648. *Vahl symb.* 2. 31. *Poiret. itin.* 2. 114.
P. crithmoides. *Desfont. atlant.* 140.
Coronopus ficulus fruticosus platyphyllos. *Bocc. sic.* 30. t. 15. f. 2. *Mor. hist. f.* 8. t. 17. f. 36. *Raii hist.* 881. n. 11.
Leaves spatulate gash-toothed, teeth imbricate mucronate, scape round hairy.
27. *Plantago Serraria*. Saw-leaved Plantain.
Lin. spec. 166. *synt.* 156. *Reich.* 1. 323. *Hoffm. germ.* 53. *Krock. files.* n. 235. *Desfont. atlant.* 139. *Poiret. itin.* 2. 113.
P. apula laciniata bulbosa. *Col. ecphr.* 1. 258. *Mor. hist. f.* 8. t. 16. f. 19. *Raii hist.* 879.
P. angustifolia ferrata hispanica. *Barrel. rar. t.* 749. *Shaw specim. n.* 485.
P. ang. ferr. hispalensis. *Baub. pin.* 189.
P. ang. altera. *Clus. cur. post.* 65.
Leaves lanceolate five-nerved tooth-ferrate, scape round.
28. *Plantago Coronopus*. Buck's-born Plantain.
Lin. spec. 166. *ed. Willd.* 648. *hort. cliff.* 37. *fl. succ.* n. 134. *Gærtn. fruct.* 1. 237. *Huds. angl.* 64. *Witber. arr. ed.* 3. 198. *Smith angl.* 185. *Lightf. scot.* 118. *Sibth. oxon. n.* 177. *Fl. dan. t.* 272. *Hall. helv. n.* 658. *Roth. germ.* 1. 62. 2. 174. *Hoffm. germ.* 53. *Desfont. atlant.* 139. *Berg. phyt. t.* 135.
P. coronopifolia. *Lin. syst.* 156. *Reich.* 1. 323. *Relb. cant. n.* 118. *Krock. files.* n. 239. *Poiret itin.* 2. 113.
P. fol. laciniatis, Coronopus dicta. *Raii syn.* 315. *Petiv. brit. t.* 4. f. 10.
P. ceratophyllos, f. Coronopus hirsutus hortensis. *Mor. hist. f.* 8. t. 17. f. 31.
Coronopus. *Fuchs. hist.* 449. *Trag.* 99. *Tabern. ic.* 102. *Camer. epit.* 276. *Matth.* 493. *Blackw. t.* 460. *Besl. eyf. æst.* 7. p. 8. f. 3.
C. sylvestris hirsutior. *Baub. pin.* 190.
C. hortensis. *Baub. pin.* 190. *Tournef. inst.* 128.
C. f. cornu cervinum vulgo, spica Plantaginis. *Baub. hist.* 3. 509.
C. vulgaris, f. cornu cerv. *Park. theat.* 502. 1. *Raii hist.* 879.
Cornu cervinum. *Lob. obs.* 239. 2. *ic.* 437. *Ger.* 346. 1. *emac.* 427. 1.
Herba stella, f. cornu cerv. *Dod. pempt.* 109. 1.
Leaves linear toothed, scape round.
29. *Plantago Loeftingii*. Spanish Plantain.
Lin. spec. 166. *synt.* 156. *Reich.* 1. 324. *Willd.* 649. *Loefl. it.* 124. *Jacqu. hort.* 2. 58. t. 126.
Leaves linear somewhat toothed, scape round, spike ovate, bractes keeled membranaceous.
30. *Plantago*

30. *Plantago Cornuti*.
Lin. syst. 156. *spec. ed. Willd.* 649. *Jacqu. ic. rar.* 1. t. 27. *misc.* 2. 351.
Leaves pinnate, pinnae unequal and distant, scape round, styles very long, filaments very short.
 ** *Caulescent.*
31. *Plantago amplexicaulis*.
Lin. spec. ed. Willd. 650. *Cavan. ic. rar.* 2. n. 137. t. 125.
Stem erect simple, leaves lanceolate somewhat fleshy quite entire embracing, heads subovate.
32. *Plantago Pysyllium*. *Clammy Plantain or Fleawort*.
Lin. spec. 167. *Reich.* 1. 324. *Willd.* 650. *vir. cliff.* 9. *hort. upf.* 28. *mat. med.* 51. *Hall. helv.* n. 661. *Scop. carn. n.* 165. *Roth. germ.* 1. 62. 2. 175. *Hoffm. germ.* 53. *Krock. files.* n. 240. t. 33. *Villars dauph.* 2. 305. *Allion. pedem.* n. 304. *Desfont. atlant.* 140. *Ludw. eet.* t. 44. *Sabb. hort.* 2. t. 10. *Berg. phyt.* t. 201. *Plenck, ic.* 62.
Pysyllium. *Trag.* 167. *Matth.* 1067. *Fuchs. hist.* 888. *Dod. pempt.* 115. *Blackw. t.* 412.
P. majus erectum. *Baub. pin.* 191. *Baub. hist.* 3. 513. *Tournef. inst.* 128. *Shaw specim. n.* 494.
P. vulgare. *Park. theat.* 278. *Raii hist.* 881.
P. Herba pulicaris. *Tabern. ic.* 146. *Ger.* 471. 1. *emac.* 587. 1.
Pulicaris herba. *Lob. ic.* 436.
Stem branched herbaceous, leaves somewhat toothed recurved, heads leafless.
33. *Plantago squarrosa*. *Leafy-spiked Plantain*.
Lin. syst. 156. *Willd.* 650. *Murr. in comm. gott.* 1781. p. 38. t. 3.
P. ægyptiaca. *Jacqu. ic. rar.* 1. t. 28. *collect.* 1. 45.
Kali tertium. *Alp. ægypt.* 128.
K. ægyptiacum foliis valde longis hirsutis. *Baub. pin.* 289. *Raii hist. app.* 1915.
Herbaceous, stems branched diffused decumbent, leaves linear quite entire, heads squarrose.
34. *Plantago indica*. *Indian Plantain*.
Lin. spec. 167. *syst.* 156. *Reich.* 1. 325. *Willd.* 651. *hort. upf.* 29.
Stem branched herbaceous, leaves quite entire reflex, heads leafy.
35. *Plantago pumila*. *Dwarf Plantain*.
Lin. spec. ed. Willd. 651. *syst.* 157. *suppl.* 125.
P. exigua. *Murr. in comm. gott.* 1778. p. 94. t. 5.
Stem branched herbaceous, leaves quite entire fleshy, branches even.
36. *Plantago Cynops*. *Shrubby Plantain*.
Lin. spec. 167. *Reich.* 1. 325. *Willd.* 651. *hort. cliff.* 47. *Hall. helv. n.* 662. *Pallas it.* 3. 626. *Krock. files.* n. 241. *Villars dauph.* 2. 305. *Allion. pedem.* n. 305. *Desfont. atlant.* 141. *Kniph. cent.* 9. n. 78. *Berg. phyt.* t. 203. *Plenck, ic.* t. 61.
Pysyllium sempervirens. *Mor. hist.* 3. 262. f. 8. t. 17. f. 1.
Pf. majus supinum. *Baub. pin.* 191. *hist.* 3. 513. *Raii hist.* 882. 3. *Tournef. inst.* 128.
Pf. plinianum forte, radice perenni supinum. *Lob. ic.* 437.
Pf. sempervirens. *Ger.* 471. 2. *emac.* 587. 2.
Pf. majus semperv. *Park. theat.* 277. n. 2.
Stem branched suffruticose, leaves quite entire filiform striat, heads somewhat leafy.
37. *Plantago afra*. *Barbary Plantain*.
Lin. spec. 168. *syst.* 157. *Reich.* 1. 325. *Willd.* 652. *Desfont. atlant.* 141. *Poiret itin.* 2. 116.
Pysyllium foliis crenatis indicum. *Baub. pin.* 191. *hist.* 3. 513. *Park. theat.* 277. 3. *Raii hist.* 882. 2. *Mor. hist.* 3. 262. f. 8. t. 19. f. 4.
Pf. fol. laciniatis. *Boc. sic.* 8. t. 7. f. B.
Stem branched shrubby, leaves lanceolate toothed, heads leafless.
38. *Plantago parviflora*. *Small-flowered Plantain*.
Desfont. atlant. 141.
Leaves opposite linear ciliate, peduncles shorter than the leaf, heads round, bractes pressed close equalling the calyx.

1. The root of the *Great Plantain* or *Waybread*, when old, is the thickness of the thumb, præmorse or stumped, laying strong hold of the earth by its fibres, which strike deeply, and are whitish. Leaves petioled, seven-ribbed or sometimes nine-ribbed, smooth, but somewhat hairy when young, about a hand in length, often remotely toothed about the edge. Petioles long, convex on the under side, concave above, each forming a kind of sheath at its base. Scapes upright, pubescent, longer than the leaves. Spikes cylindrical, very long, linear, composed of many closely imbricate flowers, under each of which is a lanceolate concave bracte. Divisions of the calyx ovate, concave, blunt, smooth, nearly equal. Anthers purple, two-celled, each cell terminating at bottom in a point. Style villose^m.

Capful superior, covered with the shrivelled corolla, papery: partition membranaceous, loose when ripe: receptacle fleshy, excavated, fastened to the partition on each side. Seeds few, about nine in each cell, (according to Leers six; but Mr. Curtis says, he has commonly found about twenty small ones, whereas *P. lanceolata* has only two large seeds); they are subovate, slightly convex on one side, angular on the other, with a ventral navel in the middle, of a palish brown colourⁿ.

Native of most parts of Europe and Japan, in meadows, gardens, and particularly by way sides, whence its name of *Way-bread*. It is a perennial plant, and flowers during the whole summer.

The seeds afford food to many of the small birds. Mr. Curtis says that cattle in general appear very readily to eat the leaves. According to the Swedish experiments, sheep, goats and swine eat it; cows and horses refuse it.

The leaves have a weak herbaceous smell, and an austere, bitterish, subsaline taste; their qualities are said to be refrigerant, attenuating, substyptic and diuretic.

Plantain was formerly reckoned among the most efficacious vulnerary herbs; and the common people now apply the leaves to fresh wounds and cutaneous sores. Inwardly they have been used in phthysical complaints, spitting of blood, and in various fluxes, both alvine and hæmorrhagic. The seeds however seem better adapted to relieve pulmonary diseases than the leaves, being extremely mucilaginous. The roots have also been recommended for the cure of tertian intermittents, and from the experience of Bergius, not undeservedly. An ounce or two of the expressed juice, or the like quantity of a strong infusion, may be given for a dose; in agues the dose should be double this quantity, and taken at the commencement of the fit.

Plantain is said to be a cure for the bite of the Rattle-snake; but probably with little foundation, although it is one of the principal ingredients in the remedy of the Negro Cæsar, for the discovery of which he received a considerable reward from the Assembly of South Carolina^o.

I have followed the late Dr. Withering in the varieties.

β. Is much smaller than the common sort. Leaves three-nerved. Stalk not more than an inch and half high. Spike shorter and having fewer flowers in proportion. About Shirehampton, and King's Weston, near Bristol.

γ. Leaves with large teeth towards the base. A variety scarcely worth notice.

δ. Spike leafy. Flower-leaves disposed in a pyramidal form.

ε. The spike is abortive or composed of leaves, as in the preceding, which differs not from this, except in having the spike-leaves imbricate in a pyramid; whereas in the Rose Plantain they are expanded like a rose; both sorts of spike often spring from the same root. Rose Plantain is often cultivated in gardens.

^m Curtis.ⁿ Gartner.^o Woodville.

5. Spike abortive leafy, branching into a panicle^p. Bedingham; near Bungay, in Suffolk.

2. Jacquin, who describes this plant in the Supplement to his Collection, says he is unacquainted with its native country. It is a stiff and roughish plant, pretty much divided or many headed. It bears the open air in summer, but must be taken into the greenhouse in winter. The root is perennial, consisting of a heap of thick, branchy, white fibres: the radical leaves are numerous, thick, erect, and either of an ovate or lanceolate form from a channelled foot-stalk; obtuse, more or less dentated at the edges, frequently almost entire, crisp, bullated, nervous, dark green, and two or three inches long. Scapes several; round, upright, the length of the leaves. Spikes round, dense. Calycine leaves roundish, glossy, green, obtuse, unequal, fleshy. Petals white, acute. Seeds ovate, punctated; if viewed with a glass blackish, and not glossy^q.

It is thought to be a native of the South of Europe. Mr. Donn, who cultivated it in the botanic garden at Cambridge, attributes it to Sweden, and assigns the year 1790 for its introduction.

3. This species resembles *P. major* so much, that it might easily be taken for the same: the spike however is longer, the flowers remote, the leaves usually somewhat toothed at the base, and the scape angular^r.

Native of China and Siberia. Introduced in 1787, by Mons. Thouin. It flowers in July^s.

4. This is a plant which bears the open air. The root is fusiform, perennial, and the thickness of a finger; producing annually several leaves with long foot-stalks, which are marked in front with a furrow. The leaves are lanceolate, somewhat acute, either toothed or entire, marked with from five to eleven nerves, villose on both sides, but most so on the back; hence they feel soft to the touch: they vary much in size and breadth, so that, exclusive of the foot-stalks, a leaf of nine inches shall be sometimes of the breadth of half a foot, and sometimes only two inches. Scapes round, striated; a little villose, and from half a foot to two and a half feet high; bearing a cylindric spike, from three to five inches long, and very thickly imbricated through its whole length: Calyx green, equal. Petal pale. Filaments very long and whitish; and at length a little purplish^t.

Native of Siberia. Cultivated in 1763, by Mr. James Gordon. It flowers in July and August^u.

5. Hoary Plantain has the leaves small and less blunt than in the common great Plantain, hoary, commonly five-nerved, lying close to the ground, on very short, dilated petioles. Spike short, close. Filaments longer than in *P. major*, pale purple: anthers white and more showy. Capsules containing only two seeds, as in *P. lanceolata*^x.

Gartner describes the capsule as covered by both calyx and corolla, of a cylindric-ovate form, opening transversely a little above the base, so that the lid forms the greater part of it. Partition so very thin as to be almost evanescent in a state of maturity. Seed in each cell one, of an oblong elliptic form, on one side convex and smooth, on the other concave, with an umbilical tubercle in the middle, of a yellowish horn colour, shining and mucilaginous. Albumen hard, pale. Embryo dorsal, erect, snow-white. Cotyledons linear-oblong, shorter than the radicle. Radicle filiform, curved, inferior. The structure is the same in *P. lanceolata*, *virginica*, *Psyllium*, &c.

Root perennial, large when fully grown, penetrating deep, and having numerous lateral fibres, by which it supports itself in the most scorching seasons: it is also not destroyed by frequent mowing, as most lawns and grass-plats testify.

Native of most parts of Europe, among grass, especially in calcareous and gravelly soils; flowering during the whole summer.

6. In America this unfolds its corolla, and puts forth the stamens, which it scarcely does in Europe.

Scape pubescent. Leaves half-three-nerved and pubescent. It is an annual plant, native of Virginia^y. Introduced in 1775, by Mons. Thouin^z.

7. Root perennial. Leaves a foot or a foot and a half in length, thick, with blunt distant teeth, on very long petioles. Scapes two or three feet high, when young rugged, but when old almost smooth. Spike cylindrical, scarcely an inch and half in length, smooth^a; in proportion to the size of the plant short, compact and close^b.

Native of Italy and Silesia. Introduced in 1774, by Jos. Nich. de Jacquin^c.

8. Root of Ribwort Plantain perennial, when old appearing as if bitten off at the end. Leaves all from the root, truly lanceolate, distinguished by five (sometimes three or seven) prominent ribs, pointed, entire, or sometimes having a few teeth near the base. Dr. Withering remarks, that in maritime situations they are toothed all along the edges. They are of a dark green, most hairy beneath, taper at the base into a long flat footstalk, ribbed like the leaf itself, and at their insertion are invested with long white woolly hair springing from the crown of the root. Scapes or flowering-stalks upright, longer than the leaves, from among which they spring; they are clothed at the base with the same kind of hair, and upwards are smoothish, round with five deep furrows, slightly twisted, and terminated by a short ovate spike, imbricated with black scales, and enlivened with the prominent cream-coloured anthers, in its more advanced state. A spike will sometimes contain one hundred and thirty small flowers, crowded close together, with an ovate pointed scale or bracte at the base of each. The capsule contains two oblong shining seeds, of an amber colour in each cell. The stalks continue to grow after the flowering is over, and sometimes shoot out to the length of two feet or more. When it grows in meadows the leaves are erect and drawn up; but in a dry barren soil, they are shorter, broader, and more spread on the ground^d.

It grows spontaneously by the sides of roads, and in dry pastures, where it is left untouched by cattle, to feed small birds with the copious produce of its seeds. It has been generally considered as a weed, occupying the room of grasses and other useful herbs; but it has lately been introduced into culture; under the name of *Rib-grass*, as a good food for sheep, or to be made into hay for cattle in general. Haller attributes the richness of the milk in the alpine dairies to this plant and *Alchemilla vulgaris* or Ladies mantle. Linneus says, it is eaten by horses, sheep and goats, but that cows refuse it. Sheep will eat it either green or dried, provided it be well gotten; but it does not answer for pasturage, without a mixture of clover or grasses^e. The total absence, says Dr. Withering, of this plant, in marshy lands, is a certain criterion of their wretched quality. In proportion as such soils are improved by draining, it will flourish and abound. Ribwort Plantain however, at least in England, is not a criterion of excellence in a soil, but merely of its dryness.

Mr. Curtis, Dr. Withering, and Dr. Smith do not speak favourably of this plant, as a pasture or meadow herb. Certainly from theory one should decide against it: but practical men hold it in some esteem.

Mr. Zappa of Milan, affirms that *P. lanceolata* grows spontaneously in every meadow of Lombardy, especially in those which are irrigated; that it vegetates early, flowers at the beginning of May, ripens in five weeks, and is cut with *Poa trivialis*; that the height of the leaves is about one foot, and of the stalk a foot and half; that it multiplies itself much by the seed, and a little by the roots, which it continues for some time to reproduce; that it is eaten heartily by every sort of cattle, and in particular by the cows in grass, and the cows like it most in May, having great influence on the milk; that the hay is eaten more voraciously by cows, and has on them great influence in the

^p Withering, Smith, Curtis. ^q Jacquin. ^r Linn. spec.
^s Hort. kew. ^t Jacquin. ^u Hort. kew.
^x Smith and Curtis.

^y Lin. syst. ^z Hort. kew. ^a Jacquin.
^b Krock. ^c Hort. kew.
^d Curtis, Withering, Engl. bot. Fl. rust.
^e With. Engl. bot. Fl. rust.

flesh; in short, that it is one of the best plants either for the milk or the flesh^f.

Mr. Young informs us, that he had long before recommended this plant for laying land to grafs, and sowed it on his own farm^g. At the same time he looks upon it as extravagant to propose Dandelion and Sorrel, as plants proper for a cow-pasture; and conjectures that those plants, being found among good ones, have qualities given them which do not properly belong to them^h. I am inclined to make the same conjecture of narrow-leaved Plantain, Ribwort or Rib-grafs, and should even have preferred Dandelion and Sorrel to it: but I am cautious of opposing theory to practice.

Mr. Zappa adds, that *P. major* or great Plantain, grows not only along the roads, near dunghills, in damp and fat places, but in irrigated meadows also of every district in Lombardy; though more near the borders than in the centre of them; that it vegetates later, flowering towards the end of may; that the leaf is six inches long, and the stalk almost a foot high; that notwithstanding it is not tender, every sort of cattle like it, and that cows are as fond of this as of the other speciesⁱ.

Dr. Anderson observes that narrow-leaved Plantain or Rib-grafs is well liked by horses and cattle, and yields a very good crop upon rich ground tending to dampness, if it is at the same time soft and spongy; but that upon any soil which has a tendency to bind, or upon dry ground, it furnishes a very scanty crop^k.

Narrow-leaved Plantain has been adopted in some parts of Yorkshire as a summer grafs. As an article of pasturage for cattle and sheep it is there in high esteem: it is not however well affected by horses; and as an article of hay it is held to be detrimental to the crop; retaining its sap an unusual length of time; and when fully dry, falls into a small compass, or is broken into fragments, and left behind in the field. One advantage of this plant is, that its seeds may be easily procur'd genuine. A small proportion of it may be eligible: it has now stood the test of twenty years established practice, and seems to be still in good estimation, even among observant husbandmen^l.

Mr. Marshall made a trial of it in Norfolk, as a substitute for Clover, but gained no credit from the experiment: the fact is, horses do not affect it, and they are the principal consumers of the Clover crop in that country^m.

The qualities of this species seem to be nearly the same with those of *P. major*; and it is more used than that by the common people, where it is more common.

It varies much in size of the plant, breadth of the leaves, &c. The narrow leaves have only three ribs. The spike is sometimes surrounded by large leaves, instead of the usual small bractes: it sometimes becomes an abortive panicle: and it is found with two or three heads.

9. Native of the Cape of Good Hope, where it was found by Thunbergⁿ.

10. Leaves nerveless, pubescent underneath, brown at the tip and at the obsolete toothlets. Spike subglo-bular. Calyxes hirsute. Border of the corolla even^o.

According to Monf. Desfontaines, the leaves are five-nerved. Scape pubescent, striated, slender. Spike short, ovate, close, silky with very soft hoary villose hairs; when mature cylindrical.

Native of the South of France, Spain, Portugal and Algiers.—Cultivated in 1683, by Mr. James Sutherland. It flowers in june and july^p.

11. Stem simple, villose. Leaves like those of the preceding, acute, toothletted or quite entire, running down into the petiole, which is sheathing at the base. Peduncles round, not striated, villose, twice or thrice as long as the leaf. Spike close. Bractes ovate, concave, elliptic, scarious at the edge, longer than the calyx. Segments of the corolla ovate. It is

allied to *P. amplexicaulis* of Cavanilles, n. 137. t. 125. but differs in having the leaves ciliate only, not hirsute all over. Perhaps it may be only a variety. Native of the sands about Tozzer^q.

12. Leaves upright, wider than in *P. media*. Scape longer than the leaves, somewhat hispid, five-grooved. Spike like that of *P. Lagopus*, but oblong, with short hirsute bractes. Corolla white, with a yellowish streak. Stamens white. Style elongated, pubescent, white^r.

According to Desfontaines, the leaves are oval-oblong, nerved, toothletted, running down into a short petiole, tomentose at the base, and attenuated both ways. Scape striated, smooth, except at top where it is a little villose, with hairs pressed close. Spike ovate-cylindrical, covered with a soft down.

Native of Spain; and near La Calle, in Barbary.—Introduced in 1781, by P. M. A. Broussonet, M. D. It flowers in july and august^s.

13. This is very nearly allied to the next species, but the leaves are narrower, more linear and nerveless. It is an annual plant; and native of Champion river in Patagonia^t.

14. Leaves narrow-lanceolate, decurrent into the petiole, three-nerved or five-nerved, quite entire or very seldom toothletted, villose with white very crowded hairs, pressed close. Scape pubescent, scarcely striated, erect. Spike when mature a little interrupted. Rachis villose. Bractes concave, ovate, membranaceous at the edge, the length of the calyx. Segments of the corolla ovoid, sharpish, rufescent. Anthers thick, yellow. Style standing out, filiform, pubescent^u.

Native of the South of France, Spain and Barbary.—Introduced in 1770, by Monf. Richard. It flowers from june to september, and is perennial^v.

Willdenow is of opinion, that *P. minuta* of Pallas (it. 2. t. E. f. 1.) scarcely differs from this, except in size.

15. Leaves silky with villose hairs pressed close, very sharp, and attenuated at the base. Scape round, pubescent, slender, a little longer than the leaves. Spike when young ovate, but when the fruit is ripe cylindrical, very close. Bractes ovate, acute, membranaceous at the edge, shorter than the flower. Corolla pale rufescent, with the segments ovoid and smooth. It is allied to *P. albicans*, but has a shorter spike, round, with the flowers very much crowded, not interrupted when the fruit is ripe. Native of the sands near Cassa in Barbary^w.

16. Native of the Cape of Good Hope, where it was found by Thunberg^x.

17. Root perennial, oblique, branched, creeping a little, often as it were bitten off. Leaves nerved, two, three, or four lines in width, dark-coloured, smooth, thick and a little fleshy. Spike very short, round, composed of from eighteen or twenty to thirty flowers, which are much larger and more detached than in *P. lanceolata*. According to Krocker, before the flowers open it hangs down; and after flowering it becomes long and cylindrical. The bractes are as long again as the calyx; the corollas are blackish; according to Haller, they are whitish. The capsules are smooth and distinct^y.

Native of the mountains of Switzerland, Austria and Siberia.—Introduced in 1774, by William Pitcairn, M. D.^z

18. This is a small annual plant, often scarcely an inch, sometimes an inch and half in height. Several of the leaves are an inch and half long, others are smaller; all are linear-lanceolate and acute, attenuated at bottom, obscurely three-nerved. Scape upright, shorter than the larger leaves, sordidly shaggy. Spike ovate or ovate-oblong, hirsute, the length of half the scape. Bractes lanceolate, attenuated, the length of the calyx. Segments of the corolla lanceolate^a.

Desfontaines has adopted Lamarck's name of *P. Holostea*; and remarks that it differs from *P. albicans*,

^f Young's Annals, vol. 6. p. 50. printed 1786. ^g Ibid. p. 47.

^h Ibid. p. 47 and 53. ⁱ Ibid. p. 51. ^k Essays, vol. 2. 253.

^l Marshall's rur. econ. of Yorkshire, vol. 2. p. 91.

^m Rur. econ. of Norfolk, vol. 1. p. 302. note.

ⁿ Prodr. cap.

^o Linn. spec. ^p Hort. kew.

^q Desfontaines.

^r Linn. spec.

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to which it is allied, in having the hairs spreading not pressed close, the spike shorter and denser, the bractes awl-shaped, and the segments of the corolla very small. He adds, that the leaves are quite entire and three or five-nerved; the scape round not striated, a little longer than the leaves; the bractes awl-shaped, the lower ones longer than the flower; the calyx villose.

Native of Spain, Italy and Tunis.

19. This is an annual plant; when cultivated having the leaves longer and not so closely woolly, and upon the whole putting on a very different appearance from the wild plant^d.—Native of Crete.

20. Native of Terra del Fuego, where it was found by Forster.

21. This puts up several very short stems from the same head. Leaves quite entire, silky with hairs pressed close, sharp, attenuated below. Scapes villose, round not striated, shorter than the leaves or a little longer. Bractes ovate, concave, pubescent, membranaceous at the edge, ciliate at the tip, the length of the calyx; which is villose, and has elliptic segments. Corolla of a pale rufous colour.

Native of the sandy desert near Cassa and Elhammah. Annual^e.

22. Root perennial, woody, inversely conical at the crown. Stalk five or six inches high. Spike from an inch to an inch and half in length, bent at a right angle before flowering. Leaves convex on the lower, channelled on the upper surface, generally entire, but sometimes with a few minute irregular teeth. Bractes keeled. Tube of the corolla woolly. Anthers yellow^f.

No plant varies more in size than this: its leaves being sometimes scarcely an inch, at other times more than a foot in length. The height of the stalk is more constant, but the number of flowers in the spike varies extremely. It loves a muddy soil, but is as various in its place of growth as in size, being found, like *Statice Armeria*, on the highest mountains as well as on the sea shore. Hence it has been taken for *P. alpina*, which is a very different plant, with short oval spikes, and lanceolate flat leaves. Still less resemblance has our Sea Plantain, (though it has sometimes toothed leaves, especially on the coast,) to *P. Loefflingii*; that having flat leaves, and very short roundish pale spikes, much like those of *P. Pycnanthemum*.

Our *P. maritima* may be known by its very fleshy and smooth leaves, channelled above and concave (convex) below, with a tuft of wool at their base, and the spike, however short, always cylindrical^g.

It is common on the sea coast and in salt marshes, in many parts of Europe, Barbary, and North America, flowering rather late in the summer. It also grows in the fissures of rocks on mountains remote from the sea. Mr. Robson found it near Bernard Castle, thirty-five miles from the Sea; and Mr. Lightfoot on the summits of the highest mountains in Scotland.

Dr. Withering notices two varieties. One *narrow-leaved*, with filiform leaves, a much smaller plant than the common sort, and flowering earlier. He found it in the Isle of Wight, going out of flower the beginning of June. Leaves about two inches long. Stalk cylindrical, slender, not scored, four inches high. Spike an inch long, cylindrical, not closely crowded with florets.

The other *flat leaved*, with flat ribbed leaves very sparingly toothed. Leaves five inches long, flat, five-ribbed. Stalk about five inches high, cylindrical. Spike two inches long, cylindrical, bent at a right angle before flowering. Bractes with a mid-rib, but not keeled. Observed near the Bristol channel, by Mr. Swayne; and at Yarmouth, by Mr. Woodward.

23. Leaves clustered, filiform, acute, flat above, convex underneath, rugged about the edge with scarcely conspicuous prickles; woolly at the root. Scape round, longer than the leaves, by no means smooth. Spike ovate-oblong, not villose^h.

^d Willdenow

^e Desfontaines.

^f Withering.

^g Engl. bot.

^h Linn. spec.

Leaves, according to Desfontaines, awl-shaped, striated, quite entire, stiffish, many from the same tuft, very much crowded together. Scape filiform, not striated, much longer than the leaves. Spike slender, close.

Native of the South of Europe, especially on the sandy shores of the Mediterranean; growing in thick tufts; also about Tlemcen, in Barbary.—Introduced in 1773, by John Earl of Buteⁱ.

24. Leaves smooth, with a rufescent down at the base. Spike slender not interrupted.—Native of Barbary near la Calle^k.

25. Plant stemless. Leaves radical, acute, somewhat pubescent underneath, scarcely toothletted. Scapes filiform, round, not striated, erect, shorter than the leaves. Corolla scarious. Stamens scarcely longer than the tube of the corolla. Pistil longer. It is allied to *P. subulata*: and perhaps may be the same cultivated in a garden. It is an annual plant, native of the South of Europe and the Levant^l.

26. Leaves radical, spreading like a rose, narrowing very much towards the base, thick, hirsute on both sides, mucronate; teeth ovate, three or five on each side, imbricate, mucronate, thickened at the edge. Scape ascending, a hand or more in height, covered closely with hairs pressed to it. Spike cylindrical hirsute, two inches and more in length. Bractes ovate, acuminate, spreading at top, purplish on the back, membranaceous at the edge, hirsute on the outside. The two outer segments of the calyx hirsute; the inner convex, ciliate^m.

Desfontaines describes it under the name of *P. crithmoides*, as a low tufted plant, hirsute, branched, decumbent at the base. Root thick, twisted, somewhat woody. Leaves crowded, running down into the petiole, hirsute, deeply toothed: teeth acute, somewhat remote. Petioles tomentose at the base, sheathing. Scape extremely villose, erect, longer than the leaves. Spike very close, villose. Bractes awl-shaped, a little longer than the flower, setaceous at the top. Corolla rufescent, with small, ovate, acute segments.

Native of Sicily and Barbary. Found by Poiret in the plains of Mazoule, by Vahl at way-sides about Tunis, by Desfontaines in the fissures of rocks on the coast.

27. Leaves striated, subpubescent, subpetioled, serrated with sharp teeth. Scape pubescentⁿ.

Desfontaines describes the leaves as almost like those of *P. lanceolata*, villose, serrated with awl-shaped, longish, remote, spreading teeth. Scape not striated, longer than the leaves, villose with hairs pressed close. Spike close slender. Segments of the corolla small, acute.

Native of Silesia, Apulia and Barbary. Krocker says he found it on the banks of the Oder and other rivers, in a clayey soil. Desfontaines in Algiers, Poiret informs us that this handsome species grows, with some varieties, in shady moist places.

28. Root annual. Leaves pinnatifid (sometimes bipinnatifid) hairy, with very unequal segments, lying on the ground in form of a Star, whence the fanciful names of *Herba Stella* and *Star of the Earth*. Scapes ascending, from four to seven inches high. Spike cylindrical, from an inch or an inch and half to two inches in length; in sandy ground few-flowered, and so short as to be almost headed. Segments of the calyx lapping over each other, deeply divided, and fringed at the outer edge. Anthers terminated by a small lanceolate transparent membrane; which is constant, however the plant may vary in the size and clefts of the leaves, height of the stalk, or length of the spike^o. Capsule ovate-conical. Seeds in each cell four, small, angular, rufescent, with a white, ventral navel. Embryo straight, yellow. Cotyledons very long, linear^p.

Native of most parts of Europe, Barbary, &c. in sandy and gravelly soils, and on the sea coast; flowering all the summer.

ⁱ Hort. kew.

^k Desfontaines.

^l Linn. mant.

^m Vahl.

ⁿ Linn. spec.

^o Withering, Smith.

^p Gartner.

Many varieties of this species are mentioned by different authors. But the species of this genus are much subject to variation. Linneus remarks, that the tenth, twelfth, fourteenth, nineteenth, twentieth, and twenty-second species are so nearly allied, that we may conjecture their difference to be owing to change of place, or the mixture of pollen.

P. Loefflingii, which has been confounded both with this species, and *P. maritima*, is very distinct from both, as may appear from the description that follows.

29. This differs from *P. Coronopus* in being smaller and earlier, in having an ovate spike, with the flowers more thinly imbricate; the bractes smooth and boat-shaped, whereas in that they are awl-shaped, very narrow, and pubescent. The stamens are shorter; the leaflets of the calyx more acute; the corolla of a browner colour. The leaves are linear, not lanceolate, and sparingly toothed. The scape is hairy. It is an annual plant; native of Spain, on hills and the borders of fields^a.

30. Root fusiform, a finger in thickness, whitish. Leaves numerous, spread out in a circle, acute, with soft hairs scattered over the surface and along the edge, half a foot in length: rib channelled: pinnae sessile, irregularly placed, linear, quite entire, or sometimes but seldom gashed. Scapes very many, ascending, closely villose, rugged, the length of the leaves. Spike linear, three inches long, round, leafless, upright, slender. Bractes ovate-acuminate, concave, equalling the calyx; the leaflets of which are lanceolate, equal, keeled, acuminate, hispidly ciliate. Corolla whitish; tube the length of the calyx; segments ovate, acuminate^c.

It is very nearly allied to *P. Coronopus*, but is more smooth, with the segments of the leaves unequal, and a very long style^d.

Its place of growth is unknown. Jacquin received the seeds from Gouan, under the name of *Pl. Cornuti*.

31. The plant of this exactly resembles *Pl. lanceolata*, but the stem is about the length of the little finger (whereas that has no stem) and upright. Leaves somewhat fleshy, narrowed at the base and embracing, beset with scattered hairs. Peduncles long, in the axils of the leaves. Heads subovate^e. It is an annual plant, native of Spain.

32. Stems diffused, villose. Lower leaves opposite; upper leaves in threes or fours, linear, recurved, toothed, villose-viscid. Peduncles longer than the leaf. Heads leafless, with the bractes and calycine leaflets linear^f.

Root slender, annual, fusiform. Stem stiffish, upright, jointed, round, tinged here and there with purple. Lower leaves obscurely toothed; upper ones quite entire. Peduncles axillary, villose rigid. Spikes oval, short, surrounded only with lanceolate bractes. Corollas sharply four-cleft, of a whitish bay colour. Seeds small, brown, oblong, shining, convex on one side, concave on the other^g.

Native of the South of Europe, Barbary, and the Canary islands.—Cultivated here in 1562, as appears from Turner's herbal. It flowers in July^h.

33. This, according to Jacquin, flowers in the stove, from June to August, after which it ripens its seed. From a white annual root proceeds a weak stem, incurvated at the base, and from thence soon after its origin, oppositely branched, round, villose, and half a foot high; sometimes it grows extremely branchy. Leaves sublinear, quite entire, acute, opposite, sessile, villose, roughish, subcarinated, from one to four inches long, subciliated, and that particularly below. Spikes oblong, terminal, pedunculated, axillary, upright, leafy, and subviscid. Flowers solitary in the bosoms of the floral spikes, forming a leafy spike, exactly answering to the Linnean character. Calycine leaves equal, and green, covered with white viscid hairs. Petal pale. Anthers brownish: whole style villous and whiteⁱ.

Native of Egypt. Introduced in 1787, by Mr. Zier. It flowers in August and September^j.

^a Loeffling in Linn. spec.

^c Linn. spec.

^e Jacquin.

^g Krockner.

ⁱ Willdenow.

^j Hort. kew.

^b Jacquin.

^d Hort. kew.

34. The two lower leaflets of the calyx are spatulate, very blunt, and concave within. Corollas tubular, frequently double the length of the calyx^a.

Native of Egypt and India. Gmelin found it about Astracan.—Cultivated in 1683, by Mr. James Sutherland. It flowers in July and August^b.

35. This is so like the *Plantago Indica* of Linneus, that at first sight it might pass for a small variety of it. It is an annual, tender, or weak plant, about a span high. Root small, growing more and more slender as it descends; and fibrillose at the edges. Stem erect, variously bent, round, thin, beneath composed of branches decussating oppositely, spreading, half a palm's length, and with internodes of about two inches. Leaves subulate, channelled, very spreading, reflected at the tip, opposite, the upper ones sometimes ternate and quaternate, about a palm's length, pubescent on the margins or ciliated. Heads leafy, with setaceous hirsute bractes, of which the two lowermost are almost twice the length of the head, incurved; the rest seated, like chaff among the straighter floscules. Peduncles solitary, filiform, hirsute, terminal and axillary, rather shorter than the leaves, spreading. Calyx equal to the corolla, and divided almost to the very base, with setaceous upright distant leaflets. Corolla with a ventricose wrinkled tube. Stamens four, longer than the corolla. Pistil the length of the corolla. Seed one in each cell, navicular, brown^c.

36. Stem hard, woody, purplish, naked. Leaves opposite, awl-shaped or filiform, channelled and three-cornered, upright, subvillose. Peduncles axillary, the length of the leaves. The lower scales of the head mucronate, patulous, of a middling length. Bractes ovate, concave^d.

It differs from *P. Pysyllium*, in having a perennial fusiform root; the stem not villose but naked, shrubby, purplish, procumbent, then erect, diffused; leaves opposite, quite entire, erect, subvillose, whereas those of the other are patulous and villose; the peduncles are only equal to or shorter than the leaves and solitary; the spikes are encircled with leaves and scales^e.

Native of the South of Europe, Barbary, and Siberia.—Cultivated in 1596, by Gerard. It flowers from May to August^f.

The ancients made a mucilage of the seeds by decoction both from this species and *Pl. Pysyllium*. It was esteemed lubricating and pectoral, provided the seeds were neither bruised nor over boiled, the kernel being acrid^g. They are now neglected.

37. Stem a foot high, upright, pubescent. Leaves subvillose, striated. Spikes several at the ends of the branches^h.

Native of Sicily, and Barbary, in the kingdom of Tunis, along the coast of the island of Tabarqueⁱ.

38. Root long, slender, twisted, descending, putting out here and there capillary fibres. Stems herbaceous, several from one tuft, slender, pubescent. Leaves often bowed, somewhat rigid, thickish. Heads of flowers small, stiff, sessile or peduncled. Peduncles shorter than the leaf. Bractes linear-awl-shaped, very small. Corolla minute: segments ovoid, acute, pale rufescent. It is an annual plant; native of Barbary, in the great desert^j.

Of this genus, Mr. Miller only says, that these plants being rarely cultivated in gardens, he shall only mention such as grow naturally in England. 1. The common broad-leaved Plantain (*P. major*) called Waybread. 2. The great hoary Plantain (*P. media*) or Lamb's-tongue. 3. The narrow-leaved Plantain (*P. lanceolata*) or Ribwort: with the varieties, called Besom and Rose Plantain. They grow common in pastures, and are frequently very troublesome weeds.

Of the *Coronopus* or Buck's-horn Plantain there are two varieties growing in Britain: the common, which is plentiful on heaths; and the narrow-leaved, which is found upon many of the Welsh mountains. The first of these was formerly cultivated as a salad herb in

^a Linn. syst.

^c Linn. spec.

^e Villars.

^b Hort. kew.

^d Krockner.

^f Linn. spec.

^h Desfontaines.

ⁱ Murray.

^j Hort. kew.

^k Poiret.

gardens, but has been long banished for its rank disagreeable flavour. *Pl. Pysyllium* or Fleawort has been found in the earth thrown out of the bottom of the canals, which were dug for the Chelsea water-works. They are sometimes imported from the South of France for medical use.

PROPAGATION AND CULTURE.

These plants are seldom to be seen except in Botanic gardens, having little beauty. [The greater part are hardy enough to bear the open air in our climate. They rise easily from seeds, of which they produce great abundance, and require no nicety in the cultivation. Some few, as n. 3. 9. 16. 33. 34. require the protection of the dry stove; and several of them must be screened from frost in severe winters.

PLANTAGO. See *Alisma*, *Limosella*, *Littorella*.

———— aquatica. See *Alisma* and *Pistia*.

PLANTAIN. See *Plantago*.]

PLANTAIN TREE. See [*Heliconia* and] *Musa*.

[PLANTAIN, WATER. See *Alisma*.

PLANTATIONS. See *Woods*.]

PLANTING.

Although the method of Planting the various sorts of trees is fully set down under their several articles, where each kind is mentioned, yet it may not be amiss to say something in general upon that head in this place, which shall be treated as briefly as possible. And,

First, the first thing in Planting trees is to prepare the ground (according to the different sorts of trees intended to be planted) before the trees are taken out of the earth; for you should suffer them to remain as little time out of the ground as possible.

In taking up the trees you should carefully dig away the earth round their roots, so as to come at their several parts to cut them off; for if they are torn out of the ground without care, the roots will be broken and bruised very much to the great injury of the trees. When they are taken up, the next thing is to prepare them for Planting; in doing which there are two things to be principally regarded; the one is to prepare the roots, and the other to prune their heads, in such a manner as may be most serviceable in promoting the future growth of the trees.

And first as to the roots; all the small fibres are to be cut off as near to the place from whence they are produced as may be (excepting such trees as are to be replanted immediately after they are taken up;) otherwise the air will turn all the small roots and fibres black, which, if permitted to remain on when the tree is planted, will grow mouldy and decay, and thereby greatly injure the new fibres which are produced, so that many times the trees miscarry for want of duly observing this. After the fibres are cut off, all the bruised or broken roots should be cut smooth, otherwise they are apt to rot and distemper the trees; and all irregular roots which cross each other, and the downright roots, (especially in fruit-trees) must be cut off; so that when the roots are regularly pruned, they may in some measure resemble the fingers of a hand when spread open; then the larger roots should be shortened in proportion to the age and strength of the tree, as also the particular sorts of trees are to be considered; for the Walnut, Mulberry, and some other tender-rooted kinds should not be pruned so close, as the more hardy sorts of fruit or forest-trees, which in young fruit-trees, such as Pears, Apples, Plums, Peaches, &c. that are one year old from budding or grafting, may be left about eight or nine inches long; but in older trees they must be left of a much greater length; but this is to be understood of the larger roots only, for the small ones must be quite cut out, or pruned very short. Their extreme parts, which are generally very weak, commonly decay after moving, so that it is the better way entirely to displace them.

The next thing is the pruning of their heads, which must be differently performed in different trees, for the design of the trees must also be considered; if they are fruit trees, and intended for walls or espaliers, it is the better way to plant them with the greatest part of their heads, which should remain on until the spring,

just before the trees begin to shoot, when they must be cut down to five or six eyes (as is fully inserted in the several articles of the various kinds of fruit) being very careful, in doing of this, not to disturb the new roots.

But if the trees are designed for standards, you should prune off the small branches close to the places where they are produced; as also irregular branches which cross each other, and by their motion, when agitated by the wind, rub and bruise their bark, so as to occasion many times great wounds in those places; besides, it makes a disagreeable appearance, and adds to the closeness of its head, which should always be avoided in fruit trees, whose branches should be preserved as far distant from each other, as they are usually produced when in a regular way of growth, (which is in all sorts of trees proportionable to the size of their leaves, and magnitude of their fruit) for when their heads are very thick, which is often occasioned by the unskilful shortening of their branches, the sun and air cannot freely pass between the leaves, so that the fruit must be small and ill-tasted. But to return: after having displaced these branches, you should also cut off all such parts of branches, as have by accident been broken or wounded; for these will remain a disagreeable sight, and often occasion a disease in the tree. But you should by no means cut off the main leading shoots, as is by too many practised, for those are necessary to attract the sap from the root, and thereby promote the growth of the tree; for from several experiments which I made in the winter of 1729, by cutting off the branches of several sorts of trees, and putting them into phials filled with water, whose tops were closely covered to prevent the evaporating of the water, I found, that those shoots, whose leading buds were preserved, did attract the moisture in much greater quantities than those shoots whose tops were cut off; and from several experiments made by the Rev. Dr. Hales, we find that great quantities of moisture are imbibed at wounds, where branches are cut off; so that by thus shortening the branches, the wet, which generally falls in great plenty during the winter season, is plentifully imbibed, and for want of leaves to perspire it off, mixes with the sap of trees, and thereby distending the vessels, destroys their contracting force, which many times kills the tree, or at least weakens it so much as not to be recovered again for some years, as I have several times observed.

But being willing to try this experiment again in the month of October 1733, I made choice of two standard Almond-trees of equal strength and age; these I took up as carefully as possible, and having prepared their roots as before directed, I pruned their heads in the following manner, viz. from one of them I only cut off the small branches, and such as were bruised or broken, but preserved all the strong ones entire; of the other, I shortened all the strong branches, and pruned off the weak and broken shoots, as is the common practice. These two trees I planted in the same soil and to the same situation, gave them both equal attendance, and managed them both as nearly alike as possible; yet in the spring, when these trees began to shoot, that, whose branches were entirely preserved, came out early, continued to shoot stronger, and is at present much larger, and in better health than the other. And since this I have made several other experiments of the like nature, which have constantly succeeded in the same manner, from whence it is reasonable to conclude, that the shortening of the branches is a great injury to all new-planted trees, but especially to Cherries and Horse Chestnuts, which are frequently killed by shortening their large branches when they are removed.

Having thus prepared the trees for Planting, we must now proceed to the placing them into the ground; but before this, I would advise, if the trees have been long out of the ground, so that the roots are dried, to place them in water eight or ten hours before they are planted, observing to put them in such manner, that their heads may remain erect, and their roots only immersed therein, which will swell the dried vessels of the roots, and prepare them to imbibe nourishment from

from the earth. In fixing them, great regard should be had to the nature of the soil, which if cold and moist, the trees should be planted very shallow; as also, if it be a hard rock or gravel, it will be much the better way to raise a hill of earth where each tree is to be planted, than to dig into the rock or gravel, and fill it up with earth (as is too often practised), whereby the trees are planted, as it were in a tub, there being but little room for their roots to extend; so that after two or three years growth, when their roots have extended to the sides of the hole, they are stopped by the rock or gravel, can get no farther, whereby the trees will decline, and in a few years die; besides, these holes detain the moisture so, that the fibres of the plants are often rotted thereby. But when they are raised above the surface of the ground, their roots will extend and find nourishment, though the earth upon the rock or gravel be not three inches thick, as may be frequently observed, where trees are growing upon such soils.

The next thing to be observed is to place the tree in the hole in such manner, that the roots may be about the same depth in the ground, as they were growing before they were taken up; then break the earth fine with a spade, and scatter it into the hole, so that it may fall in between every root, that there may be no hollows in the earth (but you should by no means sift or screen the mould, for reasons given in some other places); then having filled in the earth, you should gently tread it close with your feet, but do not make it too hard, which is a very great fault, especially if the ground is strong and inclinable to bind.

Having thus planted the trees, you should provide a parcel of stakes, one of which should be driven down by the side of the trees, and fastened thereto to support them from being blown down or displaced by the wind; then lay some mulch upon the surface of the ground, about their roots, to prevent the earth from drying.

This is to be understood of standard-trees which cast their leaves; for such as are planted against walls, should have their branches fastened to the wall to prevent the trees from being displaced by the wind; but there is no difference in their management, only to preserve their heads entire, and to place their roots about five inches from the wall, inclining their heads thereto; and the spring following, just before they shoot, their heads should be cut down to five or six buds, as is fully directed under the several articles of the different kinds of fruit.

As to the watering of all new-planted trees, I should advise it to be done with great moderation, nothing being more injurious to them than over-watering. Examples enough of this kind may have been seen in many parts of England, where plantations have been over-watered, whereby the greatest part of the trees have failed, or those which have survived, have made little progress, occasioned by the abundance of water given to them, whereby the fibres were rotted off as soon as produced. And how can any person imagine that a tree should thrive, when the ground, in which it is planted, is continually floated with water? for by an experiment made by the Rev. Dr. Hales, in placing the roots of a dwarf Pear-tree in water, the quantity of moisture imbibed decreased very much daily, because the sap-vessels of the roots, like those of the cut-off boughs in the same experiment, were so saturated and clogged with moisture, by standing in water, that more of it could not be drawn up. And this experiment was tried upon a tree which was full of leaves, and thereby more capable to discharge a large quantity of moisture than such trees as are entirely destitute of leaves; so that it is impossible such trees can thrive, where the moisture is too great about their roots.

The seasons for planting are various, according to the different sorts of trees, or the soil in which they are planted; for such trees whose leaves fall off in winter, the best time is in the middle or end of october, provided the soil be dry; but for a very wet soil, it is better to defer it until the latter end of february, or the beginning of march; and for many kinds of

Evergreens, the beginning of april is by far the best season, though some sorts may be safely removed at midsummer, provided they are not to be carried very far; but you should always make choice of a cloudy season, if possible, at that time of the year, when they will take fresh root in a few days. And, on the contrary, when these trees are removed in winter, during which time they are almost in a state of rest, they do not take root until the spring advances, and sets the sap in motion; so that many times they die, especially if the winter proves severe.

As to the preparing the soil for Planting, that must also be done to suit the different sorts of trees, some requiring a light soil, others a strong one, &c. But this is fully set down in the several articles of trees, under their proper heads, to which the reader is desired to turn; though for the fruit-trees in general, a fresh soil from a pasture ground, which is neither too light and dry, nor over-strong and moist, but rather a gentle, soft, loamy earth is to be preferred, provided it be exposed some time. And if it be for wall trees, will be the better if the borders are filled with this earth six or eight feet wide, but it need not be above two feet and a half deep at most; for when the borders are made too deep, the roots of these trees are enticed downward, which is of bad consequence to fruit-trees, as hath been elsewhere observed. The same also must be observed for standard-trees (where fresh earth is brought to the places in which they are planted), not to make the holes too deep, but rather let them have the same quantity of earth in width, which is much to be preferred.

There are several persons who direct the placing the same side of the tree to the south, which before removing had that position, as a material circumstance to be strictly regarded; but from several trials which I have made, I could not observe the least difference in the growth of those trees which were so placed, and others which were reversed; so that I conclude, it is not of any consequence to observe this method.

The distance which trees should be planted at, must also be proportioned to their several kinds, and the several purposes for which they are intended, all which is explained under their several heads; but fruit-trees, planted either against walls, or for espaliers, should be allowed the following distances: for most sorts of vigorous-shooting Pear-trees, from thirty-six to forty feet; for Apricots, sixteen or eighteen feet; Apples, twenty-five or thirty feet; Peaches and Nectarines, twelve feet; Cherries and Plums, twenty-five feet, according to the goodness of the soil or the height of the wall. But as these things are mentioned in the several articles of fruit trees, it will be needless to repeat any more in this place.

What hath been mentioned on this article chiefly relates to fruit-trees and evergreens, for gardens; but I shall now proceed to the planting of forest and other trees, which are in all large plantations of parks and extensive gardens the most numerous. The modern practice of transplanting these sorts of trees, from hedge-rows and woods, of large sizes, and at a great expense, has too generally prevailed in this kingdom, the generality of planters being in too great haste, and by a mistaken notion of saving time, begin by transplanting such large trees as they find on their own estates, or that they can procure in their neighbourhood, and please themselves with the hopes of having fine plantations soon; but if, instead of removing these trees, they would begin by making a nursery, and raising their trees from seeds, they would save a great expense and much time, and they would have the constant pleasure of seeing their trees annually advance in their growth, instead of growing worse, as will always be the case where old trees are removed, though many persons flatter themselves with the hopes of success, when they find their trees shoot out the following season; and as these will often continue to grow for some years after, they continue their expectations, till after waiting many years, in which time they might have had seedling trees grown up to a fine size, if they had been sown at the time the large trees were planted, they find their trees annually decaying, when they

they most expected their increase; and of all the plantations which I have yet seen of these large trees of any sort, there is scarce one which has ever succeeded.

In some of these plantations, all the Elms which could be procured from the neighbouring hedge-rows have been removed, most of which having been suckers produced from the old stumps, have scarce any roots: these have, at a great expense, been planted and watered, and perhaps many of them have made considerable shoots, the whole length of the stem at every knot, and many of them have continued ten or twelve years alive, but have not increased in the girth of their stems half an inch, and all that time have been decaying at their heart, and growing hollow; so that when a severe frost in winter, or a great drought in summer, has happened, there has been an almost total destruction of the trees.

In other places I have seen great numbers of tall Oaks transplanted, which have appeared to thrive for some years when first planted; but in five or six years after have begun to decay at their top; and have leisurely died to the ground, than which nothing can be a more disagreeable sight to the owner. And the method which is commonly practised in transplanting these trees would destroy them, were there a possibility of such large trees surviving their removal, which is, that of cutting off all their branches; for, were the same practised on a tree of the same age unremoved, it would stint the growth so much as not to be recovered in several years, nor would it ever arrive to the size of such as have all their branches left on them. But the reason given for this practice is, that if the branches were left upon the trees, they could not be supported, the winds would throw them out of the ground; and another (which is bad philosophy) is, that as the roots have been greatly reduced by transplanting, so the heads of the trees should be reduced in the same proportion. As to the first, it must be allowed, that trees which are removed with great heads, are with great difficulty preserved in their upright situation; for the winds will have such power against the branches as to overset the trees, if they are not very strongly supported with ropes. Therefore this may be brought as an objection to the transplanting of large trees, rather than in support of a practice which is so prejudicial to them: and as to the other reason, it has no foundation; for if large amputations are made at the root, there should not be the same practised on the head, because the wounded part of the head will imbibe the air at every orifice, to the great prejudice of the tree. Besides this, if we pay any regard to the doctrine of the circulating of the juices in plants, we must allow, that the heads of the trees are equally useful to nourish the roots, as the roots are to the heads; so that if there is a waste of sap both at the top and bottom of the trees, it must weaken them in proportion. For whoever will be at the trouble to try the experiment on two trees of equal age and health, and cut the branches off from one, and leave them upon the other at the time of transplanting, if the latter is well secured from blowing down, it will be found to succeed much better than the other; or if the same thing is practised upon two trees left standing, the tree whose branches are cut off, will not make half the progress as the other, nor will the stem increase in its bulk half so fast. Therefore where trees are transplanted young, there will be no necessity for using this unnatural amputation, and the success of these plantations will always give pleasure to the owner. I have seen some plantations of Oak-trees, which were made fifty years ago, and had thriven beyond expectation most part of the time, but are now annually decaying, and seem as if they would not continue many years longer, when the trees on the same soil and in the same situation, which were left standing, are in perfect health and vigour; and some of these transplanted trees which have been cut down, were found to be of little value, their timber being shaken and bad.

It is common to hear persons remarking that from the present spirit of Planting, great advantages will accrue to the public by the increase of timber; but

whoever is the least skilled in the growth of timber, must know, that little is to be expected from most of the plantations which have lately been made; for there are few persons who have had this in their view when they commenced planters, and of those few scarce any of them have set out right; for there never was any valuable timber produced from trees which were transplanted of any considerable size, nor is any of the timber of the trees which are transplanted young, equal in goodness to that which has grown from the seeds unremoved. Besides, if we consider the sorts of trees which are usually planted, it will be found, that they are not designed for timber; so that upon the whole, it is much to be doubted, whether the late method of planting has not rather been prejudicial to the growth and increase of timber, than otherwise.

Before I quit this subject of Planting, I must beg leave to observe, that most people are so much in a hurry about Planting, as not to take time to prepare their ground for the reception of trees, but frequently make holes and stick in the trees, amongst all sorts of rubbish which is growing upon the land; and I have frequently observed, that there has not been any care afterwards taken to dig the ground, or root out the noxious plants; but the trees have been left to struggle with these bad neighbours, who have had long possession of the ground, and have established themselves so strongly, as not to be easily overcome; therefore, what can be expected from such plantations? This is to be understood of deciduous trees, for the Pines and Firs, if once well rooted in the ground, will soon get the better of the plants and destroy them.

There are some other persons who begin better than the former, and who will be at the expense of preparing the ground and of planting their trees, but afterwards take very little care of them; so that it is common to see them overgrown with weeds in a year after they are planted, whereby the trees receive so much injury as to retard their growth, and many times, if the trees are young, they are totally destroyed. Therefore I would advise every person who proposes to plant, to prepare the ground well before-hand, by trenching or deep ploughing it, and clearing it from the roots of all bad weeds; for by so doing, there will be a foundation laid for the future success of the plantation. Also I advise no person to undertake more of this work than he can afterward keep clean, for all plantations of deciduous trees will require this care, at least for seven years after they are made. Therefore all small plantations should have the ground annually dug between the trees; and as to those which are large, it should be ploughed between them. This will encourage the roots of the trees, to extend themselves, whereby they will find a much greater share of nourishment, and by loosening the ground, the moisture and air will more easily penetrate to the roots, to the no small advantage of the trees. But besides this operation, it will be absolutely necessary to hoe the ground three or four times in summer, either by hand or the hoe-plough. This I am aware will be objected to by many, on account of the expense; but if the first hoeing is performed early in the spring, before the weeds have gotten strength, a great quantity of ground may be gone over in a short time; and if the season is dry when it is performed, the weeds will presently die after they are cut; and if this is repeated before the weeds come up again to any size, it will be found the cheapest and very best husbandry; for if the weeds are suffered to grow till they are large, it will be a much greater expense to root them out, and make the ground clean; besides, the weeds will rob the trees of great part of their nourishment. I have sometimes been told, that it is necessary to let the weeds grow among trees in summer, in order to shade their roots, and keep the ground moist, but this has come from persons of no skill; but as others may have been deceived by such advice, I imagine it may not be improper to give some answer to this. And here I must observe, That if weeds are permitted to grow, they will draw away all moisture from the roots of the trees for their own nourishment, so that the trees will be thereby deprived

of the kindly dews and the gentle showers of rain, which are of great service to young plantations; and these will be entirely drawn away by the weeds, which will prevent their penetrating the ground, so that it is only the great rains which can descend to the roots of the trees. And whoever has the least doubt of this matter, if they will but try the experiment, by keeping one part of the plantation clean, and suffer the weeds to grow on another, they will soon be convinced of the truth by the growth of the trees. And though this cleaning is attended with an expense, yet the success will overpay this, beside the additional pleasure of seeing the ground always clean.

In the disposition of trees in parks, and of shrubs and trees in gardens, there are very few of those who call themselves designers, who have had much regard to this particular; for in most of the modern plantations, it is not uncommon to see an Oak, an Elm, or some other large-growing tree planted where a Rose-bush, a Honeysuckle, or Sweet-briar, might with more propriety occupy the space: so that in a few years, if these large trees are left growing, the whole plantation must make a disagreeable appearance. See NURSERY and Woods.

[PLATANARIA. See *Sparganium*.

PLATANI FOLIO. See *Carica*.

PLATANOCEPHALUS. See *Nauclea*.]

PLATANUS (of *Pliny*, &c. and Πλάτανος of *Theophrastus* and *Dioscorides*; from πλατύς wide; the leaves of this tree being very wide: or rather, from its spreading branches.)

Lin. gen. n. 1075. *Reich. n.* 1173. *Schreb. n.* 1451.

Gärtn. t. 90. *Tournef. t.* 363. *Juss.* 410.

Class. 21. 7. Monoecia Polyandria.

Nat. order of Amentaceæ.

GENERIC CHARACTER.

* *Male Flowers* compound, forming a globular Ament.

CAL. A few very small jags.

COR. scarcely apparent.

STAM. Filaments oblong, thicker at top, coloured. Anthers four-cornered, growing round the filament at the lower part.

* *Female Flowers* forming a globe, numerous, on the same tree.

CAL. Scales many, very small.

COR. Petals many, concave, oblong, club-shaped.

PIST. Germs many, awl-shaped, ending in awl-shaped Styles; with a recurved Stigma.

PER. none. Fruits many, collected into a globe.

SEED roundish, placed on a bristle-shaped peduncle, and terminated by the awl-shaped style; with a capillary pappus adhering to the base of the seed.

Obs. The parts of the flowers require a more attentive examination by such as have a sharp sight.

ESSENTIAL CHARACTER.

MALE. Cal. Ament globular. Cor. scarcely apparent. Anthers growing round the filament.

FEM. Cal. Ament globular. Cor. many-petalled. Stigma recurved. Seeds roundish, mucronate with the style, pappus at the base.

SPECIES.

1. *Platanus orientalis.* Oriental Plane Tree.

Lin. spec. 1417. *Juss.* 859. *Reich.* 4. 170. *hort. cliff.* 447. *Gärtn. fruct.* 2. 57. *Hassellqu. itin.* 487. *Gron. orient.* 293. *Pallas ross.* 1. 2. p. 1. t. 51. *Du Roi barbk.* 2. 130. *Medic. in obs. soc. æcon. Lutr.* 1774. p. 240. *Ait. kew.* 364. *Hunt. Evel. silva.* 2. 53.

Platanus. Bauh. pin. 431. *Clus. hist.* 1. 9. *Dalech. hist.* 92. *Belon. itin.* 9. *Dod. pempt.* 842. *Matth.* 133. *Ger.* 1304. *emac.* 1489.

P. orientalis vera. Park. theat. 1427. *Raii hist.* 1706. *Dukam. arb.* 2. 171. n. 1. t. 33.

α. *P. O. elongata.* Common Oriental Plane Tree. Leaves attenuated at the base, flat.

β. *P. O. acerifolia.* Spanish Plane Tree. *Ait. kew.* 3. 364.

P. orientalis Aceris folio. Tournef. Duham. arb. 2. *Du Roi barbk.* 133.

Leaves transverse.

γ. *P. O. undulata.* Wave-leaved Plane Tree.

Leaves attenuated at the base, waved.

Leaves subpalmate, nerves smoothish underneath.

2. *Platanus occidentalis.* American Plane Tree.

Lin. spec. 1418. *Juss.* 859. *Reich.* 4. 170. *hort. cliff.* 78. *Gron. virg.* 151. *Kalm. itin.* 2. 198. *Engl. edit.* 1. 62. *Du Roi barbk.* 2. 134. *Medic. in obs. soc. æcon. Lutr.* 1774. p. 239. *Catesb. car.* 1. 156. t. 56. *Hunt. Evel. silv.* 2. 54. *Ait. kew.* 3. 365.

P. occ. f. virginensis. Park. theat. 1427. f. 2. *Raii hist.* 1707. *Dukam. arb.* 1. 25.

Leaves lobed-angular, nerves tomentose underneath.

DESCRIPTIONS, &c.

1. The first sort, or Eastern Plane-tree, grows naturally in Asia, where it becomes very large; the stem is tall, erect, and covered with a smooth bark, which annually falls off; it sends out many side branches, which are generally a little crooked at their joints; the bark of the young branches is of a dark brown, inclining to a purple colour; the leaves are placed alternate, on foot-stalks an inch and a half long; the leaves themselves are seven inches long and eight broad, deeply cut into five segments, and the two outer are slightly cut again into two more; these segments have many acute indentures on their borders, and have each a strong midrib, with many lateral veins running to the sides; the upper side of the leaves is of a deep green, and the under side pale. The flowers come out upon long peduncles hanging downward, each sustaining five or six round balls of flowers; the upper, which are the largest, are more than four inches in circumference; these sit very close to the peduncle. The flowers are so small as scarce to be distinguished without glasses; they come out a little before the leaves, which is the beginning of June; and in warm summers the seeds will ripen late in autumn, and if left upon the trees will remain till spring, when the balls fall to pieces, and the bristly down which surrounds the seeds, helps to transport them to a great distance with the wind.

[*Du Roi* remarks, that the leaves vary in figure, but are always smooth; and that the peduncles are brown. *Pallas* says, that the leaves, when young, are white-tomentose; but when old, the petioles only are so; that the peduncles are smooth; that it differs most from the Occidental Plane-tree in having scarcely any stipules on the adult branches; and that the wood is very hard, reddish with brownish-gray transverse streaks.

Gärtner thus describes the fruit.—Pericarp none, unless the suberous or corky crust of the seed be taken for it. Common integument globular, corky, attended on every side by the seeds heaped together very closely, when mature naked, without any visible scale. Seed naked, club-shaped, from an awl-shaped peduncle, compressed a little or somewhat angular, thickened into a globular head, and dagger-pointed with the permanent style or stigma; at the base crinite with fulvous simple straight hairs, not exceeding the head in length. Integument double: outer thick, somewhat woody, not opening, but easily split from the base upwards, so that it may be taken for a capsule: inner membranaceous, very thin, pale. Albumen none. Embryo oblong, compressed, inverted, yellowish, much shorter than the shell of the seed. Cotyledons linear, somewhat leafy. Radicle roundish, superior.

Native of the Levant, and many other parts of Asia. On mount Taurus, Athos, Macedonia, Lemnos, Crete, mostly near water¹. In Persia and perhaps Georgia, where there are very handsome trees, four yards in circumference; on mount Caucasus, where it is very common, it takes the form of a large shrub; as the American Plane does, in the gardens at St. Petersburg^m.

The Plane Tree has always been much esteemed in the Eastern countries, where it grows naturally, for its beauty, and grateful shade. Evelyn, Miller, and Gilpin have related at length, from *Ælian*, the adoration that was paid by Xerxes, to a tree of this sort in

¹ Linn.

^m Pallas.

Phrygia.] And wherever any sumptuous buildings were erected in that country, the porticoes, which opened to the air, generally terminated in groves of lines of these trees.

[It was no less esteemed in Italy after it was introduced there. Pliny informs us, that it was first brought over the Ionian sea, into the island of Diomedes, for a monument to that hero; thence it passed into Sicily, and so into Italy^a. It was planted near their houses, and in rows for walks; and was even irrigated with wine.]

Pliny affirms, that there is no tree whatsoever which so well defends us from the heat of the sun in summer, or that admits it more kindly in winter; the branches being produced at a proportional distance to the largeness of the leaves; (which holds good in all sorts of trees yet known): so that when the leaves are fallen in winter, the branches easily admit the rays of the sun. [Virgil calls the *Platanus sterilis*, not because it bears no seed, but no fruit that is eatable.]

Mr. Miller says, it is generally supposed, that the introduction of this tree in England is owing to the great lord chancellor Bacon, who planted a noble parcel of them at Verulam, which were very flourishing some years since, but have lately been destroyed.

[Mr. Evelyn also says—the introduction of this true Plane among us, is *perhaps* due to the great lord chancellor Bacon, who planted those, still flourishing ones (1706) at Verulam. He adds, that he owed a hopeful plant then growing at his own villa to the late Sir George Crook, of Oxfordshire. He speaks of the true Plane of antiquity, as being very rare in England in his time, and of the American Plane as more common.]

Mr. Miller also informs us, that there were very few large Oriental Plane Trees to be seen; which he thinks might be owing to the great esteem persons of the last age had for the Lime Tree, which being much easier to propagate, and of quicker growth during the three or four first years, became more fashionable for avenues and shady walks near habitations.

[But we had the Oriental Plane-tree in England certainly before the time of Lord Bacon; for it appears from Turner's herbal, that it was cultivated here as early as 1562^o: whereas the Chancellor was born only in 1561. The plantations however at Verulam might be the first of any note or consideration.

Mr. Boutcher from Evelyn, and he from Rieciolus, says that the Turks used to build most of their ships with this timber; that it was hard, close, takes a fine polish, and is valuable for a variety of useful purposes. Mr. Marshall, seemingly with more reason, ranks this wood with that of the Great Maple, vulgarly called Sycamore, and in the North of England Plane Tree.

With us it is considered merely as an ornamental tree, and is not so common as the American Plane even in ornamental plantations.] Notwithstanding its backwardness in coming out in the spring, and the sudden decay of its leaves in autumn, yet for its goodly appearance, and the great size to which it will grow, the Oriental Plane deserves a place in all large plantations, or shady recesses, especially near the mansion, or on a moist soil and near streams of water, in which situations it will arrive at a prodigious magnitude.

[Lady Craven speaks of some which she saw in the Turkish dominions of a size so gigantic, that the largest trees we have in England, placed near them, would appear only like broomsticks.

Pausanias tells us of a Plane-tree of extraordinary size and beauty in Arcadia, supposed to be planted by Menelaus; so that the age of the tree, when Pausanias saw it, must have been about thirteen hundred years^p. That the tree was large and handsome we may believe, but no tradition can be sufficient to persuade us that a Plane-tree ever attained such an age, provided it was found when Pausanias saw it.

Pliny mentions other remarkable Plane-trees: as one in Lycia that had mouldered away into an immense

cave, eighty feet in circumference. Licinius Mutianus, governor of that province, with eighteen others dined commodiously on the benches of pumice placed round the body of it.

Caligula also had a tree of this sort at his villa near Velitræ. The hollow of the trunk held fifteen persons at dinner, with a proper suite of attendants^q.]

That which is called Maple-leaved Plane is certainly a feminal variety of the Eastern Plane, for the seeds which scattered from a large tree of this variety in the Chelsea garden have produced plants of the common sort several times. The Maple-leaved Plane has not its leaves so deeply cut as those of the Eastern Plane: they are divided into five segments, pretty deep, but are not lobed, like those of the Occidental Plane. The petioles are much longer than in either of the species, and the upper surface of the leaves is rougher, so that they might be taken for different sorts, if we did not know that they rose from the same seeds.

The Spanish Plane-tree has larger leaves than either of the sorts; and are more divided than those of the Occidental, but not so much as those of the Oriental. Some of the leaves are cut into five, and others into three lobes only; these are sharply indented on the edges, and are of a light green; the foot-stalks are short, and covered with a short down. This is by some called the middle Plane-tree, from the leaves being of a shape between the two species.

2. The second sort grows naturally in most parts of North America; this tree also grows to a large size, the stem very straight, and of equal girth most part of the length; the bark is smooth, and annually falls off like that of the other: the branches extend wide on every side; the young ones have a brownish bark, but the old ones have a gray bark; the foot-stalks of the leaves are three inches long; the leaves are seven inches long, and ten broad; they are cut into three lobes or angles, and have several acute indentures on their borders, with three longitudinal midribs, and many strong lateral veins. The leaves are of a light green on their upper side, and paler on their under. The flowers grow in round balls like the former, but are smaller. The leaves and flowers come out at the same time with the former, and the seeds ripen in autumn.

[Kalm, who calls it the Virginian Maple, says that it grows in plenty on the shores of the Delaware. The English Americans call it Button-wood, (from the catkins or aments) or Water Beech, which is more common. It grows mostly in low places, but especially on the edge of rivers and brooks. It is easily transplanted to drier places, if the soil be good; and as the leaves are large and the foliage thick, it is planted about houses and in gardens, to afford a pleasant shade in the hot season. It likewise grows in marshes and in swampy fields, with the Ash and Red Maple. It is remarkable for its quick growth; and is frequently as tall and thick as the best Fir trees. There are such numbers of them on the low meadows between Philadelphia and the ferry at Gloucester, on both sides of the road, that in summer it is a shady walk all the way. In Philadelphia near the Swedish church, some great Plane-trees stand on the shore of the river.

It appears from Parkinson that the American Plane was introduced here before 1640, by Mr. John Tradescant, junior^r. Johnson, in his additions to Gerarde's herbal, printed in 1633, mentions that there were two young ones at that time growing with Mr. Tradescant. He does not seem indeed to have known that these were of a different species from those which Gerarde says his servant William Marshall (whom he sent into the Mediterranean sea as surgeon unto the Hercules of London) found growing in Lepanto, hard by the sea side, at the entrance into the town, a port of Morea; and from thence brought one of the rough buttons, being the fruit thereof. These were Oriental Planes; but there is no doubt that the young trees growing with Mr. Tradescant were Occidental Planes.

^a Martyn's Virg. Georg. 2. 70. p. 121.

^p Hort. kew.

^q Gilpin's Forest scenery, vol. 1. p. 50 and 123.

^r Idem, p. 123 to 125.

^s Hort. kew.

In more than a century and half it has not become very common, although, as Mr. Marshall says, it is particularly refreshing to the eye, and truly ornamental; the bright colour giving variety to groves and masses of wood; and in single trees or groups being singularly elegant.

The stem of the Occidental Plane, says Mr. Gilpin, is very picturesque: it is smooth and of a light ash colour, and has the property of throwing off its bark in scales; thus naturally cleansing itself, at least its larger boughs, from moss and other parasitical incumbrances.

No tree forms a more pleasing shade. It is full-leaved, and its leaf is large, smooth, of a fine texture, and seldom injured by insects. Its lower branches shooting horizontally, soon take a direction to the ground; and the spray, by twisting about in various forms, fills up every little vacuity with shade. At the same time it must be owned, the twisting of its branches is a disadvantage, when the tree is stripped of its leaves, and reduced to a skeleton. Nor indeed does its foliage, from the largeness of the leaf, and the mode of its growth, make the most picturesque appearance in summer. The summer-leaf also both of this and the Oriental Plane, wears so light a hue, as to mix ill with the foliage of the Oak, the Elm, and other trees. On the skirts of a plantation they sometimes form, during the summer, a disagreeable spot. In autumn, their leaves receive a mellow tint, which harmonizes very well with the waning colour of the wood.

One of the finest Occidental Planes, adds Mr. Gilpin, stands in my own garden at Vicar's-hill, where its boughs, feathering to the ground, form a canopy of above fifty feet in diameter.

At Shadwell Lodge in Norfolk, the seat of John Buxton, Esq. a Plane Tree was planted in April 1744; it was then eight feet high. In April 1775, the height was sixty-five feet nine inches; the girth at half a foot from the ground was seven feet nine inches; at twenty feet, four feet six inches^s.]

PROPAGATION AND CULTURE.

1. The Eastern Plane-tree is propagated either from seeds, or by layers, the latter of which is generally practised in England; though the plants thus raised seldom make so large straight trees, as those which are produced from seeds; but it has been generally thought that the seeds of this tree were not productive, because they have not been sown at a proper season, nor managed in a right manner; for I have had thousands of the young plants spring up from the seeds of a large tree, which scattered upon the ground in a moist place: and I since find, that if these seeds are sown soon after they are ripe, in a moist shady situation, they will rise extremely well; and the plants thus obtained, will make a considerable progress after the second year, being much hardier and less liable to lose their tops in winter, than those which are propagated by layers. And since the seeds of this tree frequently ripen well in England, they may be propagated in as great plenty as any other forest-tree.

2. The Virginian Plane-tree will grow extremely well from cuttings, if they are planted the beginning of October upon a moist soil; and if they are watered in dry weather, will make a prodigious progress; so that in a few years from the planting, they will afford noble trees for planting avenues, and other shady walks; and their trunks are perfectly straight, growing nearly of the same size to a considerable height, there being the least difference in the girth of this tree, for several yards upwards, of any sort of tree whatsoever. The Hon. Paul Dudley, Esq; in a letter to the Royal Society, mentions one of these trees, which he observed in New England, whose girth was nine yards, and held its bigness a great way up, which tree, when cut down, made twenty-two cords of wood. He also says, in the same letter, that he had propagated many of these trees by cutting off sticks of five or six feet long, and setting them a foot deep into the ground in the spring of the year, when the season was wet, and that they always thrive best in a moist soil.

^s Hunter's Evelyn.

Both sorts are propagated very easily by layers, in March every twig of them will take root, if they are but pegged down and covered with earth; these layers will be well rooted in one year, when they should be cut off from the old trees or stools, and planted in a nursery, where they may remain two or three years to get strength, after which they may be transplanted where they are to remain, for the younger these trees are planted the better they will thrive. An experiment of this I made in 1731, when I planted four of these trees, in the same soil and situation, at about twenty feet distance from each other; one of which, viz. the Spanish Plane, whose stem was eight inches in girth; next to this, one of the Maple-leaved Plane-tree, whose girth was not three inches, but the latter is now much larger than the former, and gains more in one year than the other does in three; and the two others which were of a middle size, have grown in a mean proportion between them.

[In the winter screen the seed-beds with pea-straw, rotten tanner's bark, or some other light covering, that can easily be removed in mild weather. In the spring, before the seeds vegetate, rake the beds gently over with a short-toothed rake, sifting a little fresh rich mould on them, and in dry weather during summer let them be watered. The following autumn, the beds having been made quite clean, put a little more good mould about the plants; after which they will require no farther trouble, but keeping them clean, till they have had another season's growth, when they may be removed into the nursery in spring: in rows one yard asunder, and eighteen inches distance in the rows.—Though many of the seeds will come up the first spring; yet the general crop must not be expected till the second.

Dr. Hunter recommends the cuttings to be taken from strong young wood, and planted early in autumn, in a moist good mould. They are generally planted thick, and then removed into the nursery: but if a large piece of moist ground be ready, the cuttings may be placed at such a distance, as not to approach too near each other, before they are of a sufficient size to plant where they are to remain, which would save the expense and trouble of a removal. The Eastern Plane will also grow from cuttings, but not so certainlyⁿ.

Mr. Boucher recommends cuttings of the Western Plane, to be planted at the beginning of March, in shady borders, two feet row from row, and eight or ten inches in the rows: if they are torn asunder at the joints with a knob of the old wood left, they will grow more readily. These cuttings should be a foot or fourteen inches long, and buried about eight inches deep. In two years they may be removed.

However propagated, after two years they may be planted out, in rows three feet and a half asunder, and eighteen inches in the rows, there to remain, or be transplanted after three years to another nursery, in rows six feet asunder, and three feet in the rows, where they may stand six or seven years. The season for transplanting the Planes is March, and they delight in a moist deep ground^x, especially the American sort. Where land is inclined to be dry, the two varieties are to be preferred^y.

PLATYLOBIUM. (From πλατύς broad, and λοβός, a pod.)

Smith in Linn. trans. 2. 350. Nov. Holl. t. 6.

Cheilococca. Salisb.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. bell-shaped, five-toothed: the three lower teeth acute and spreading; the two upper very large, obovate, obtuse, close pressed to the standard.

COR. papilionaceous: *standard* twice as long as the calyx, spreading, deeply emarginate: *wings* shorter than the standard, semi-obovate, with a blunt incurved tooth on the upper side at their base: *keel* of two adhering petals, obtuse, as long as the wings, with a tooth on

ⁿ Boucher.

^y Hunter's Evelyn.

^x Hunter.

^x Boucher.

each side of the base, embraced by the incurved teeth of the wings.

STAM. *Filaments* in one set, separated only on the upper side, and cloven nearly half their length; divisions equal and curved upwards. *Anthens* ten, nearly orbicular, equal, versatile.

PIST. *Germ* linear, very hairy. *Style* incurved, smooth. *Stigma* simple, sharp.

PER. *Legume* pedicelled, clothed with scattered hairs, somewhat scimeter-shaped, perfectly compressed, obtuse with a small point, one-celled, extending into a flat border along the upper edge, considerably beyond the insertion of the seeds.

SEEDS seven or eight, compressed, each on a curved white pedicel.

OBS. *This genus may be inserted near Crotalaria in the Linnean system.*

ESSENTIAL CHARACTER.

Cal. bell-shaped, five-cleft; the two upper segments very large and obtuse. *Legume* pedicelled, compressed, winged at the back.

SPECIES.

1. *Platylobium formosum*. *Orange Flat-pea*.
Smith in Linn. trans. 2. 350. nov. holl. 17. t. 6.

DESCRIPTION, &c.

Stem shrubby, four feet high. Branches opposite, round, roughish, covered with leaves, and ornamented with numerous flowers. Leaves opposite, on very short hairy foot-stalks, cordate-ovate, entire, revolute, acute with a minute spine at the end; very veiny, rigid, of a beautiful green, glaucous beneath. Stipules in pairs, lanceolate, brown, membranous, striated, smooth. Flowers solitary, from the axils of the uppermost leaves, opposite, on short hairy peduncles. Bractes several, at the base of the peduncle, ovate, concave, hairy; and two at the top, immediately under the flower, somewhat longer. Calyx very hairy. Standard of the corolla orange-coloured, striated almost half way to the edge, with beautifully radiant crimson lines, from a pale-yellow spot at the base: wings deep yellow; keel whitish, tipped with a rich crimson. Pod an inch and half long, and half as broad.

Native of New South Wales, where it blooms all the year through². Introduced about 1792.

PLECTRANTHUS. (*From πλεκτρον, a cock's spur, and ανθος, a flower, the corolla having a spur, which is singular in the order Gymnospermia of the class Didynamia, though common in the other order.* L'Herit.)

Lin. gen. Schreb. n. 987. L'Herit. stirp. 85. t. 41, 42. Germanea. Lamarck. Juss. gen. 116. 449.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of Verticillatae. Labiatae, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, subcampanulate, short, bilabiate. *Upper lip* ovate, wider, ascending. *Lower lip* four-cleft, acute: the two lowest segments a little longer.

COR. monopetalous, ringent, resupine. *Tube* compressed, longer than the calyx. One lip turned upwards, wider, trifid; the middle segment larger, emarginate, the lateral ones small: the other lip turned down, narrower, entire, ovate, concave.

Nectary a spur or bump from the base of the tube of the corolla, produced upwards.

STAM. *Filaments* four, declined, awl-shaped, of which two are a little shorter. *Anthens* simple.

PIST. *Germ* four-parted. *Style* filiform, the length and situation of the stamens. *Stigma* bifid, acute.

PER. none; but the calyx contains the seeds at bottom.

SEEDS four, roundish.

ESSENTIAL CHARACTER.

Cal. upper segment larger. *Cor.* resupine: gibbous or spurred at the base. *Filam.* simple.

SPECIES.

1. *Plectranthus fruticosus*. *Shrubby Plectranthus*.
L'Herit. stirp. nov. 85. t. 41. Ait. kew. 2. 322.
Nectary spurred, racemes compound, peduncles three-parted, stem shrubby levigated.

² Smith in Linn. trans.

2. *Plectranthus punctatus*. *Dotted Plectranthus*.

L'Herit. stirp. nov. 87. t. 42. Ait. kew. 2. 322.

Ocymum punctatum. *Linn. suppl. 275.*

Nectary gibbous, flowers in spikes, stem herbaceous rough-haired.

3. *Plectranthus galeatus*. *Helmet-flowered Plectranthus*.
Vahl symb. 1. 43.

Nectary gibbous, pedicels branched, leaves cordate-ovate acuminate serrate.

4. *Plectranthus Forskahlæi*.

Vahl symb. 1. 44.

Ocymum hadiense. *Forsk. descr. 109.*

Nectary gibbous, racemes leafless, stem equal.

5. *Plectranthus crassifolius*. *Thick-leaved Plectranthus*.

Vahl symb. 1. 44.

Ocymum Zatahendi. *Forsk. descr. 109.*

Nectary gibbous, racemes bracted, leaves ovate fleshy.

DESCRIPTIONS, &c.

1. This is a handsome fragrant plant, with the habit of a Nettle. Stems several, erect, very much branched, brachiate, pithy, ash-coloured. Branches opposite, spreading, obscurely marked with lines, the thickness of a reed, brittle: tender shoots four-cornered, pubescent, green. Leaves broad-ovate or shaped like a heart, only they are not emarginate but produced at the base, acute or acuminate, doubly serrate, with equal bluntish waved serratures; wrinkled, nerved and veined, with the nerves and veins prominent on the lower surface only; villose, appearing dotted underneath when viewed with a magnifying glass, spreading, fragrant, four or five inches long, and three or four wide. Petioles spreading, longer than half the leaf, having one groove above, pubescent, sometimes pale purple. Racemes terminating, erect, compound or three-parted, four-cornered, villose, from three to six inches in length. Peduncles opposite, horizontal, three-flowered, round, villose. Flowers pedicelled. Corollas blue, five lines in breadth. Bracte under the peduncles, spreading, pressed close, subsessile, ovate, acute, villose. Calyx villose, three lines wide. Seeds brown, fastened to a fleshy subrostrated body, at the bottom of the calyx, as to a receptacle.

Native of the Cape of Good Hope^a. Found there by Masson. Introduced here in 1774. It flowers from June to September^b.

2. This is an annual plant, a foot high, with a disagreeable smell. Stems a few, branching only at the base, fleshy, round, jointed; the lower joints more gibbous, and sometimes rooting; below they are purple, with very dark purple spots. Leaves ovate, acute, toothed, nerved, very much wrinkled, villose, commonly spotted with brown in the disk, the spot having stiffish brown hairs scattered over it, spreading, reclining, from two to three inches long, from eighteen to twenty-four lines wide, stinking. Petioles short, channelled. Spikes solitary, terminating; and besides this, others short and solitary from the upper axils; erect, compact, bracted, hirsute, two inches long. Flowers on short pedicels, in a sort of whorl, aggregate under each bracte, two or three lines in length. Corollas very pale blue, marked with purple lines on the disk of the upper lip; on the lower more intensely dotted towards the tip. Seeds compressed, of an ash-bay-colour.

The glands which are scattered over the corolla, and especially over the calyx in this species, are not found in *P. fruticosus*. The calyx is not really shaped like that of the *Ophrys* in this, as it is in that. The nectary of this is a bag not a spur. The upper lip is manifestly trifid in *punctatum*; but in *fruticosum* instead of the lateral segments of the upper lip, there are two toothlets at the side of the throat. Lastly the anthers are ovate in *punctatum*; four-cornered in *fruticosum*^c.

Native of Africa; where it was found by James Bruce, Esq. Introduced here in 1775: It flowers from January to May^d. Monf. L'Heritier says it flowers in autumn, and marks it as annual. In the Kew catalogue it is marked as biennial.

^a L'Heritier.

^b Hort. kew.

^c L'Heritier.

^d Hort. kew.

3. Stem villose, grooved. Leaves petioled, broad-ovate, villose, especially the veins underneath. Peduncle terminating: pedicels opposite, branched. Bractes none. Corollas pubescent, with the lower lip galeated. It approaches to *Ocimum scutellarioides* of Linneus; but that has ovate-lanceolate leaves, smaller flowers, cordate bractes, and a pair of peduncles on each side.—Native of Java.

4. Stem hirsute, not dotted. Leaves ovate, approximating towards the tops of the branches, hairy, very blunt, grossly crenate, transverse at the base, quite entire. Petiole only half the length of the leaf, a little dilated at the base. Racemes half a foot long, erect, composed of whorls having from eight to ten flowers. Pedicels filiform. Fruiting calyxes grooved, gibbous at the base underneath: the lower segments bristle-shaped, ascending. Corolla four times as long as the calyx: tube bent back a little, above the calyx, gibbous upwards.

Native of the mountains of Arabia Felix and Madagascar. The specimens from the latter are more villose and soft.

5. This differs from the preceding in having fleshy leaves, and membranaceous ovate bractes.

Native of Arabia Felix. Probably several species of *Ocimum* may belong to this genus^c.

PROPAGATION AND CULTURE.

1. This perfects seeds, and may be increased by them; as also freely by cuttings. It must have the protection of the dry stove.

2. This also commonly ripens its seeds, and is propagated only by them. It may be preserved in the dry stove or greenhouse. The other two species have not yet been cultivated in Europe.

PLECTRONIA. (From Πλεκτρον.)

Lin. gen. Reich. n. 300. Schreb. n. 389. Juss. 382.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*? *Rhamni*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, turbinate, obsoletely five-toothed, closed with sinuses or five villose scales; permanent.

COR. *Petals* five, lanceolate, sessile, inserted into the throat of the calyx.

STAM. *Filaments* five, very short. *Anthems* geminate, roundish, each covered by the calycine scales.

PIST. *Germ* inferior. *Style* filiform, shorter than the calyx. *Stigma* ovate.

PER. *Berry* oblong, two-celled.

SEEDS solitary, oblong, compressed.

ESSENTIAL CHARACTER.

Pet. five inserted into the throat of the calyx. *Berry* two-seeded, inferior.

SPECIES.

1. *Plectronia ventosa*.

Lin. mant. 52. Juss. 242. Reich. 1. 564. Willd. 1152.

P. corymbosa. *Burm. prodr. 6.*

Rhamnus foliis subrotundo-acuminatis, fructu racemoso. *Burm. afr. 257. t. 94.*

DESCRIPTION, &c.

This is a tree with four-cornered branches. Leaves opposite, petioled, lanceolate-ovate, quite entire, even, longer than the internodes. Corymbs capillary, brachiate, shorter than the leaves.—Native of the Cape of Good Hope^f.

PLIANT MEALY TREE. See *Viburnum*.

PLINIA. (So named by Plumier, in memory of Caius Plinius Secundus, born at Verona under Tiberius; the celebrated author of a compilation of *Natural History*, under the title of *Historia Mundi*.)

Lin. gen. n. 671. Reich. n. 676. Schreb. n. 851.

Plum. 11. Juss. 342.

Class. 12. 1. Icolandria Monogynia.

Nat. order of *Rosaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five or four-parted: segments acute, flat, small.

^c Vahl.

^f Linn. mant.

COR. five or four-petalled: *petals* ovate, concave.

STAM. *Filaments* numerous, capillary, the length of the corolla. *Anthems* small.

PIST. *Germ* superior, small. *Style* awl-shaped, longer than the stamens. *Stigma* simple.

PER. *Drupe* very large, globular, grooved.

SEED single, very large, globular, smooth.

ESSENTIAL CHARACTER.

Cal. five or four-parted. *Pet.* five or four. *Drupe* superior, grooved: (inferior in *Pl. pedunculata*.)

SPECIES.

1. *Plinia crocea.* *Saffron-fruited Plinia.*

Lin. Juss. 464. Reich. 2. 490.

P. pinnata. *Lin. spec. 735.*

P. fructu croceo odorato. *Plum. gen. 9. ic. 225.*

Flowers five-petalled.

2. *Plinia pedunculata.* *Red-fruited Plinia.*

Lin. suppl. 253. Juss. 464.

P. rubra. *Lin. Juss. ed. 13. p. 386. mant. 243.*

Reich. 2. 490.

Myrtus brasiliensis. *Lin. spec. 674.*

Eugenia uniflora. *Lin. spec. 673.*

Ibipitanga. *Marcgr. bras. 187.*

Flowers four-petalled.

DESCRIPTIONS, &c.

1. This is a tree, with abruptly pinnate leaves: leaflets about twelve, ovate-lanceolate, quite entire. Flowers sessile, scattered over the older naked branches. Fruit eatable.—Native of America^g.

2. Leaves opposite, petioled, simple, even, like those of Myrtle, ovate. Flowers peduncled, the length of the leaves, subumbelled. Calycine leaflets four, ovate, concave, spreading, coloured, reflex. Petals four or eight, obovate, sessile, twice as long as the calyx. Filaments very many, capillary, the length of the petals, inserted into the receptacle: anthers roundish. Germ inferior, roundish, angular. Style filiform, the length of the stamens. Stigma simple. Berry roundish, the size of a Plum, with eight swellings, one-celled, umbilicated with a four-toothed calyx, very like those of the other species, red and sapid. Seed single, subglobular^h.

Native of Brasil. Cultivated here in 1759, by Mr. Miller. It flowers in January and February. It is commonly cultivated in Madeira and the West Indiesⁱ.

This species is thrice repeated by Linneus, twice in the *Species Plantarum*, under the names of *Eugenia* and *Myrtus*; and again in the thirteenth edition of *Systema Vegetabilium* and *Mantissa Plantarum*, under the name of *Plinia rubra*. See *Eugenia* and *Myrtus* in this Dictionary.

PLOCAMA. (Πλοκαμος, a lock of hair.)

Ait. hort. kew. 3. 508. Lin. gen. Schreb. n. 1738.

p. 797.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, very small, five-toothed, permanent.

COR. one-petalled, bell-shaped, five-parted: segments oblong.

STAM. *Filaments* five, short, inserted into the tube. *Anthems* linear, from incumbent erect.

PIST. *Germ* inferior, globular. *Style* filiform-subclavate, longer than the stamens. *Stigma* simple, obtuse.

PER. *Berry* subglobular, three-celled.

SEEDS solitary, linear-oblong.

ESSENTIAL CHARACTER.

Cal. five-toothed, superior. *Cor.* bell-shaped, five-cleft. *Berry* three-celled: cells one-seeded.

SPECIES.

1. *Plocama pendula.* *Pendulous Plocama.*

Ait. kew. 1. 292. Lin. spec. ed. Willd. 1210.

Native of the Canary Islands; where it was found by Mr. Francis Masson. It was introduced in 1779^k.

PLOUGHMAN'S SPIKENARD. See *Baccharis* and *Conyza*.

PLUKENETIA. (So named by Plumier from Leonard Plukenet, M. D. He published *Phytographia*, 1691 to 1696, 4°. *Almagestum Botanicum*, 1696, 4°. *Alma-*

^g Linn. spec.

^h Linn. suppl.

ⁱ Idem.

^k Hort. kew.

gesti Botanici Mantissa, 1700, 4°. Amaltheum Botanicum, 1705, 4°. He was born in 1642.)

Lin. gen. n. 1080. Reich. n. 1178. Schreb. n. 1459.

Plum. 13. Juss. 392.

Class. 21. 8. Monoecia Monadelphia.

Nat. order of *Tricoccæ*. *Euphorbiæ*, Juss.

GENERIC CHARACTER.

* *Male Flower*.

CAL. none, unless the corolla be regarded as such.

COR. *Petals* four, ovate, spreading.

STAM. *Filaments* eight, very short, united. *Antlers* erect, simple.

Nectary, four glands, at the base of the stamens, furnished with a beard longer than the stamens.

* *Female Flower* on the same plant with the Males, larger.

CAL. four-leaved, small.

COR. as in the males.

PIST. *Germ* quadrangular. *Style* filiform, very long, declined. *Stigma* peltate, four-cleft; *segments* obtuse, flat, each marked with a dot in the middle.

PER. *Capsule* depressed, quadrangular, keeled at the angles, in the middle of which is a thin wart, four-celled: cells two-valved.

SEEDS solitary, roundish, compressed, a little acuminate at one end.

ESSENTIAL CHARACTER.

Cal. none. Pet. four.

MALE. *Stam.* eight. *Nect.* four, bearded.

FEM. *Style* very long, with a peltate, four-lobed stigma. *Caps.* four-grained.

SPECIES.

1. *Plukenetia volubilis*.

Lin. spec. 1423. syst. 862. Reich. 4. 181. suppl. 421. Plum. gen. 47. ic. 226. Rumph. amb. 1. 194. t. 79. f. 2.

DESCRIPTION, &c.

Stem twining. Leaves like those of Ivy, cordate, ferrate, acute, on loose petioles. Racemes composed of numerous male flowers, and a few female flowers at bottom. Fruit resembling that of *Euonymus margaritifera*, figured by Plukenet, t. 176. f. 4. but four-grained, white above with two-warted angles.—Native of both Indies¹. Habit of *Tamus* or *Bryonia*^m.

PLUM. See *Prunus*.

—, Maiden. See *Camocladia*.]

PLUMBAGO. (*Macula plumbea* imposita. Lin. A nigro colore quem imprimit. Allion. Quia manus volam macula plumbea radix inficit. A plumbeo foliorum colore. Raius.)

Lin. gen. n. 213. Reich. n. 227. Schreb. n. 281. Tournef. t. 58. Juss. 92. Gertn. t. 50.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Plumbagines*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, ovate-oblong, tubular, five-cornered, rugged, with a five-toothed mouth, permanent.

COR. one-petalled, funnel-form: tube cylindrical, narrower at top, longer than the calyx: border five-cleft, from erect-spreading, with ovate segments.

Nectary of five very small acuminate valves in the bottom of the corolla, inclosing the germ.

STAM. *Filaments* five, awl-shaped, free within the tube of the corolla, placed on the valves of the nectary. *Antlers* small, oblong, versatile.

PIST. *Germ* ovate, very small. *Style* simple, the length of the tube. *Stigma* five-cleft, slender.

PER. *Capsule* oblong, five-cornered, terminated by the permanent style, one-celled, five-valved, clothed with the calyx.

SEED single, oblong, fastened to a thread, pendulous.

ESSENTIAL CHARACTER.

Cor. funnel-form. Stam. inserted into scales inclosing the base of the corolla. Stigma five-cleft. Seed one, oblong, tunicated.

SPECIES.

1. *Plumbago europæa*. *European Leadwort*.

Lin. spec. 215. syst. 199. Reich. 1. 429. Willd. 837. hort. cliff. 53. mat. med. 59. mant. 335.

¹ Linn. spec.

^m Jussieu,

Sauv. mensp. 63. Ger. prov. 339. Villars dauph.

2. 447. Allion. pedem. n. 315. D'Affo arag.

n. 171. Desfont. atlant. 171. Sabb. hort. 2.

t. 39, 40. Plenck, ic. 95. Regnault, bot. ic.

Lamarck, illustr. n. 2141. t. 105.

Plumbago Plinii. Ger. 1069. emac. 1254. Raii hist.

394. Mor. hist. 3. 599. f. 15. t. 1. f. 2.

P. quorundam. Clus. hist. 2. 124. Tabern. ic. 858.

Tournef. inst. 141. Garid. 368.

Dentaria vel Dentellaria Roudeltii. Lob. adv. 136.

Baub. hist.

Lepidium Dentellaria dictum. Bauh. pin. 97.

L. monspeliacum Dent. dictum. Park. theat. 855. 2.

Tripolium Dioscoridis. Column. ecphr. 1. 161.

Leaves embracing lanceolate rugged.

[2. *Plumbago lapathifolia*. *Dock-leaved Leadwort*.

Lin. spec. ed. Willd. 837.

P. orientalis lapathi folio, flore minore albido. Tournef.

cor. 7.

Leaves embracing lanceolate even, stem divaricating.

3. *Plumbago capensis*. *Cape Leadwort*.

Lin. spec. ed. Willd. 837. Thunb. prodr. 33.

Leaves petioled oblong entire glaucous underneath, stem erect.]

4. *Plumbago zeylanica*. *Ceylon Leadwort*.

Lin. spec. 215. Reich. 1. 430. Willd. 837. hort.

cliff. 53. upf. 43. fl. zeyl. n. 73. Kniph. cent. 2.

n. 60.

Lychnis indica, &c. Comm. hort. 2. 169. t. 85.

Tumba codiveli. Rheede mal. 10. 15. t. 8. Raii

suppl. 550.

Leaves petioled ovate smooth, stem filiform.

[5. *Plumbago rosea*. *Rose-coloured Leadwort*.

Lin. spec. 215. Reich. 1. 430. Willd. 838. Curt.

magaz. 230. Gertn. fruct. 1. 234.

P. zeylanica, folio splendente ocymastri, flore rubro.

Burm. zeyl. 195.

Radix vesicatoria. Rumph. amb. 5. 453. t. 168.

Schetti codiveli. Rheed. mal. 10. 17. t. 9. Raii

suppl. 550.

Leaves petioled ovate smooth somewhat toothletted, stem with gibbous joints.

6. *Plumbago scandens*. *Climbing Leadwort*.

Lin. spec. 215. syst. 199. Reich. 1. 430. Willd.

838. Swartz obs. 61. Jacqu. amer. pict. 18.

t. 23. Brown. jam. 158.

P. americana viticulis longioribus sempervirentibus.

Mor. hist. 3. 599.

Dentellaria lychnoides sylvatica scandens flore albo.

Sloan. jam. 1. 211. t. 133. f. 1.

Caapomonga. Marcgr. bras. 28. Pis. bras. 200.

Leaves petioled ovate smooth, stem flexuose-scandent.

7. *Plumbago auriculata*. *Eared Leadwort*.

Lin. spec. ed. Willd. 838. Lamarck encycl. 2. 267.

Leaves ovate-oblong petioled scaly-dotted underneath, petioles eared embracing.]

DESCRIPTIONS, &c.

1. Root perennial, striking deep into the ground. Stalks many, slender, three feet and a half high, and channelled. Leaves three inches long and two broad, smooth, entire, of a grayish colour. The upper part of the stalks send out many slender side branches, which have small leaves on them. These, and also the principal stalks are terminated by tufts of either blue or white flowers, which are small, and succeeded by rough hairy feeds.

[The calyx has five tubercles at the base on the outside, besides the petioled glandsⁿ.

Height, according to Villars, one foot. Stems hard, numerous, angular. Leaves oblong, very entire, a little rugged, of a blackish green. The calyx has glands on the angular lines that run along it longitudinally. Corolla of a dusky purplish colour.

Stem erect, smooth, angular, with paniced branches. Leaves alternate, smooth, lead-coloured, toothletted at the edge or quite entire, having two appendices at the base: the lower stem-leaves blunt; the upper branch-leaves sharp. Flowers aggregate, terminating. Calyx round, five-parted: segments linear, approximating; with short hairs, glandular at top, disposed

* Linn. syst.

in a double row. Corolla blue-violet, five-petalled; with linear claws, converging at the edge into a tube, twice as long as the calyx; border obovate, quite entire. Stamens shorter than the claws: filaments capillary. Style pubescent at bottom: stigmas five, villose-glandular. Germ superior^o.

Native of the South of Europe, and the kingdom of Tunis in Africa.—Cultivated in 1597, by Gerarde^p.] It seldom flowers in England till towards the end of october, and unless the autumn proves warm, does not flower at all; and never produces ripe seeds.

It is called *Dentellaria* in Latin, *Dentellaire* in French, and *Toothwort* in English, from its property of curing the tooth-ach; being of a hot caustic nature, like *Pellitory* of Spain.

[Two ounces of the plant boiled in four ounces of Olive oil is recommended to cure the itch; the sediment is tied up in a bag of linen, and the patient is rubbed with it, moistening the bag from time to time with the oil^q. Allioni says that the leaves are too burning and inflammatory, and therefore prefers an infusion of the root, which he used with success himself. The root bruised is laid on the wrist, to heal the tooth-ach; it leaves a dark lead-coloured mark on the place, very difficult to be wiped off, whence the name of *Plumbago*, and if it remains on long enough, it burns the skin and leaves an ulcer. Some put it behind the ear, when it acts as a blister^r.

The Arabs make an ointment, by rubbing the leaves with salt and oil, for the itch, tetters, &c.^s

2. This resembles the preceding, but is manifestly different; the stem being higher, the branches longer and divaricated, the leaves much larger and smooth, and the flowers only half the size.—Native of Iberia^t.

3. Native of the Cape of Good Hope^u.]

4. This is a perennial plant, with a strong fibrous root, from which arise many slender stalks, growing near four feet high. Leaves about three inches long, and an inch and half broad near their base, ending in acute points; they are alternate, and on short foot-stalks. The upper part of the stalks divides into small branches, having smaller leaves on them, and terminating in spikes of flowers. Seeds covered with the prickly calyx. The upper part of the stalks, and the calyx of the flowers are very glutinous, sticking to the fingers, and entangling small flies that settle on them.

[Native of the East Indies and of the Society Isles. Cultivated in 1731, by Mr. Miller. It flowers from april to september^x.

5. This is a shrubby plant, which frequently grows to the height of four or five feet, and is perpetually putting forth flowering spikes; these continue a long time, and hence, with proper management, it may be kept in flower during most of the year. The parts of fructification, whether we regard their colour or structure, are highly deserving of notice^y.

The calyx has capitate glutinous hairs scattered over it. The filaments are dilated at the base and arched. Capsule superior, clothed with the permanent calyx, ovate-oblong, ending in the subulate-setaceous style, obscurely five-cornered. Seed oblong, acuminate above, of a dark blood-red or ferruginous colour, suspended by a filiform umbilical chord, springing from the base of the capsule^z.

Native of the East Indies. Introduced into this country in 1777, by the late John Fothergill, M. D.^a

6. Stem suffrutescent, scandent, sometimes decumbent, loose, flexuose, branched, round, striated, smooth. Leaves alternate, ovate-lanceolate, acuminate, nerved, spreading, entire, smooth on both sides: two smaller leaflets at the base of the middle, and two above it. Petioles very short, compressed, channelled, half embracing, membranaceous at the edge, with a red spot at the base underneath. Flowers terminating, subpanicked, commonly in spikes, sessile, scattered, approximating. Leaflets sessile under the flowers. Calyx inferior, bellying in the middle and towards the base,

five-grooved, with glanduliferous hairs. Border of the corolla five-parted: parts roundish, emarginate, with a very short point in the middle. Nectaries roundish, yellow, round the germ, inserted into the bottom of the calyx. Filaments thickened, approximating, awl-shaped. Anthers placed on the top of the filaments, blue. Style the length of the stamens. Seed coated, as it were included in a capsule, and covered with the permanent calyx.

Native of South America, and Jamaica, in dry hedges^b.

The calyx sent by Jacquin proves his plant to be a species distinct from this^c.

Lamarck distinguishes this from *P. zeylanica*, by the segments of the corolla not being mucronate; whereas Swartz says that they have a very short point in the middle^d.

It was introduced here in 1778, by Henry De Pontthieu, Esq. and flowers in july and august^e.

7. Native of the East Indies.]

PROPAGATION AND CULTURE.

1. The stalks decay in the winter, and new ones come up the following spring. It may be increased by parting the roots, which send out heads in plenty. These may be divided at any time when the weather is mild, from the time the stalks decay, till the roots begin to shoot in the spring. It should have a light soil and a warm situation, otherwise it will not flower here. The roots should be allowed room to spread; the stalks require support; and if the plants are kept clean from weeds, and the ground is dug between them every autumn, that is all the culture they require.

4. This is propagated by seeds, sown on a good hot-bed in the spring. The plants will come up in five or six weeks. When these are fit to remove, plant each in a separate small pot filled with light loamy earth, and plunge the pots into a hot-bed of tan, observing to screen them from the sun till they have taken new root. In summer admit a large share of fresh air to them in warm weather, and water them moderately every other day. In winter keep them in a moderate warmth, and water them more sparingly.

[5. Increase this by cuttings, which strike freely. It is one of the most ornamental plants which we keep in our stoves^f.]

PLUMERIA. (So named by Tournefort, in honour of Charles Plumier, of Marseilles, a Franciscan, traveller into South America, and author of several excellent works: as *Plantæ Americanæ*, 1693, and by Burmann in 1755. Genera, 1703. Fougères Americaines, 1705, &c.)

Lin. gen. n. 298. Reich. n. 325. Schreb. n. 422. Tournef. t. 439. Juss. 145.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Contortæ*. *Apocineæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* five-parted, blunt, very small.

COR. one-petalled, funnel-form: tube long, widening gradually: border five-parted, from erect spreading; segments ovate-oblong, oblique.

STAM. *Filaments* five, awl-shaped, from the middle of the tube. *Anthers* converging.

PIST. *Germ* oblong, bifid. *Styles* scarcely any. *Stigma* double, acuminate.

PER. *Follicles* two, long, acuminate, ventricose, bent downwards, nodding, one-celled, one-valved.

SEEDS numerous, oblong, inserted into a larger ovate membrane at the base, imbricate.

ESSENTIAL CHARACTER.

Contorted. *Follicles* two, reflex. *Seeds* inserted into their proper membrane.

SPECIES.

1. *Plumeria rubra*. *Red Plumeria*.

Lin. spec. 306. syst. 254. Reich. 1. 598. Willd. 1242. hort. cliff. 76. Jacq. amer. 35. pict. 23. Brown. jam. 181. n. 2. Curt. magaz. 279.

^b Swartz.

^c Linn.

^d Willdenow.

^e Hort. kew.

^f Curtis.

^o Desfontaines.

^p Hort. kew.

^q Villars.

^r Allioni.

^s Desfontaines.

^t Willdenow.

^u Thunb.

^x Hort. kew.

^y Curt. magaz.

^z Gartner.

^a Hort. kew.

- P. flore roseo odoratissimo. Tournef. inst. 659. Catesb. car. 2. t. 92. Ebret. pict. t. 20. Trew. Ebret. t. 41.*
Nerium arboreum, folio maximo obtusiore, flore incarnato. Sloan. jam. 2. 61. t. 185. f. 1. & t. 186. f. 1. Pluk. phyt. t. 207. f. 2. Swartz.
Jasminum indicum. Mer. surin. t. 8.
Clematis arborea americana, &c. Pluk. mant. 50. alm. 109. t. 207. f. 2.
Leaves ovate-oblong, petioles biglandular.
 2. *Plumeria alba. White Plumeria.*
Lin. spec. 306. syst. 254. Reich. 1. 598. Willd. 1242. Jacqu. amer. 36. t. 174. f. 12. pict. 23. t. 38. Plum. spec. 20. ic. 231. Comm. hort. 2. 47. t. 24.
Nerium arboreum altissimum, folio angusto, flore albo. Sloan. jam. 2. 62. Raii dendr. 114. Herm. parad. 49.
Leaves lanceolate revolute, peduncles tuberous above.
 3. *Plumeria obtusa. Blunt-leaved Plumeria.*
Lin. spec. 307. Reich. 1. 599. Willd. 1243. Lour. cochinch. 117.
P. nivea. Mill. dict. n. 4.
P. flore niveo, foliis brevioribus obtusis. Catesb. car. 2. t. 93. Plum. ic. 232.
Flos convolutus. Rumph. amb. 4. 85. t. 38? Burm. ind. 68.
Leaves lanceolate petioled blunt.
 4. *Plumeria pudica. Close-flowered Plumeria.*
Lin. syst. 254. Reich. 1. 599. Willd. 1243. Jacqu. amer. 37. pict. 24. t. 39.
Border of the corolla closed.]

DESCRIPTIONS, &c.

1. Red Plumeria, called Red Jasmine in Jamaica, rises to the height of eighteen or twenty feet. The stalks are covered with a dark green bark, having marks where the leaves are fallen off; they are succulent, abound with a milky juice, and within are somewhat woody. Towards the top they put out a few thick succulent branches, with leaves at their ends of a light-green colour, full of milky juice, having a large midrib and many transverse veins. At the ends of the branches also come out the flowers in clusters; shaped like those of the Oleander or Rose-Bay, of a pale red colour, and having an agreeable odour.

[The flowers are so sweet as well as beautiful, that the women in South America adorn their hair with them, and put them among linen to scent it, as we do Lavender^g.

They are produced in England in July and August; and the whole plant loses its foliage from the middle of winter till the beginning of May^h.

According to Linneus it is a native of Surinam. In the Kew catalogue, and by Mr. Curtis, it is set down as a native of Jamaica. Browne does not give it as indigenous of that island.] Miller says it grows naturally in the Spanish West Indies, where it is cultivated in the gardens for ornament. [Jacquin confirms this, saying that it seems to have been transported into the Caribbee islands from the American continent. The French there call it *Frangipanier rouge*. It was cultivated in 1690, in the Royal garden at Hampton-courtⁱ.]

Mr. Miller has a variety of this, which he calls *Plumeria incarnata*, (n. 2.) He received it from the island of St. Christopher, by the name of Japan-tree, with an account that it had then been lately introduced from the Spanish West Indies. The stalks do not rise so high as the preceding; the leaves are of a thicker consistence, and the veins larger; the flowers are of a paler colour, and in much larger clusters; it being common to have upwards of twenty open in one bunch, with a number to succeed these as they decay; so that the clusters continue in beauty upwards of two months, during which time they make a most beautiful appearance in the stove, and have a very agreeable odour.

2. [This tree has the habit of Red Plumeria, but is not much branched, and rarely exceeds fifteen feet

in height; it abounds like that in a milky juice. The flowers are white with a yellowish eye, and diffuse a very sweet odour to a considerable distance^k: Linneus says, it is ambrosiac, and so strong as to excite the head-ach; but that all powerfully sweet smells will do in some constitutions, particularly in a hot day or a warm climate.

Linneus adds, that the flowers are in spikes, and that the leaves are rolled back on the sides.]

Mr. Miller remarks, that this is not near so beautiful as the former; the flowers being smaller, produced in less bunches, and of shorter duration; but that for the beauty of the stem and leaves it deserves a place in every curious collection. It grows plentifully at Campeachy, whence the seeds were sent by Dr. Houstoun, who also observed some plants of it at Jamaica. [Browne considers it as a native of that island; and Jacquin of Martinico, where the French call it *Frangipanier blanc*.

It was introduced by William Houstoun, M. D. and cultivated by Mr. Miller before 1733^l.]

3. This produces small white flowers resembling those of the second. [The leaves are oval-lanceolate; and the peduncles branched^m.

Loureiro describes it as a thick tree, exceeding the middle size, with an ash-coloured, smooth, milky bark, a juicy brittle wood, and spreading, thick, twisted branches. Leaves quite entire, large, flat, smooth, scattered, with many transverse ribs. Flowers terminating, in compound spreading upright racemes. Corollas odorous, white, mixed on the outside with red, on the inside with yellow. Calyx tubular, short, deciduous, slightly five-cleft; segments rounded, erect. Corolla inferior; tube small, curved. Filaments very short, inserted above the base of the tube: anthers oblong, erect. Style none. Stigmas two, conical. Seeds biggish, scale-form, ending in a membranaceous base. Linneus attributes blunt leaves to this tree; but Rumphius and Loureiro met with them always acute. Probably two different species have been confounded.]

Miller says his *Pl. nivea* was discovered by Dr. Houstoun, growing in great plenty near Carthagera in the Spanish West Indies, whence he sent the seeds to England.

[Plumier found it in South America, and Catesby in Carolina. According to the Kew catalogue, it is a native of the West Indies, and was introduced in 1783, by John Greg, Esq. If so, *P. obtusa* is supposed to be different from Miller's *nivea*. If Rumphius's *Flos convolutus*, and Loureiro's *P. obtusa* be the same with Linneus's *P. obtusa*, it is also a native of Amboyna, China and Cochinchina, where it is also cultivated on account of the beauty and sweet smell of the flowers.

4. This is an upright milky shrub, five feet in height, of the same habit with the others. Leaves oblong, flat, veined. Flowers numerous, yellowish, the border continuing erect and shut, even after they drop; being rolled up like the flowers of Hibiscus or Achania Malvaviscus: they succeed each other continually for two months together; and have an odour much more agreeable than that of the preceding species, or even of any other known flower. It is highly esteemed at Curaçao, and is there called *Donzelle* from the property of the flower mentioned above. They cultivate it there in the gardens; but it is not known from what part of South America it was introducedⁿ.]

PROPAGATION AND CULTURE.

All these plants may be propagated by seeds procured from the countries where they grow. Sow them in pots filled with light earth; plunge them into a tan-pit, and when the plants are two inches high, transplant them separately into small pots filled with light sandy earth; plunge them into the hot-bed again, shading them in the middle of the day, until they have taken root: they must not have much water, for being very succulent, much moisture will cause them to rot. In hot weather the plants should have a large share of fresh air admitted to them, by raising the

^g Jacquin. ^h Curtis. ⁱ Hort. kew.

^k Jacquin. ^l Hort. kew. ^m Linn. ⁿ Jacquin.

glasses of the hot-bed every day, in proportion to the warmth of the season, to prevent their drawing up weak. Towards michaelmas, when the nights begin to be cold, the plants should be removed into the stove, and plunged into the bark-bed, where they must remain during the winter. As these plants all cast their leaves in the middle of winter, and continue destitute of them till about the beginning of may, during that time, they should be watered very sparingly, because they are in more danger of rotting, while they are in a less active state, by too much moisture, than when they are furnished with leaves, through which the moisture is more freely perspired.

All these sorts are too tender to thrive in the open air of this country in the summer season, therefore should be constantly preserved in the stove, where, in warm weather, they must have a large share of free air, but in cold weather they must be kept very warm. While they are young, it will be proper to continue them in the bark-bed; but when they have obtained strength, they may be placed in a dry stove, where they will thrive well, provided they are kept in a moderate temperature of heat, and have not too much water.

These plants may also be propagated by cuttings, which should be taken from the old plants two months before they are planted, during which time they should be laid on the flues in the stove, that the part which joined to the old plant may be healed over before they are planted, otherwise they will rot. These cuttings should be planted in small pots filled with light sandy earth, and plunged into a moderate hot-bed of tanner's bark, observing to shade them in the heat of the day from the sun, and refresh them once in a week or ten days with water, but it must be given to them sparingly each time. If the cuttings succeed, they will have taken root in about two months, when they should have a larger share of air to harden them by degrees to bear the sun and air, and afterwards may be treated as the old plants.

The milky juice of these plants is very caustic, and reckoned poisonous. In cutting off any of the branches of the plants, if the knife be not immediately cleaned, the juice will corrode it, and turn the blade almost black in a very little time, so as not to be cleaned off again; and if dropped on linen will cause it to wash in holes, equal to aquafortis.

[PNEUMONANTHE. See *Gentiana*.

POA. (Ποα, an herb: as where Theophrastus (l. i. c. 5.) divides plants into trees, shrubs, undershrubs, and herbs: a plant in general, ποα ἑστὴν ἐκαστὴ: grass, as where it is joined with wheat and barley, (l. i. c. 9.)

Lin. gen. n. 83. Reich. n. 89. Schreb. n. 114. Juss. 32.

Class. 3. 2. Triandria Digynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume many-flowered, two-valved, awnless, collecting the flowers into a distich ovate-oblong spikelet: valves ovate acuminate.

COR. two-valved: valves ovate, sharpish, concave, compressed, a little longer than the calyx, with a scariose margin.

Nectary two-leaved: leaflets acute or jagged, gibbous at the base.

STAM. Filaments three, capillary. Anthers forked.

PIST. Germ. roundish. Styles two, reflex, villose. Stigmas similar.

PER. none. Corolla cleaves to the seed and does not open.

SEED single, oblong, acuminate, compressed on both sides, covered.

Obs. The flowers of *Poa Eragrostis* have not a scariose margin. Some species have a two-flowered, others a three or four-flowered calyx.

ESSENTIAL CHARACTER.

Cal. two-valved, many-flowered. Spikelet ovate: valves scariose at the edge and sharpish.

SPECIES.

1. *Poa aquatica*. Water or Reed Meadow-grass.

Lin. spec. 98. Juss. 113. Reich. 1. 184. Willd. 385. fl. suec. n. 78. hort. cliff. 494. Hudf. angl. 38.

Witther. arr. ed. 3. 140. Smith angl. 95. Relb. cant. n. 65. Sibth. oxon. n. 127. Abbot, bedf. 17. Curt. lond. 5. t. 12. 330. Hall. belv. n. 1454. Scop. carn. n. 105. Leers herb. n. 65. t. 5. f. 5. Pollich pal. n. 86. Hoffm. germ. 29. Roth. germ. 1. 41. 2. 111. Neck. gallob. 72. Gmel. fib. 1. 105. Krock. files. n. 133. Villars dauph. 2. 124. Fl. dan. t. 920.

Gramen palustre paniculatum altissimum. Baub. pin. 3. theat. 38. Scheuch. gram. 191. t. 4. f. 1.

Gr. aquaticum panic. latifolium. Baub. pin. 3. Mor. hist. 3. 201. f. 8. t. 6. f. 25. Tournef. inst. 523.

Gr. aquat. majus. Baub. hist. 2. 462. Ger. emac. 6. 1. Raii syn. 411.

Gr. arundinaceum aquat. Park. theat. 1274. 2. Raii hist. 1280.

Gr. phalaroides palustre, arundinaceum, rad. amplissima. Monti ic. 38.

Panicle erect branched loose, spikelets six-flowered linear, florets blunt seven-nerved.

2. *Poa alpina*. Alpine Meadow-grass.

Lin. spec. 99. Juss. 113. Reich. 1. 185. Willd. 386. fl. suec. n. 79. Witther. arr. ed. 3. 142. Smith angl. 100. Lightf. scot. 96. Hall. belv. n. 1456. Krock. files. n. 135. Villars dauph. 2. 124.

Gramen paniculatum alpinum majus, panicula speciosa variegata. Scheuch. gram. 186. prodr. 20. t. 3.

β. vivipara. Lin. spec. 99. Hudf. angl. 39. Witther. 142. var. 2. Smith 100. β. Scheuch. gram. 212. t. 4. f. 14. itin. 1. 4. 2. Fl. dan. 807.

Panicle diffused, spikelets four-flowered cordate, glumes ovate subfalcate free, lower stipules very short.

3. *Poa laxa*. Loose Meadow-grass.

Lin. spec. ed. Willd. 386. Haenke sudet. 118. Hall. belv. n. 1457.

Gramen alpinum paniculatum minus panicula spadiceo-viridi elegans. Scheuch. gram. 163. app. t. 4.

Gr. panic. alp. parvum, panic. spicata, &c. Scheuch. itin. 6. 457. t. 6. f. 16.

Panicle contracted subracemed, spikelets three-flowered pubescent at the base and on the back.

4. *Poa biflora*. Two-flowered Meadow-grass.

Lin. spec. ed. Willd. 386. Retz. obs. 5. 19.

Panicle dense, calyxes subbiflorous smooth, culm ascending.

5. *Poa hirta*. Rough-haired Meadow-grass.

Lin. syst. 113. Willd. 387. Thunb. jap. 49.

Panicle spreading rod-like, calyxes subtriflorous angular, sheaths dotted-ciliate.

6. *Poa trivialis*. Roughish Meadow-grass.

Lin. spec. 99. Reich. 1. 185. Willd. 387. fl. suec. n. 80. Hudf. angl. 39. Witther. arr. ed. 3. 143. Smith angl. 103. Curt. lond. 2. t. 6. praest. obs. 15. t. 4. Relb. cant. n. 63. Sibth. oxon. n. 128. Neck. gallob. 55. Pollich pal. n. 88. Scop. carn. ed. 1. 193. n. 2. ed. 2. n. 99. Krock. files. n. 137. Villars dauph. 2. 125.

P. pratensis. Leyss. halens. n. 91. Roth. germ. 1. 42. 2. 113.

P. dubia. Leers herb. n. 69. t. 6. f. 5.

P. palustris. Hoffm. 29.

P. scabra. Ebrh. gram. 72. Hoffm. germ. 29.

Gramen pratense paniculatum medium. Baub. pin. 2. theat. 30. Raii hist. 1285. 6. syn. 409. Scheuch. gram. 180.

β. *Poa setacea*. Hudf. angl. ed. 1. 34.

Panicle diffused, spikelets three-flowered, glumes lanceolate five-nerved, connected by a villus at the base, stipule elongated.

7. *Poa angustifolia*. Narrow-leaved Meadow-grass.

Lin. spec. 99. Reich. 1. 186. Willd. 387. fl. suec. n. 81. lapp. n. 52. Pollich pal. n. 89. Leers herb. n. 67. t. 6. f. 3. Hoffm. germ. 29. Roth. germ. 1. 41. 2. 112. Leyss. halens. n. 90. Hall. belv. n. 1460. Krock. files. n. 140. Villars dauph. 2. 125.

Gramen pratense paniculatum majus, angustiore folio. Baub. pin. 2. prodr. 5. Scheuch. gram. 178. Raii hist. 1285. n. 5.

β. *Poa trivialis*. Leers herb. n. 66. t. 6. f. 2. Hoffm. germ. 29. Roth. germ. 1. 41. 2. 112.

Panicle

- Panicle diffused, spikelets four-flowered pubescent, culm erect round.*
8. *Poa Gerardi*. *Panicled Meadow-grafs.*
Ait. kew. 1. 99. Ger. prov. 91. n. 11. t. 2. f. 1.
Allion. pedem. n. 2201.
Panicle erect, spikelets three-flowered smooth, corollas acuminate twice as long as the calyx.
9. *Poa pratensis*. *Smooth-stalked or Great Meadow-grafs.*
Lin. spec. 99. Reich. 1. 186. Willd. 388. fl. suec. n. 82. lapp. n. 51. hort. cliff. 27. Hudf. angl. 39. Wither. arr. ed. 3. 141. Curt. lond. 2. t. 5. Relb. cant. n. 64. Sibth. oxon. n. 129. Stilling. 6. Anderson, 2. 231. t. 7. Hall. helv. n. 1465. potius, 1462. Pollich pal. n. 90. Leers herborn. n. 68. t. 6. f. 4. Hoffm. germ. 29. Krock. files. n. 141. Villars dauph. 127.
P. trivialis. Leyff. balens. n. 89. Roth. germ. 1. 42. 2. 113.
P. ferotina. Ehrh. gram. 82.]
Gramen pratense paniculatum majus, latiore folio.
Baub. pin. 2. [Scheuch. gram. 177. t. 3. f. 17. A. Mor. hist. f. 8. t. 5. f. 18. Raii hist. 1285. n. 4. syn. 409.
Panicle diffused, spikelets four-flowered, glumes lanceolate five-nerved connected by a villus, stipule abbreviated blunt.
10. *Poa ferruginea*. *Rust-coloured Meadow-grafs.*
Lin. syst. 114. Willd. 388. Thunb. jap. 50.
Panicle spreading capillary, spikelets five-flowered oblong, glumes smooth.
11. *Poa cilianensis*.
Lin. spec. ed. Willd. 388. Allion. pedem. n. 2207. t. 91. f. 2. Barr. obs. 3. n. 1216. t. 743.
Panicle elongated branched flexuose, spikelets four-flowered smooth.
12. *Poa nervata*. *Five-nerved Meadow-grafs.*
Lin. spec. ed. Willd. 389.
Panicle strict, spikelets smooth five-flowered nerved.
13. *Poa trinervata*. *Three-nerved Meadow-grafs.*
Lin. spec. ed. Willd. 389. Schrad. spicil. 3. Ehrh. Beit. 6. 131. gram. 36. Hoffm. germ. 29. Fl. dan. t. 1145.
P. sylvatica. Pollich pal. n. 87. Krock. files. n. 134. Roth. germ. 1. 43. 2. 117. Hoffm. germ. 30. Villars dauph. 2. 128.
Panicle diffused, spikelets four or five-flowered very sharp rugged, outer glume of the corolla three-nerved, inner two-nerved.
14. *Poa sudetica*.
Lin. spec. ed. Willd. 389. Haake sudet. 120.
P. quadripedalis. Ehrh. gram. 135.
Panicle from erect spreading, spikelets three-flowered very smooth mucronate, culm erect compressed, sheath of the leaves loose ancipital.
15. *Poa rubens*. *Red-panicled Meadow-grafs.*
Lin. spec. ed. Willd. 389. Moench. meth. 187.
Panicle spreading, spikelets four-flowered or thereabouts, outer glume of the corolla five-nerved, culm erect compressed.
16. *Poa anceps*. *Two-edged Meadow-grafs.*
Lin. spec. ed. Willd. 390. Forst. prodr. n. 43.
Panicle diffused, spikelets five-flowered acute pubescent at the base, culm ancipital.
17. *Poa annua*. *Annual Meadow-grafs.*
Lin. spec. 99. Reich. 1. 187. Willd. 390. fl. suec. n. 83. Hudf. angl. 42. Wither. arr. ed. 3. 143. Smith angl. 105. Curt. lond. 1. t. 6. Relb. cant. n. 66. Sibth. oxon. n. 131. Stillingf. misc. t. 7. Fl. rust. t. 98. Hall. helv. n. 1466. Leers herborn. n. 70. t. 6. f. 1. Pollich pal. n. 91. Hoffm. germ. 30. Roth. germ. 1. 42. 2. 115. Neck. gallob. 53. Scop. carn. ed. 1. 195. n. 8. ed. 2. n. 102. Gmel. fib. 1. 102. n. 34 & 36. Krock. files. n. 142. Villars dauph. 2. 127. Desfont. atlant. 72. Mus. rust. 4. 2. 8. Berg. phyt. t. 55.
P. humilis. Ehrh. gram. 115.
Gramen pratense paniculatum minus. Baub. pin. 2. theat. 31. Scheuch. gram. 189. t. 3. f. 17.
Gr. prat. minus f. vulgatissimum. Raii hist. 1284. syn. 408.
Gr. prat. minimum album. Ger. 3. 2. emac. 3. 2. Park. theat. 1156. 4. Mor. hist. f. 8. t. 5. f. 21.
- Gr. panic. minus album. Baub. hist. 2. 465.*
Gr. pratense 1. Ded. pempt. 560.
β. Gr. prat. panic. minus rubrum. Tabern. ic. 207. Tournef. inst. 522. Vaill. par. 91. n. 61.
Panicle divaricate, spikelets ovate, florets somewhat remote five-nerved free, culm oblique compressed.
18. *Poa flava*. *Yellow Meadow-grafs.*
Lin. spec. 100. Reich. 1. 187. Willd. 390. Gron. virg. 13.
Gramen pratense majus virginianum. Petiv. mus. 239.
Panicle diffused, spikelets ovate-oblong shining.
19. *Poa barbata*. *Bearded Meadow-grafs.*
Lin. syst. 114. Willd. 391. Thunb. jap. 50. t. 10.
Panicle spreading capillary, spikelets six-flowered oblong, glumes smooth keeled.
20. *Poa pilosa*. *Hairy Meadow-grafs.*
Lin. spec. 100. Reich. 1. 187. Willd. 391. Scheuch. gram. 193. t. 4. f. 3.
Panicle spreading strict, primary ramifications hairy.
21. *Poa palustris*. *Marsh Meadow-grafs.*
Lin. spec. 98. syst. 113. Reich. 1. 188. Willd. 391. Hall. helv. n. 1467. Fl. dan. t. 750. Krock. files. n. 136.
Gramen paniculatum aquaticum angustifolium, panicula speciosa. Scheuch. gram. 184.
Gr. palustre panic. speciosa. Baub. pin. 3. prodr. 7. Mor. hist. 3. 201. f. 8. t. 6. f. 27.
Panicle diffused, spikelets subtriflorous pubescent, leaves rugged underneath.
22. *Poa glutinosa*. *Clammy Meadow-grafs.*
Lin. spec. ed. Willd. 391. Swartz prodr. 26. descr. 214. Sloan. jam. 1. 114. t. 71. f. 2. Raii hist. 3. 633.
Panicle spreading strict, spikelets seven to nine-flowered somewhat hirsute glutinous, culm simple, leaves somewhat hairy.
23. *Poa prolifera*. *Proliferous Meadow-grafs.*
Lin. spec. ed. Willd. 391. Swartz prodr. 27. descr. 216.
Panicle spreading strict, spikelets many-flowered, (sixteen to twenty) culm very much branched knobbed, proliferous at the joints.
24. *Poa amabilis*. *Indian Meadow-grafs.*
Lin. spec. 100. syst. 113. Reich. 1. 188. Willd. 392. fl. zeyl. n. 46.
Panicle spreading, spikelets eighteen-flowered linear.
25. *Poa Eragrostis*. *Spreading Meadow-grafs.*
Lin. spec. 100. syst. 114. Reich. 1. 118. Willd. 392. mant. 325. Schreb. gram. 2. 81. t. 38. Hall. helv. n. 1450. Hoffm. germ. 30. Roth. germ. 2. 118. Gmel. fib. 1. 106. n. 40. Villars dauph. 2. 135. Desfont. atlant. 74. Cavan. hisp. t. 92.
Gramen paniculis elegantissimis minimum. Scheuch. gram. 192. t. 4. f. 2. Tourn. inst. 522.
Gr. phalaroides, sparsa Brizæ panicula, minus. Barr. ic. t. 44. f. 2.
Gr. tremulum minus, locusta deltoide. Mor. hist. f. 8. t. 6. f. 47.
β. Gr. panic. elegantiss. majus, locustis purpurascens minoribus. Scheuch. gram. 193. t. 4. f. 13.
Panicle spreading, pedicels flexuose, spikelets serrate ten-flowered, glumes three-nerved.
26. *Poa badensis*. *Baden Meadow-grafs.*
Lin. spec. ed. Willd. 392.
Panicle crowded ovate, spikelets eleven-flowered distich ovate pubescent at the base.
27. *Poa cynosuroides*. *Bipinnate Meadow-grafs.*
Lin. spec. ed. Willd. 393. Retz. obs. 4. 20. Vahl symb. 3. 10.
Uniola bipinnata. Lin. spec. 104. Reich. 1. 195.
Briza bipinnata. Lin. syst. ed. 10. 875. amoen. 4. 450.
Panicle strict pyramidal, peduncles spreading very much, spikelets hanging down distich.
28. *Poa unioloideis*. *Uniola-like Meadow-grafs.*
Lin. spec. ed. Willd. 393. Retz. obs. 5. 19. n. 41.
Panicle almost erect, spikelets ten-flowered or thereabouts ovate, lower calyxes many-valved.
29. *Poa racemosa*. *Racemed Meadow-grafs.*
Lin. spec. ed. Willd. 393. Thunb. prodr. 21.
Panicle squeezed close, spikelets ovate nine-flowered, peduncles very short.
30. *Poa*

30. *Poa cyperoides*. *Cyperus-like Meadow-grass*.
Lin. spec. ed. Willd. 393. *Thunb. prodr.* 22.
Panicles spike-glomerate, spikelets eleven-flowered, culm branched, leaves awl-shaped.
31. *Poa verticillata*. *Whorled Meadow-grass*.
Lin. spec. ed. Willd. 393. *Cavan. ic.* 1. 63. t. 93.
Panicle spreading capillary flexuose, spikelets eleven-flowered linear-subulate.
32. *Poa atrovireus*.
Desfont. atlant. 73.
Smooth; culm erect, leaves somewhat rigid, sheath shorter than the internodes, panicle spreading, spikelets flat linear.
33. *Poa abyssinica*. *Smooth upright Meadow-grass*.
Lin. syst. 114. *ed. Willd.* 394. *Ait. kew.* 1. 100.
Jacqu. ic. rar. t. 43. *misc.* 2. 364.
P. Taf. Zuccagni monogr. cum. ic.
Teff. Bruce itin. 5. 76. *ic. Ludolf. athiop.* l. 1. c. 9. n. 2. *comment.* 137.
Panicle capillary loose erect, spikelets four-flowered even linear-lanceolate, leaves smooth somewhat convoluted.
34. *Poa capillaris*. *Hair-panicled Meadow-grass*.
Lin. spec. 100. *Reich.* 1. 189. *Willd.* 394. *Swartz obs.* 39. *Kalm itin.* 3. 291. *ed. engl.* 3. 66. *Gron. virg.* 136.
Gramen paniculatum virginianum locustis minimis. Mor. hist. 3. 202. f. 8. t. 6. f. 33.
Panicle loose spreading very much capillary, leaves hairy, culm very much branched.
35. *Poa japonica*. *Japanese Meadow-grass*.
Lin. spec. ed. Willd. 394. *Thunb. jap.* 51.
Panicle spreading capillary, spikelets seven-flowered and leaves smooth, culm branched.
36. *Poa malabarica*. *Malabar Meadow-grass*.
Lin. spec. 100. *Reich.* 1. 189. *Willd.* 394. *Burm. ind.* 27. t. 11. f. 2? *Retz. obs.* 5. 19.
P. latifolia. Vahl symb. 2. 18? *Forst. prodr.* n. 44?
Branches of the panicle quite simple, flowers sessile, seeds distant, culm creeping.
37. *Poa chinensis*. *Chinese Meadow-grass*.
Lin. spec. ed. Willd. 395. *Retz. obs.* 5. 19. *Burm. ind.* 27. t. 11. f. 3. *Lour. cochinch.* 54.
P. panicea. Retz. obs. 3. 11.
Branches of the panicle quite simple, flowers sessile, seeds imbricate, culm erect.
38. *Poa punctata*. *Dotted-flowered Meadow-grass*.
Lin. syst. 144. *ed. Willd.* 395. *suppl.* 109.
Panicle diffused, spikelets twelve-flowered, flowers diaphanous even, with a brown spot within.
39. *Poa nutans*. *Nodding Meadow-grass*.
Lin. spec. ed. Willd. 395. *Retz. obs.* 4. 19. n. 54.
Panicle contracted nodding at the top, spikelets ten-flowered, valves reversed.
40. *Poa tenella*. *Small Meadow-grass*.
Lin. spec. 101. *syst.* 114. *Reich.* 1. 189. *Willd.* 395. *Retz. obs.* 5. 19. *Pluk. phyt.* t. 300. f. 2. *Burm. zeyl.* 110. t. 47. f. 3. *Rumph. amb.* 6. t. 4. f. 3.
Panicle oblong capillary somewhat whorled, flowers six together very minute nodding.
41. *Poa maritima*. *Sea Meadow-grass*.
Lin. spec. ed. Willd. 396. *Ait. kew.* 1. 100. *Huds. angl.* 42. *Wither. arr. ed.* 3. 147. *Smith angl.* 97. *Lightf. scot.* 98. *Relb. cant. n.* 72. *Dicks. ficc.* 2. 2. *Fl. dan.* t. 251. *Hoffm. germ.* 31. *Roth. germ.* 1. 43. 2. 121. *Pourret in act. tolos.* 3. 325.
P. arenaria. Retz. scandin. n. 120.
P. arundinacea. Moench. meth. 186.
P. cristata. Gunn. norv. 780.
Gramen paniculatum maritimum vulgatissimum. Raii hist. 1286. 12. *syn.* 409.
3. Gr. caninum marit. panic. Raii. hist. 1286. 11. *syn.* 410. *Huds.* 42.
Panicle branched somewhat squeezed together, spikelets five-flowered, florets bluntnish roundish obsoletely five-nerved, root creeping.
42. *Poa procumbens*. *Procumbent Sea Meadow grass*.
Smith angl. 98. *Engl. bot.* t. 532. *Curt. lond.* 6. t. 11. n. 72.
P. rupestris. Wither. arr. ed. 3. 146. t. 26.
Panicle lanceolate directed one way squeezed close rugged,

- rachis round, spikelets four or five-flowered, flowers bluntnish nerved.*
43. *Poa rigida*. *Hard Meadow-grass*.
Lin. spec. 101. *syst.* 114. *Reich.* 1. 190. *Willd.* 396. *amoen.* 4. 165. *Huds. angl.* 42. *Wither. arr. ed.* 3. 146. *Smith angl.* 99. *Curt. lond.* 2. t. 4. 142. *Relb. cant. n.* 67. *Sibth. oxon. n.* 132. *Dicks. ficc.* 6. 1. *Guett. stamp.* 62. *Neck. gallob.* 54. *Roth. germ.* 1. 43. 2. 120. *Ger. prov.* 90. *Villars dauph.* 2. 134. *Krock. files. n.* 143. *Desfont. atlant.* 74.
Gramen exile duriusculum in muris & aridis proveniens. Raii hist. 1287. 17. *syn.* 410.
Gr. loliaceum murorum duriusculum, spica erecta rigida. Mor. hist. 3. 182. f. 8. t. 2. f. 9.
Gr. panicula multiplaci. Baub. pin. 3. *prodr.* 6. *theat.* 32. 1. *Scheuch. gram.* 271. t. 6. f. 2. *Park. theat.* 1157.
Gr. minus duriusculum. Ger. 4. 3. *emac.* 4. 3.
Gr. minus vulgare, panicula rigida. Tournesf. inst. 522.
Gr. arvense filicina duriore panicula gracilius. Barrel. ic. t. 49.
Gr. filiceum rigidiusculum. Vaill. bot. 92. t. 18. f. 4.
Panicle lanceolate distich and pointing one way squeezed close smooth, rachis margined, spikelets seven-flowered, flowers round nerveless.
44. *Poa spinosa*. *Thorny Meadow-grass*.
Lin. spec. ed. Willd. 397. *Thunb. prodr.* 22.
Festuca spinosa. Lin. suppl. 111.
Branches of the panicle alternate compressed spinifcent, spikelets alternate peduncled ten-flowered, culm branched.
45. *Poa compressa*. *Flat-stalked Meadow-grass*.
Lin. spec. 101. *syst.* 115. *Reich.* 1. 190. *Willd.* 397. *fl. suec. n.* 84. *act. holm.* 1741. p. 184. *Huds. angl.* 41. *Wither. arr. ed.* 3. 147. *Smith angl.* 99. *engl. bot.* t. 365. *Relb. cant. n.* 68. *Sibth. oxon. n.* 130. *Dicks. ficc.* 6. 1. *Hall. helv.* n. 1455. *Pollich pal.* n. 93. *Leers herb. born.* 30. t. 5. f. 4. *Gunn. norv.* n. 1004. *Fl. dan.* t. 742. *Roth. germ.* 1. 44. 2. 122. *Hoffm. germ.* 31. *Neck. gallob.* 53. *Krock. files. n.* 144. *Villars dauph.* 2. 128.
Gramen pratense paniculatum medium. Baub. pin. 2. *Raii hist.* 1285. *syn.* 409.
Gr. panic. radice repente, culmo compresso. Vaill. par. 91. t. 18. f. 5.—*locustis distichis pulchellis. Scheuch. gram.* 198.
Gr. loliaceum procumbens, caul. compressis, &c. Monti ic. 10.
Panicle squeezed close directed one way, culm ascending compressed, florets angular connected at the base by a complicated villus.
46. *Poa sarmentosa*. *Sarmentose Meadow-grass*.
Lin. spec. ed. Willd. 398. *Thunb. prodr.* 21.
Panicle squeezed close, spikelets lanceolate ten flowered, culm sarmentose.
47. *Poa striata*. *Striated Meadow-grass*.
Lin. spec. ed. Willd. 398. *Thunb. prodr.* 22.
Panicle spreading, spikelets ovate ten-flowered or thereabouts, culm creeping.
48. *Poa amboinensis*.
Lin. syst. 115. *Willd.* 398. *mant.* 557. *Retz. obs.* 4. 20.
Phoenix amboinica montana. Rumph. amb. 6. 19. t. 7. f. 3?
Panicle squeezed close directed one way, culm round.
49. *Poa vilcosa*. *Viscid Meadow-grass*.
Lin. spec. ed. Willd. 398. *Retz. obs.* 4. 20.
Panicle oblong spreading, lower spikelets three-flowered (three to five), upper twelve-flowered, culms rigid finally viscid.
50. *Poa nemoralis*. *Wood Meadow-grass*.
Lin. spec. 102. *syst.* 115. *Reich.* 1. 191. *Willd.* 399. *fl. suec. n.* 85. *Wither. arr. ed.* 3. 146. *Smith angl.* 106. *Relb. cant. n.* 69. *Sibth. oxon. n.* 134. *Hall. helv. n.* 1469. *Neck. gallob.* 52. *Scop. carn. n.* 108. *Leers herb. born.* n. 72. t. 5. f. 3. *Pollich pal.* n. 94. *Fl. dan.* t. 749. *Hoffm. germ.* 30. *Roth. germ.* 1. 42. 2. 115. *Krock. files. n.* 145. *Villars dauph.* 2. 129.
P. angustifolia

- P. angustifolia* β. *Huds. angl.* 41.
 Gramen paniculatum angustifolium alpinum, locustis rarioribus & angustioribus non aristatis. *Scheuch. gram.* 164. t. 2. prodr. 18. 2. itin. 2. 18. 3.
 Gr. loliaceum alpinum, paniculis ex rarioribus & exiguis locustis compositum. *Monti ic.* 12.
 β. *Poa angustifolia* α. *Huds. angl.* 40.
P. pratensis var. 2. *Wither.* 141.
 Gramen paniculatum pratense majus, angustiore folio. *Mor. hist. f.* 8. t. 5. f. 19.
 Panicle and leaves attenuated, spikelets lanceolate three-flowered or thereabouts, glumes acute obsoletely five-nerved, stipule very short crenate.
51. *Poa contracta*. Contracted Meadow-grass.
Lin. spec. ed. Willd. 399. *Retz. obs.* 3. 11.
 Panicle contracted, florets lanceolate three together naked sessile, leaves filiform.
52. *Poa filiformis*. Thread-leaved Meadow-grass.
Lin. spec. ed. Willd. 399. *Thunb. prodr.* 21.
 Panicle spreading, spikelets acute four-flowered, leaves filiform.
53. *Poa bulbosa*. Bulbous Meadow-grass.
Lin. spec. 102. *Reich.* 1. 191. *Willd.* 399.
Huds. angl. 41. *Smith angl.* 102. *Hall. helv.* n. 1461. *Krock. files.* n. 139. t. 25. *Villars dauph.* 2. 130. *Hoffm. germ.* 31. *Roth. germ.* 1. 44. 2. 122. *Desfont. atlant.* 73.
 Gramen xerampelinum, miliacea pertenui ramosaque sparsa panicula. *Scheuch. gram.* 185.
 Gr. vernum, radice Ascalonitidis. *Vaill. par. t.* 17. f. 8.
 Panicle subflexuose, spikelets four-flowered, glumes connected by a villus, leaves serrulate, culm bulbous at the base.
54. *Poa disticha*. Double-rowed Meadow-grass.
Lin. spec. ed. Willd. 400. *Jacqu. ic. rar.* 1. t. 19. misc. 2. 74. *Hall. helv.* n. 1447. (*Sesleria*.)
P. seslerioides. *Allion. pedem.* n. 2208. t. 91. f. 1.
 Spikelets compressed four-flowered sessile distich-spiked.
55. *Poa bifaria*. Recurve-spiked Meadow-grass.
Lin. spec. ed. Willd. 400. *Vahl. symb.* 2. 19.
 Spikelets sessile distich, lower remote erect, upper approximating recurved.
56. *Poa bromoides*. Brome-like Meadow-grass.
Lin. spec. ed. Willd. 401. *Vahl. symb.* 3. 10.
 Subspiked, spikelets lanceolate twenty five-flowered, lower on short pedicels, upper sessile, leaves bifarious involuted.
57. *Poa spicata*. Spike-panicked Meadow-grass.
Lin. syst. 115. *Reich.* 1. 192. *Willd.* 401. mant. 32.
 Panicle-spiked, flowers awl-shaped, florets remote.
58. *Poa distans*. Reflexed Meadow-grass.
Lin. syst. 115. *Reich.* 1. 192. *Willd.* 401. mant. 32. *Wither. arr. ed.* 3. 141. t. 25. *Smith angl.* 96.
P. retroflexa. *Curt. lond.* 6. t. 1.
P. salina. *Pollich pal.* n. 92. *Hoffm. germ.* 30. *Roth. germ.* 1. 43. 2. 119. *Krock. files.* n. 138.
Aira aquatica β. *Huds. angl.* 34. *Lin. syst. ed.* 12. v. 2. 91. (*Smith*.)
 Panicle branched effused, branches finally reflexed, spikelets five-flowered, florets very blunt, obsoletely five-nerved shining.
59. *Poa divaricata*. Spreading Meadow-grass.
Lin. spec. ed. Willd. 402. *Gouan. illustr.* 4. t. 2. f. 1. *Desfont. atlant.* 75.
 Branches of the panicle corymbed, peduncles club-shaped, spikelets four-flowered, leaves filiform.
60. *Poa cristata*. Crested Meadow-grass.
Lin. syst. 115. *Reich.* 1. 193. *Willd.* 402. *Wither. arr. ed.* 3. 145. *Relb. cant.* n. 70. *Sibth. oxon.* n. 133. *Pollich pal.* n. 96. *Leers herborn.* n. 73. t. 5. f. 6. *Hoffm. germ.* 30. *Roth. germ.* 1. 43. 2. 119. *Krock. files.* n. 132. t. 26. *Desfont. atlant.* 76.
Aira cristata. *Lin. spec.* 94. *Huds. angl.* 33. *Smith angl.* 83. *Gmel. fib.* 1. 93. n. 24. *Hall. helv.* n. 1444. (*Festuca*.)
 Gramen spica cristata, subhirsutum. *Baub. pin.* 13. prodr. 8. *Mor. hist.* 3. 194. f. 8. t. 4. f. 7. *Scheuch. gram.* 166. *Pluk. phyt. t.* 33. f. 7.

- Panicle spiked, calyxes somewhat hairy four-flowered or thereabouts longer than the peduncle, petals awned.
61. *Poa peruviana*. Peruvian Meadow-grass.
Lin. spec. ed. Willd. 402. *Jacqu. ic. rar.* 1. t. 18. collect. 1. 107.
 Panicle spiked, spikelets five-flowered ovate, leaves and culms procumbent hirsute.
62. *Poa glomerata*. Glomerate-panicked Meadow-grass.
Lin. spec. ed. Willd. 402. *Thunb. prodr.* 22.
 Panicle spiked glomerate, spikelets four-flowered, corollas ciliate.
63. *Poa ciliaris*. Ciliated Meadow-grass.
Lin. spec. 102. *syst.* 115. *Reich.* 1. 193. *Willd.* 402. *amoen.* 5. 392. *Swartz obs.* 39. *Jacqu. collect.* 2. 338. *Brown. jam.* 135. (*Briza*.) *Sloan. jam.* 1. 114. t. 73. f. 1. *Pluk. phyt. t.* 190. f. 5.
 Panicle contracted, inner valves of the glumes hairy-ciliate.
64. *Poa plumosa*.
Lin. spec. ed. Willd. 403. *Retz. obs.* 4. 20.
 Panicle diffused, calyxes six-flowered, inner valves of the corollas linear recurved ciliated at the back.
65. *Poa flexuosa*. Zigzag Meadow-grass.
Smith angl. 101.
 Panicle flexuose, spikelets three-flowered, glumes ovate connected by villus at the base, all the stipules lanceolate.
66. *Poa caesia*. Sea-green Meadow-grass.
Smith angl. 103.
P. glauca. *Wither. arr. ed.* 3. 148?
 Panicle diffused, spikelets ovate five-flowered, glumes lanceolate somewhat silky free, stipules very short blunt.
67. *Poa cinerea*. Ash-coloured Meadow-grass.
Villars dauph. 2. 126.
 Stem-leaves erect involuted, spikelets three-flowered, ciliate at the base acute.
68. *Poa brizoides*. Briza-like Meadow-grass.
Villars dauph. 2. 126.
 Panicle contracted, spikelets round four flowered awnless.
69. *Poa divaricata*. Straddling-spiked Meadow-grass.
Villars dauph. 2. 127.
 Leaves plane striated, spikelets six-flowered acuminate, panicle divaricate.
70. *Poa montana*. Mountain Meadow-grass.
Allion. pedem. n. 2199. *Hall. helv.* n. 1468.
 Gramen paniculatum angustifolium montanum, panicula densa, locustis parvis muticis. *Scheuch. gram.* 180.
 Panicle strict, spikelets two-flowered, glumes villose at the base.
71. *Poa fabauda*. Savoy Meadow-grass.
Allion. pedem. n. 2200. *Hall. helv.* n. 1470.
 Panicle loose, spikelets two-flowered, flowers twice as long as the calyx very smooth.

DESCRIPTIONS, &c.

1. Root perennial, creeping. Culms from three to six feet high, upright, leafy, the thickness of a reed straw, two-edged, striated, smooth, the joints yellowish, the lower joints rooting all round. Leaves ensiform, from half an inch to almost an inch in breadth, acute, straight, smooth on both sides except that the keel and edges are rugged, very finely striated, the base of the leaf on each side marked with a yellow triangular spot; sheath smooth and striated, the keel prominent, the membrane short and obtuse. Panicle very large, from six inches to a foot in length, very much branched: branches in half whorls, rugged; branchlets alternate, flexuose. Florets from five or six to eight, seldom more, subcylindric, remote, purple on the outside, rugged. Calyx nearly equal, whitish, shining. Outer corolline glumes seven-nerved, inner emarginate. Styles from a little below the top of the germ. Nectary, a small truncated scale at the base of it. Seed of a pale brown colour.

Water Meadow-grass is one of the largest of our Grasses. In the fens of Cambridgeshire, Lincolnshire, &c. immense tracts that used to be overflowed and produce useless aquatic plants, and still retain much moisture, though drained by mills, are covered with

this grass, which not only affords rich pasturage in summer, but forms the chief part of their winter fodder.

It has a powerfully creeping root, and bears frequent mowing well. It is sometimes cut thrice in one season, near the Thames. It grows not only in very moist ground, but in the water itself; and with Cat's-tail, Burr-reed, &c. soon fills up ditches, and occasions them to require frequent cleansing. In this respect it is a formidable plant, even in slow rivers. In the Isle of Ely they cleanse these by an instrument called a Bear; which is an iron roller, with a number of pieces of iron, like small spades, fixed in it; this is drawn up and down the river by horses walking along the bank, and tears up the plants by the roots, which float, and are carried down the stream^p.

Poa aquatica is native of most parts of Europe, and flowers from July to September. Like several other species of *Poa*, it varies with viviparous flowers.

2. Root perennial, with simple, elongated, smooth fibres. Root-leaves very many, spreading, flat, wide, nerved, smoothish especially underneath, bluntish at the end with a little dagger point, rugged at the edge; with short erect compressed sheaths, and a short blunt stipule: stem-leaves two, very short, with very long sheaths, and lanceolate acute stipules. Culm a foot high, ascending, having two joints, naked at top, round, purple, shining. Panicle short, roundish or ovate, branches in pairs alternately subdivided, angular, smoothish, sometimes rugged. Spikelets cordate or broad-ovate, compressed, shining with purple and bay-colour, three or four-flowered, in gardens six-flowered. Calycine glumes almost equal, ovate, acute, somewhat sickle-shaped, obsolete nerved, rugged on the edge. Florets ovate, sharpish, scarious on the edge and commonly silky, bristly at the base, but free and not connected by complicated hairs; the inner valves emarginate and ciliate^q.

Villars also remarks that the glumes of the corolla have some ciliae at the edge; and that the culm is often compressed.

β. This species, in common with many alpine grasses, which live almost constantly in a moist vapour, is frequently viviparous. Linneus says, it is often found in this state in the Lapland alps, and that it continues so in gardens; and that it is not the calyx or petals growing out into leaves; but the rudiment of the germ, like *Lycopodium Selago*, leafing, falling, and growing^r.

Dr. Smith's account is, that the glumes change into leaves, and at length the fructification into a bud.

Mr. Lightfoot informs us, that the specimen he saw in Scotland was viviparous: the leaves smooth, compressed, and a little recurved; the stalk five inches high, slender, and purple; the panicle open and thinly set with flowers; the calyxes of a purple colour; and the germs viviparous.

Alpine Meadow-grass grows wild in Lapland, Switzerland, Silesia, Dauphiné, the highlands of Scotland, and Wales. It flowers in June and July.

3. Panicle small, with the branches pressed close, two-flowered or three-flowered. Spikelets three-flowered or four-flowered. Calycine glumes mucronate. Glumes of the corolla acute, of a dusky violet colour, with a membranaceous white margin.

Native of the mountains of Switzerland, Bohemia and Silesia^s.

4. Culm a foot high, ascending, leafy. Upper leaves scarcely shorter than the culm, naked, linear, acute. Panicle elongated, narrowed; peduncles short, spreading, half whorled. Flowers numerous, minute. Calyxes smooth, pellucid, ovate, compressed, of the same size with the glumes of the corolla, two-flowered, more seldom three-flowered.

Native of the East Indies, whence it was sent by Koenig^t.

5. Culm round, simple, upright, smooth, three feet high. Leaves ensiform, entire, striated, dotted-ciliate, as is the whole of the sheath, which is very long. Pa-

nicle a foot long. Peduncles angular, ciliate-rugged at the angles. Pedicels very short, pressed close. Calyxes having the keel very finely serrulate.—Native of Japan^u.

6. Root fibrous. Culms decumbent at the base and rooting, then erect, a foot and half high, simple, round, striated, somewhat rugged, leafy, frequently purple. Leaves almost erect, flaccid, sharpish, keeled, rugged, especially underneath and round the edge. Sheaths almost the length of the leaves, somewhat compressed, striated, a little rugged. Stipule lanceolate, acute. Panicle elongated, upright, very much branched, rugged; branches alternately decompounded, when in flower spreading horizontally. Spikelets ovate, generally three-flowered, purple and green. Calycine glumes rugged at the back, equal in length: outer linear-lanceolate, acuminate: inner dilated at the edge; three-nerved. Florets bluntish, five-nerved, scarious at the tip, somewhat silky at the edge and on the back: inner valves have a thickened, green and scarcely pubescent margin^v.

Culm from one to two feet high, creeping at bottom, whence this grass becomes perennial. Spikelets small, containing two or three, sometimes four flowers. Glumes of the calyx unequal. If the glumes of the corolla are drawn out of them, a woolly substance is observable, as in *P. pratensis*: these are nearly equal and pointed. Anthers yellow or purplish, finally becoming forked at each end. Germ very small, ovate: styles feathered almost to the bottom. Nectary, two little tender glumes, at the bottom of the germ. Seed oblong, pointed, having a woolly substance at bottom^w.

Dr. Withering remarks that the root is creeping; the whole plant rough; the height from one foot and a half to two feet or more; the panicle six or eight inches long, and three or four broad when fully expanded; the florets mostly three or four in each spikelet, but generally three. Its creeping root, and the great roughness of the culm and leaves, sufficiently distinguish this from *P. pratensis*, to which it has otherwise some resemblance.

Willdenow says it is sufficiently distinguished by its very branching diffused panicle, and especially by the great length of the ligule or stipule, which character Curtis first pointed out. See *P. pratensis*.

P. trivialis is certainly one of our best grasses, both for hay and pasturage; indeed a good meadow can scarcely be formed without it. Its chief qualities are, that it produces a large quantity of sweet tender leaves, preferred by cattle to most others, and convertible into exceeding fine hay. It is an early grass, flowering about the beginning of June. It does not bear frost so well, nor does it shoot so early in the spring as the *Poa pratensis*; but when the weather becomes warm enough to make Grasses in general shoot, this grows faster, and produces a greater crop of bottom leaves than most others. Whilst that is found chiefly in dry pastures, this principally occurs in moist meadows, or on the edges of wet ditches: it loves moisture, and a sheltered situation. In very wet ground it grows very tall; but in poor dry pastures it is diminutive^x.

So long ago as the year 1785, Mr. Boys of Betsfanger in Kent, a farmer of the highest reputation, raised at much expense, and several years attention, from twenty to thirty bushel of the *Poa trivialis*, which he then offered for sale at three shillings a pound. He says that it makes a very fine thick turf, and will produce a great quantity of very excellent grass, from moist rich soils, and that horses, cattle and sheep, are all very fond of it: that the first seed he had was given him by William Boys, Esq. of Sandwich, who collected it to the quantity of about an ounce. He used the straw after the seed was thrashed, instead of hay, for his riding horses, and they preferred it to his best meadow hay. The seed being very small, he thinks that seven pounds will sow an acre; but to have the land covered thick the first year, a little more should be sown. Sifting the seed is a work of time, as it

^p Curtis.^q Smith.^r Fl. succ.^u Thunberg.^v Smith.^w Curtis.^s Willdenow.^t Retz.^x Idem.

hangs together in lumps, and must be rubbed by hand though a sieve fifteen wires to an inch^a.

It is no small recommendation, says Mr. Curtis, to this Grass, that it is a principal ingredient in that uncommonly productive meadow near Salisbury, mentioned by Stillingfleet, and described in the first volume of the Memoirs of the Bath Agricultural Society, &c. See our article MEADOW.

Mr. Curtis had five turfs sent him from this famous meadow, which he planted in his garden at Lambeth marsh. *Poa trivialis* appeared in all the six. *Agrostis palustris* in three. *Alopecurus pratensis* in two. *Triticum repens* in four. *Avena elatior* in one. Hence he concludes, that the extraordinary fertility of this meadow arose not from any new grass peculiar to it, but from several unusual circumstances concurring and favouring in an uncommon degree the growth of certain well-known Grasses, especially *Poa trivialis* and *Agrostis palustris*.

This long grass was noticed long since by Merret and Ray, under the name of *Gramen caninum supinum longissimum*; and the place of growth assigned is Maddington, two miles from Salisbury. Ray adds, that it is twenty-four feet long; that they fat hogs with it; and that it grows in some parts of Wales. The greatest part of the meadow in which Mr. Swayne found this grass is in the parish of Maddington; and that is divided from Orcheston St. Mary only by a small stream. The following account from that ingenious gentleman will at length clear up the obscurities which have so long hung over this celebrated grass.

A friend of Mr. Swaynes' in Somersetshire had been to see the Orcheston grass, and being on the spot at the time the meadow was mowing, was directed to the *real long grass* by the farmer and labourers, and brought back with him living plants and specimens of the flowers. The latter were the *Alopecurus pratensis* of very large growth. Mr. Swayne carried home one of the plants and set it in his garden. The spring following it produced a very fine tuft of spikes of *Alopecurus pratensis*. The year following, Mr. Swayne visited Orcheston the first week in June. The greatest part of the meadow, or meadows, for there are several partitions, though the whole is not more than two or three acres, was then mown, and the grass was lying in small cocks. The standing part, which was one corner, about a quarter of an acre had one uniform appearance, and presented a thick and beautiful assemblage of the flowering panicles of what he took to be *Poa trivialis palustris* of Hudson. It is not however the *Poa palustris* of Linneus, but only a trailing variety of *Poa trivialis*, taking root at the joints: as Dr. Withering determined from the specimen sent him by Mr. Swayne.

The grass which had not been cut was lodged or lying on the ground, and had put forth roots at the knots, and began to be erect only at the last knot or two. These meadows are mown twice, at the end of May or beginning of June, and at the end of July or beginning of August.

Mr. Swayne remarks very judiciously that no grasses but those that flower early could be in bloom at the first mowing, and that whatever grasses are in blossom at the last mowing must be of the late-flowering kinds. Mr. Davies says, in his Wiltshire report, that Mr. Sole has determined the Orcheston grass to be the *Agrostis stolonifera*, and probably that grass may be predominant, perhaps the only grass in flower, at the time of the last mowing^b.

β. Dr. Smith regards the *Poa setacea* of Hudson's first edition as a variety of this; for it cannot be referred to *P. pratensis* on account of its lanceolate acute stipule. The lower leaves are involute-setaceous.

7. Panicle oblong, crowded, so as to seem almost imbricate, with four-flowered florets, when ripe often villose, wandering, cohering. Anthers yellow^c. Linneus speaks of it as growing every where with the preceding in Sweden and Lapland. Dr. Smith regards it as a variety of *P. pratensis*; which see.—For *P. an-*

guistifolia of Hudson, &c. see *P. nemoralis*, n. 50.—and *P. capillaris*, n. 34.

8. Culm round, smooth, straight, a foot high and more. Leaves few, in long sheaths. Panicle naked, loose: peduncles erect, angular, solitary or in pairs, divaricate. Spikelets sub sessile, lateral and terminating, compressed. Valves of the calyx almost equal, keeled, of a reddish bay colour, with pellucid margins. Corollas keeled, equal in length, of an elegant bay colour, large, one wider than the other. Filaments very short: anthers longer, purple, inclosed. Styles also very short^d.

Native of the mountains of France, Italy and Switzerland. Introduced in 1775, by Drs. Pitcairn and Fothergill. It flowers in April and May^e.

9. Root perennial, creeping by runners, easily penetrating into the earth and crevices of walls. Culms upright, smooth, scarce perceptibly striated, a foot or eighteen inches in height. Leaves smooth, of a dark green colour, sometimes glaucous or blueish, keeled, bluntish, spreading. Sheaths the length of the leaves, striated, smooth. Stipules short, blunt. Panicle as in *trivialis*, but less rugged. Spikelets ovate, four-flowered, often five-flowered, sometimes only two-flowered, flattened on each side, green or sometimes purple. Calycine glumes sharp, rugged on the back, a little unequal, three-nerved. Florets bluntish, five-nerved, scarious at the tip, rugged on the back, connected at the base by numerous very long complicated villose hairs; the inner valves somewhat pubescent at the edge. Filaments longer than the glumes: anthers forked at each end. Styles branched to the bottom. Nectary, two little glumes at the base of the germ. Seed angular, pointed^f.

Dr. Withering remarks, that it is from one to two feet high; that the leaves, though much less rough than in *P. trivialis*, are not always smooth; that the panicle is heavy when in seed, not greatly diverging, from two to four inches in length, and more than half as broad.

The late Mr. Curtis, whose attention to Grasses is well known, first accurately distinguished *P. trivialis* and *pratensis*, which are so alike in their general appearance, as hardly to be distinguished without nice examination. The *pratensis* however is in every part smooth; whilst in *trivialis* the stalk, leaves with their sheaths, and the branches of the panicle, all feel rough, if the plant be drawn downward betwixt the thumb and finger: in the *trivialis* the sheath of the leaf is flatter and more deeply fluted: the root of the *trivialis* is simply fibrous; that of the *pratensis* is creeping, and sends out many white shoots; but what distinguishes them most fully is, that the membrane at the bottom of the leaf where the sheath begins, (ligula f. stipula) in the *pratensis* is very short and blunt, in the *trivialis* long and pointed: this distinction is obvious to the most common observer, and never fails, let the grass vary ever so much in size, &c. These two grasses differ also in the size of the spikelets, and the number of flowers contained in each; in the *trivialis* they are biflorous or triflorous, in the *pratensis* most commonly *quinqueflorous*. The *pratensis* grows generally on walls, or on dry banks, but often in meadows: the *trivialis* is scarce ever found on walls, seldom on dry banks, but most frequently in moist meadows or by the sides of ditches: the former flowers about the third week in May, the latter the first week in June; after the *pratensis* has once flowered, it shows no disposition to do so again; whilst the *trivialis* is found in bloom, though not generally, during the whole of the summer. Lastly, there is a firmness in the stalk of the *pratensis* not perceivable in the *trivialis*. As to the pubescence, or filamentose appearance, which seems to connect the florets and calyx together, and adheres to the seeds so as to cause them to hang together as if there were cobwebs among them, it takes place nearly in an equal degree in both species^g.

The foliage of *Poa pratensis* begins to shoot, and to

^a Young's annals, 5. 115.

^b Wither. atr. 144.

^c Linn. succ.

^d Gerard prov.

^e Hort. kew.

^f Curtis, Smith.

^g Flora lond.

assume a beautiful verdure very early in the spring, but its flowering stems are not produced so soon, by a week at least, as those of *Alopecurus pratensis* or Meadow Foxtail-grass. Where early pasturage is desired, it cannot better be obtained than by a combination of these two with *Anthoxanthum odoratum* or sweet-scented Vernal-grass. If crop be an object, the Foxtail should predominate.

This grass preferring a dry situation, keeps its verdure in a continued drought better than most others: but it has a root like Quich or Couch-grass, (*Triticum repens*) and ought therefore to be cautiously introduced, where the meadow is not intended to be permanent. From its not throwing up any stems or bents but once in the season, together with its hardiness and verdure, it seems to be a good grass for lawns.

In dry soils, the crop from this grass yearly diminishes in quantity, so as at last to be very trifling; in moist meadows this effect has not been so observable. Upon the whole, this grass has rather sunk than risen in Mr. Curtis's estimation^b.

Dr. Withering relates that this grass constitutes a considerable part of the herbage on the rich meadows in the flat parts of Somersetshire.

Mr. Swayne observes, that in meadows which have been flooded the whole winter, it flourishes so as nearly to exclude every other grass.

β. Dr. Smith considers *Poa angustifolia* of Linneus as a variety of this grass; and informs us that it differs from it in having the lower leaves very narrow, and stiffish, the panicle smaller, and the lower sheaths somewhat rugged.

Dr. Withering makes *P. setacea* of Hudson a variety of this species. According to Dr. Smith, it is a variety of *P. trivialis*.]

Mr. Miller celebrates the perennial Meadow-grasses as the best species for pastures, and suggests that if the seeds of these were carefully collected, and sown separately without any other mixture of Grass-seeds, they would not only afford a greater quantity of seed on the same space of land, but the grass would also be better, the hay sweeter, and the verdure more lasting than of any other sorts.

[10. Leaves convoluted, striated, erect, smooth, a little longer than the culm. Sheaths bearded at the opening. Culm simple, erect, a foot high. Panicle rod-like, a span long. Peduncles and pedicels capillary, flexuose. Calyxes four-flowered and five-flowered, acute, smooth, dusky-rust-colour. It has the appearance of *P. Eragrostis*, but the spikelets are shorter and few-flowered.—Native of Japan¹.

11. A foot high and more. Culms grooved, smooth, brown at the knots. Leaves dark green, smooth, ciliate about the sheath, two or three lines wide. The leaf almost under the panicle, equals or exceeds the whole panicle; which has three or four branches from the same point, seldom one only. Branches flexuose, the first branched again. They all put forth distich ovate-oblong spikelets, disposed in a sort of thin spike, for the most part alternate, peduncled. Peduncles mostly one-flowered, sometimes two-flowered. Spikelets sometimes three-flowered, commonly four-flowered, sometimes five-flowered. Calycine valves acute, with a prominent greenish nerve. Corolline glumes ovate, having also a nerve. It is an annual grass, native of Italy, where it was found by Bellardi^k.

12. Panicle almost half a foot long, with capillaceous branches, pressed close and subdivided. Spikelets small, green. Corollas smooth, having five raised nerves on each valve. Native of North America¹.

13. Root perennial. Culms many, upright, from two to three feet, and often a little more in height, round, smooth, blueish green; having four purplish joints. Leaves flat, mucronate, bright or reddish green, smooth above but somewhat rugged underneath, with a whitish nerve. Ligule or stipule jagged, two lines in length. Sheaths smooth, striated, somewhat rugged when drawn backwards. Panicle green and

white; branches two from the same point, consisting of closely crowded branchlets, especially towards the top. Spikelets small, ovate-oblong, compressed, from four to six-flowered, whitish green, mixed sometimes with a little purple. Glumes of the calyx narrow, lanceolate, keeled, mucronate, the larger little more than a line and half, the smaller more than a line in length. Glumes of the corolla lanceolate, narrow, ending in a very acute point, two lines in length.

This species differs evidently from all the other species, except the *alpina*, and from that it may be distinguished, by its longer culm; much wider leaves, smaller spikelets, and by its narrow very acute glumes^m.

Native of Germany. It was first observed by Pollich in the Palatinate, flowering in June and July. The *sylvatica* of Krocker seems to be the same with this; but whether that of Villars be so is very doubtful.

14. Height four feet. Leaves wide. Habit like that of the preceding, but sufficiently distinct. Culm two-edged. Spikelets bright green, much smaller than the preceding, with the florets acuminate.

Native of the mountains of Silesia, and of the marshes of Hanover and Magdebourgⁿ.

15. This is a middle species between the *trinervata* and *judetica*: it differs from the former, to which it approaches the nearest, in having shorter broader leaves, a longer ligule, a shorter panicle of a red colour and less divaricate, the spikelets more crowded and rugged, the outer valve of the corolla five-nerved. It is a perennial grass, native of the lower Hesse^o.

16. Native of New Zealand^p.

17. Root annual, remarkably full of fibres. Culms numerous, forming a thick tuft, semiproculumbent, but in meadows among other plants nearly upright, slender, leafy, smooth and even, at the base rooting and branched, about half a foot high, or varying in different situations from less than three inches to near a foot. Leaves very numerous, linear, bluntish, flat or sometimes transversely wrinkled, flaccid, smooth, bright green, rugged or finely ferrate on the edge. Sheaths elongated, flat, smooth, striated, palish. Stipule short, subdeltoid, erose. Panicle triangular, flattish, erect, smooth: branches or peduncles at the bottom generally in pairs, one shorter than the other, in the middle often in threes, and at top single: it is thinly set, near two inches long and almost as broad. Spikelets ovate-oblong, flattish and sharp on both sides, three, four, or sometimes five-flowered, shining, green and white variegated, smooth. Calycine glumes lanceolate acute, keeled, unequal. Florets rather remote, ovate-lanceolate, blunt, five-nerved, membranaceous at the edge, somewhat silky at the back, but entirely free at the base, not connected by hairs. Styles exceedingly branched and pellucid. Seed ovate, covered by the corolla, which adheres to it, and slightly villose at bottom^q.

Poa annua is distinguished from *P. trivialis* by its general habit, its spreading panicle, its reclining culms, its smoothness and greater softness and delicacy: from *P. pratensis* by having the branches or peduncles in pairs, its panicle more thinly set, and its spikelets larger: from both, by its inferior size, compressed culms, annual root, property of throwing out new shoots, and having the florets and seeds separate, not hanging together by cobweb-like hairs.

If *Gramen* be so named, says Ray, *a gradiendo* or *progrediendo*, no species better merits the name than Annual Meadow-grass. Mr. Curtis, to whose accounts of Grasses it is difficult to add any thing new, remarks, that it differs very considerably from all other annual grasses, in continually throwing out new shoots, and producing new flowers and seeds, inasmuch that if the ground be moist, a single plant will grow in this manner throughout the year, so that we generally find on the same plant young shoots and ripe seeds. It imitates therefore the tropical plants in this circumstance, and is perhaps the only vegetable we have that does so.

^b Pract. obs. ed. 3. p. 12, &c.

^k Allioni.

ⁱ Thunberg.

¹ Willdenow.

^m Pollich.

^p Forster.

ⁿ Willdenow.

^o Curtis, Smith.

^q Idem.

No grass is better entitled to the accurate Ray's epithet of *vulgatissimum*, for it is common to every quarter of the globe, and occurs almost every where in meadows, gardens, by the sides of paths, and on walls; flowering all the summer, and even in the winter, if the weather be mild. In open fields the panicle frequently acquires a reddish tinge.

It appears to be one of the first general coverings which nature has provided for earth made bare from any cause; hence it is frequent on the edges of paths, where its seeds being scattered quickly vegetate, and the plants not being overpowered by more luxuriant herbage, continue to flourish; this gave occasion to Mr. Stillingfleet to suppose that this grass thrived the more for being trodden on, but this supposition is void of foundation.

In walks, pavements and pitching it is one of our most troublesome weeds; in such situations the most expeditious way of destroying it, would be by pouring boiling water on it.

Mr. Stillingfleet says that it makes the finest of turfs; that it is called in some parts Suffolk Grass, there being whole fields of it in High Suffolk, without any mixture of other grasses, and that it is likely to be the best grass for the dairy.

Its foliage is tender and grateful to cattle, but it never acquires any great height: it is also liable to be killed by winter's frost and summer's drought.

May or June is the best time to gather the seed in greatest abundance; but as a single tuft of this grass may be divided into a vast number of plants, and as they grow with wonderful facility, an experiment, on a small scale at least, might be tried with it by transplanting it in moist weather¹.

This species becomes viviparous in alpine situations².

18. Native of Virginia³.

19. Root annual, in bundles of fibres. Culm simple, upright, round, smooth, a span in height. Leaves narrow, linear, attenuated at the tip, setaceous, convoluted, entire, smooth, longer than the culm. Joints bearded. Peduncles bifid or branched, with alternate, flexuose, smooth pedicels. Spikelets five, six or seven-flowered, oblong, often ferruginous, smooth, serrate from patulous florets. Native of Japan⁴.

20. Height fourteen and sixteen inches. Leaves on the culm three or four inches long, ending in a sharp point, smooth except at the edges, where they feel rough if drawn between the finger and thumb. Panicle very thin, loose and scattered, from a hand to half a foot in length. Branchlets or peduncles very slender, mostly single and at unequal distances, except the lowest, which come out every way in a sort of whorl. Spikelets small and delicate, of various sizes: the lowest on shorter peduncles, only a line in length or shorter, three-flowered; others a line and half in length and four-flowered; others two lines in length, having five, six or seven florets, placed alternately. Calycine glumes narrow, acuminate, unequal, the larger scarcely half a line in length. The lower glume of the corolla a line and half long, the upper one a little shorter. The lower branchlets of the panicle are villose with longish hairs at the base; and the other branchlets (or peduncles) up to the middle of the panicle have a very fine slender hair or two, about two lines in length at their bases. Native of Italy about Bologna⁵.

21. Root perennial, creeping. Culm from a foot to two feet in height, sometimes but seldom three feet, at first decumbent, then erect, weak, round, rooting at the four or five lower joints by white capillary fibres, between the joints involved in green white or brownish sheaths, putting out at almost every rooting joint a lateral shoot, rendering the culm as it were dichotomous; the joints are very close near the base, but very remote in the upper part of the culm. Leaves scarcely two lines wide, acuminate. Ligule or stipule subdiaphanous. Panicle half a foot or more in length, pyramidal, the lower branches being very long

and decreasing gradually till the uppermost are very short: pedicels slender, unequal, alternate, several together from the same point, branched, crisped as it were with various flexures. Spikelets variegated with green and white, ovate, compressed, acuminate. Calyx two or three-flowered; one glume narrower, both blackish on the outside, acuminate. Glumes of the corolla narrower, green, acuminate, brownish at the tip, covered with a very fine pubescence or villus at the base⁶.

Krocker could not observe that the spikelets were pubescent; he has seen them with four flowers. He remarks that the rachis at the rise of the pedicels is divided by little white knobs, as in most of the other species.

He distinguishes it from *P. trivialis* by its creeping, dichotomous culm; its creeping root; its thinner, longer and more diffused panicle; and its wider, longer, rugged leaves: from *angustifolia* also by its culm and leaves; its longer, wider panicle, and larger spikelets. It is known, says Seguiet, when the rice-fields are hoed, during its tender state, by its glaucous leaves; when farther advanced, by the spinules of the leaves⁷.

Haller informs us, that Bauhin's name does not appertain to this species; but yet that Morison's figure does represent it.

Native of Denmark, Switzerland, Italy, and Germany.

22. Culm one or two feet high, suberect, very slender, strict, round, smooth, jointed below. Leaves short, linear, acute, concave, spreading, hairy or somewhat hirsute; the hairiness thin and clammy. Sheaths hirsute. Panicle two inches long, somewhat hirsute: branches alternate, distant, simple, few-flowered. Spikelets distinct, three to six on a branchlet, purple, pedicelled. Calycine valves acute, keeled, minute. Corolline glumes a little larger, ovate, acute, keeled, flattened a little; the inner ciliate, when examined by a magnifier; with that advantage, the keel also appears serrulate. Filaments very short. Anthers dark-purple. Stigmas hairy, whitish. Seed roundish, very minute.—It is distinct from *P. pilosa* in not having the lowest branchlets of the panicle whorled and hairy:—from *P. amabilis* in having fewer florets, not linear:—from *P. Eragrostis* in the rigidity of the panicle, the distance and clamminess of the branchlets, &c.—from *P. capillaris* as in the preceding, and also in having an upright simple culm.

It is an annual grass, native of Jamaica, in dry sand.

23. Culm a fathom high and more, upright. Branches subdivided, round, striated, smooth. Joints knobbed, leafy, proliferous as it were with the origins of a younger plant. Leaves in bundles, linear, setaceous, commonly convoluted, sheathing, erect, even. Panicles a span and more in length, branched, erect: branchlets subdivided, capillary, strict, flexuose. Spikelets pedicelled, lanceolate, compressed. Calycine valves equal. Corolline valves ovate, acuminate, keeled. Filaments two or three. Anthers pale. Stigmas villose.

Native of the Caribbee islands; St. Lucia, Guadeloupe⁸.

24. This is very nearly allied to the next species, with purple flowers, and three-nerved glumes, the lower of which gradually fall. Native of the East Indies⁹.

25. This is an annual grass. The outer glumes keeled, hyaline, with green nerves on both sides, by which it is easily distinguished. Flowers ovate, sharpish, six to nine-flowered without a scarious margin. Panicle waved¹⁰.

Though annual, this grass throws out several inclined culms on a fibrous root, thus forming a dark-green turf. They are from six to ten inches in height, and divide by furnishing several lateral branches, which bear panicles at their lower part. Leaves open, flat, dark green, having a pencil of hairs at their base on each side. Terminating panicle oval, upright, two or

¹ Curtis.

² Davies in Smith. angl.

³ Gronovius.

⁴ Thunb.

⁵ Scheuchzer.

⁶ Krocker.

⁷ Veron. 1. 351. Linn spec.

⁸ Swartz.

⁹ Lin. spec.

¹⁰ Linn. mant.

three inches long, composed of a great number of filiform straight branches, and an infinity of spikelets, which are linear, reddish, very narrow, almost cylindrical, each composed of from eight to ten flowers. Glumes smooth, reddish or brown, with a whitish margin.

When the spikelets of the upper panicle are ripe, the seeds fall immediately, and successively those of the middle and base of the culm. This quick falling of the seeds, is the reason why we may often observe the young flowers withering at the base, whilst those in the middle are in the state of full expansion, and the upper ones falling present ripe seeds, of an uncommon fineness, though accompanied by the inner glume, and often by both.

In Dauphiné the panicle is not spreading, the peduncles are scarcely flexuose, and the glumes have not any sensible nerves. These characters are found in *Briza Eragrostis*, which a little resembles this: but the wide flattened spikelets of that are three times as big, and three times less in number; besides the three nerves are so strongly marked, that the middle one forms a keel, and renders the spikelets distich and flattened, whilst the two lateral nerves leave between them and it a curved deep space. The spikelets of *P. Eragrostis* on the contrary are almost cylindrical, because they are very narrow, and have no nerve^d.

Lamarck and Cavanilles insist that *Poa* and *Briza Eragrostis* are one and the same plant.

According to Desfontaines, the culms are slender, procumbent at the base, often knee-jointed. Leaves wide, somewhat villose. Sheath crowned with little bristles. Panicle elongated, narrow. Peduncles capillary, flexuose. Spikelets compressed, linear-subulate, dusky purple, closely imbricate in a double row. Outer calyx from eight to fifteen-flowered. Outer glumes of the calyxes keeled, bluntish.

Native of Switzerland, Dauphiné, Spain, Italy, on walls; also of Barbary and Siberia.—Introduced in 1776, by Mr. Thouin^e.

26. This grass forms a turf. Root-leaves two inches long, linear, smooth; culm-leaves only half an inch in length. Ligule large, truncate. Culm quite simple. Panicle squeezed close. Corollas nerveless, acute, pubescent at the base, of a dusky violet colour, with a membranaceous margin.

Native of Baden on the rocks by the hot baths in lower Austria and Mansfield. Perennial^f.

27. This is an extremely handsome Grass. Culms of the same size with those of Wheat, simple. Raceme simple, a foot long, composed of alternate, quite simple, equal peduncles, longitudinally pinnate on both sides from the base to the tip. Flowers sessile, approximating, compressed, equal, flattened as in *Cyperus*. Glumes compressed, keeled, sharpish, ovate^g.

Culms two feet high, solitary, round, erect, with distich reflex leaves at the base, and two or three convoluted leaves on the culm. Panicle often longer than the culm, remarkable for its blood-red colour in flowering-time. Peduncles whorled in threes, horizontal, gradually shorter upwards. Spikelets crowded, numerous, many or about ten-flowered. Calycine valves unequal. Corolline valves acute, keeled^h.

Native of Egypt and the East Indies.

28. Spikelets short, like those of *Briza*; but the valves acute and keeled. Calyx of the lower flowers of the panicle four-valved, of the upper two-valved. The lower flowers four-flowered, the upper eight, ten or twelve-flowered. This is a middle grass between *Poa*, *Briza* and *Uniola*. It was found in the East Indies by Koenigⁱ.

29. 30. These were found at the Cape of Good Hope by Thunberg.

31. Branches of the panicle in whorls, branched, much longer than in *Poa* (*Briza*) *Eragrostis*. Spikelets very numerous and narrow: the calyx and lower glumes often falling. Culms prostrate and more than a foot in length. This grass resembles *Poa* (*Briza*) *Eragrostis*, in every thing except the panicle and spike-

lets. It is annual, and native of Spain, flowering there in July^k.

32. Culm naked at top, firm. Leaves acute. Sheath without any membranaceous crown. Flowers loosely panicle. Peduncles long, capillary, angular, flexuose, rough, branched, solitary in twos or threes. Rachis flexuose, angular, rough. Spikelets pedicelled, blunt, greenish-brown. Outer calyx eight to ten-flowered; glumes unequal, sharpish. The outer glume of the inner calyxes keeled, larger, inclosing the other. Anthers very small. Seed very small, oblong. It is allied to *P. verticillata*, but the spikelets are twice as wide, the culms are erect, and the sheaths have no ligule or stipule. Root perennial.

Native of Barbary, near La Calle^l.

33. Root annual. Culm slender, a little compressed, branched, procumbent at bottom, bent in at the knots. Leaves sublinear, acuminate, sheathing, roughish at the edges with very minute toothlets. Panicle on capillary compressed spreading rachises. Spikelets oblong, blunt, from four to six-flowered. Calycine valves lanceolate, acuminate, erect, concave, compressed, whitish with a green back, appearing obsoletely toothletted when magnified; one longer than the other. Corolline valves like the others. Florets alternate on the rachis, which is flexuose arch-wise. Stigmas purple. The whole plant is very smooth^m.

It is from the grain of this plant that the common bread in Abyssinia is prepared; that made from wheat being used only by the superior ranks. The flour of the best kind of Teff is, according to Mr. Bruce, as white as that of wheat, and is very light and easily digested; other kinds are of a browner and coarser quality: that which grows on light ground is accounted the best. The manner of making the Teff bread is by taking a broad earthen jar, and having made the flour into a lump with water, they put it into the jar, and let it stand at some distance from the fire till it begins to ferment or turn sour, and then bake it into cakes of a circular form, and about two feet in diameter: it is of a spongy soft quality, and a hot disagreeable sourish taste. From the same bread, by being well toasted, and infused in water for some days, is prepared the common beer of that country, which is called by the name of bouzaⁿ.

Cultivated in Abyssinia. Introduced here in 1775, by James Bruce, Esq. It flowers in August and September^o.

34. Culm from six inches to two feet in length, decumbent at the base, prostrate, filiform. Leaves long, very narrow, erect, with the sheaths somewhat hairy. Panicle with very long diffused branches. Florets distant, peduncled, patulous, minute. Calyxes four or five-flowered: glumes awnless, acute. Corolline glumes more distant, oblong, acute. Anthers purple. Stigmas villose, purplish. Seed roundish, shining. Common in the West Indies^p, Virginia and Canada. Introduced, according to the Kew catalogue, by Mons. Thouin, in 1781.

The grass in the meadows round Montreal, says Kalm, is chiefly the *Poa capillaris*. It is very slender, grows very close, and succeeds even on the driest hills. It is however not rich in foliage, and the slender stalk is chiefly used for hay. Many sorts of grass in Sweden make infinitely finer meadows than this.

Kalm informs us, in another passage^q, that the high meadows in Canada are excellent, and far preferable to those round Philadelphia. The farther he advanced northward, the finer he found them, and the turf upon them better and closer. Almost all the crop was *Poa angustifolia*, or narrow-leaved Meadow-grass and *Trifolium repens*, white or Dutch Clover. The spikelets of the former contained three or four flowers, so exceedingly small, that the plant might easily be taken for an *Agrostis*, and the seeds have small downy hairs at the bottom, as in *trivialis* and *pratensis*. It is pretty tall, but has very thin stalks; the ground however is

^d Villars.

^e Hort. kew.

^f Willdenow.

^g Linn. spec.

^h Retz.

ⁱ Idem.

^k Cavanilles.

^l Bruce.

^m Desfontaines.

ⁿ Hort. kew.

^o Jacqu. misc.

^p Swartz.

^q Travels, 3. 156.

quite covered with the Clover, and both together make very fine meadows.

35. Culm sheathed with leaves, round, striated, smooth, upright, two feet high and more. Branches alternate, simple. Leaves ensiform; narrow, striated, shorter than the culm, a span in length. Sheaths long, without any hairs. Panicle from erect spreading, very much branched, a foot long. Rachis angular, striated, smooth. Pedicels capillary, branched, flexuose. Spikelets erect, from five to nine-flowered, subpellucid.—It differs from *P. capillaris* in the number of flowers, all smooth, in the smoothness of the leaves, not hairy even at the base, and in the uprightness and superior height of the culm. Native of Japan, in Kofido and near Nagasaki¹.

36. Flowers by no means sessile, but pedicelled, and more remote and elongated than in the *chinensis*. Calyx four-flowered, shorter than the flowers, with the keel ciliate. Rachis rough. Leaves and sheaths naked². Native of the East Indies, in sandy ground.

37. Leaves hairy; especially at the sheaths. Rachis not rough. Flowers pedicelled, not sessile, almost pressed close to the rachis and imbricate. It varies with two, three and four-flowered calyxes, no less than in height³.

Culm two feet high, slender, round, almost upright. Leaves lanceolate, smooth. Panicle oblong, with the branches quite simple and spreading. Calyxes six-flowered. Florets imbricate⁴. Native of India, China and Cochinchina.

38. Culms a foot and half high, ascending, even, the thickness of a pigeon's quill, with very swelling joints, often three in number. Leaves somewhat rugged, even underneath, longer than the internodes, rugged on the edge, and having a few erect hairs towards the base. Sheaths even. No ligule or stipule at the opening. Panicle spreading like that of *Milium effusum*. Peduncles, when the flowering is part contracted into a raceme. Spikelets lanceolate, twelve or fourteen-flowered. Florets diaphanous, with a dot (from an anther) within of a dusky colour, and a green streak on each side. Corolline glumes ovate, sharpish, even, much resembling those of the calyx. Native of Malabar⁵.

36. Culms from two to three feet high, round, erect, simple. Leaves narrow, short. Branches of the panicle in half whorls. Spikelets reddish or whitish green, linear, containing about ten florets. The outer valve of the corolla is bent down at the tip and has the margins reversed.

Native of the East Indies. Koenig sent it from Tranquebar, where it is frequent on the borders of fields, and in Paddy-grounds that are not over wet⁶.

40. Root annual. Culms even, prostrate, branched at bottom. Leaves even, with a rugged edge, and a hairy opening. Panicle spreading very much. Flowers oblong, blunt, purplish, with a green line on each side; the margin appearing to be ciliate, when examined with a magnifier⁷.

It is observed by Retzius, that not only the leaves are hairy at the throat or opening, but that the whole panicle at the base of the peduncles has bundles of long white hairs, from three to sixteen in number.

Native of the East Indies. Introduced in 1781, by Monf. Thouin. It flowers in July and August⁸.

41. Root perennial, creeping. Culms decumbent at the base, from six inches to a foot in height, very smooth, round, striated, leafy. Leaves rolled in, so as to resemble those of rushes, glaucous, acute, with long sheaths. Stipule blunt, but sometimes sharpish. Panicle upright, strict, or little spreading; branches commonly in pairs, angular, rugged, a little flexuose, racemed, spreading when in flower, and afterwards erect, sometimes divaricating, as in *P. distans*, to which it is very nearly allied; differing however in having the root creeping, the florets longer, sharper, and by no means retuse. Spikelets linear, smooth, purplish, five-flowered or thereabouts (three to seven

or eight. *Huds.*) Calycine glumes unequal, ovate, sharpish, keeled; outer three-nerved. Florets somewhat remote, oblong, subcylindrical, bluntish but not retuse, scarce apparently five-nerved, less scarious at the tip; inner glumes rugged at the edge, emarginate at the tip⁹. Inner valve of the corolla very minutely ferrulated.

Mr. Lightfoot remarks, that it is nearly related to *Festuca* (*Poa*) *fluitans*, and that perhaps the sea-water may occasion the difference. But this opinion is not probable; for the outer and larger valve of the corolla in this plant wants the ribs, which are so strongly marked in *F. fluitans*; the inner valve wants the open cleft at the end; and *F. fluitans*, examined whilst growing in the salt marshes at Lymington, was found to vary but little from that growing in inland places¹⁰.

It is observed by Willdenow, that in the wild plant, the panicle is squeezed close, narrow, and directed one way, with spikelets having from four to eight flowers; but in a garden, the panicle is divaricate, and the spikelets have from five to twelve flowers.

Native of Denmark, Britain, Germany and France, on sandy coasts, and in salt marshes. About Yarmouth: between Bristol and the Hot-wells; near the canal from Droitwich to the Severn, meadows near Wisbech, &c. &c. In Scotland, in the island of Oransa, in Skye, at Loch-Broom in Ross-shire, &c. It flowers in July.

42. Root fibrous, forming a turf. Herb glaucous. Culms several, more or less prostrate, about a span long, leafy, smooth, bent at the joints. Leaves widish, acute, flat, nerved, somewhat rugged, with very long sheaths. Stipule sharpish, torn. Panicle rigid, leaning to one side (secunda,) semicylindrical, its main and partial stalks (rachis ramulique) nearly round, rugged. Spikelets two-ranked (distichæ,) sessile, lanceolate, four or five-flowered, glaucous, smooth. Calyx-valves blunt, very unequal, keeled; the outermost having five ribs. Florets bluntish, five-nerved, membranous and torn at their apex; their inner valves ciliated¹¹.

Dr. Smith affirms that this grass has an annual root. On the contrary, Mr. Curtis says, "from the same root, which is clearly *perennial*, we have, as in *Poa annua*, young shoots and ripe seeds. However *P. procumbens* seems to be no more perennial than that.

We may add, from Mr. Curtis's description, that the stems are from four to six inches or more in length, having two or three joints, flattened towards the panicle. Leaves short, two lines broad, the edges very minutely ferrulate. Stipule short, embracing, somewhat pointed, white. Sheath glossy on the inside; the outer surface the same as that of the leaves. Panicle about two inches long, somewhat ovate, now and then bent a little backwards: the branches in pairs, unequal, the outer one largest: in the lower branches a single spikelet is most commonly placed in the middle betwixt them; in impoverished specimens, a spikelet often holds the place of a branch. Common peduncles round, naked, crooked, marked at the base on the upper side with a glandular substance. Rachis round, smooth, with two grooves on the inside. Spikelets in the larger branches about six, in the smaller four, somewhat linear, roundish, slightly flattened, equidistant. Florets obtuse, hairy at the base. Calyx-valves green edged with white, somewhat blunt. Corolla-valves almost equal; the outer rather larger and five-ribbed; the inner narrower and two-ribbed; the ribs edged with hairs. Germ obovate, pale green. Styles spreading and ramified quite to the base. Nectary, two small transparent glumes, tumid and fleshy at the base, a little longer than the germ. Seed oblong, smooth, inclosed in the glumes.

In general habit it comes near to *P. annua*; it bears an affinity also to *P. rigida*; but from those and all the other species it is sufficiently distinct. The stalks are for the most part procumbent; but this procumbence does not appear to originate in the usual way, from the weakness of the stalk, but from its being bent downward at a joint near its base; as every stem

¹ Thunberg ² Retz. ³ Idem. ⁴ Loureiro.
⁵ Linn. suppl. ⁶ Retz. ⁷ Linn.

⁸ Hort. kew.

⁹ Smith.

¹⁰ Withering.

¹¹ Smith.

is not thus acted on, some are frequently found nearly upright: the foliage is of a glaucous hue, and if examined with a magnifier, is found to be covered with numerous rough silvery particles; the panicle has a greater degree of rigidity than that of *P. annua*; the spikelets are much longer, less flat, and more regularly distant from each other; and each floret is ciliated at its base.

This new grass is described and figured in the last number of the *Flora Londinensis* that Mr. Curtis published.

Dr. Withering remarks, that this has not the bordered fruit-stalk of *P. rigida*. He has figured it under the name of *P. rupestris*; and describes it as four or five inches high; the culm knee-bent in the upper joint, sheathed up to the panicle; leaves short, broad, ribbed; panicle an inch and half long, nearly one inch broad; calyx three or four-flowered, with the outer valve three-ribbed; valves of the corolla blunt.

Dr. Smith observes, that *Cynosurus durus*, which is undoubtedly a *Poa*, is very nearly allied to this; scarcely differing from it except in its more rigid habit, more simple panicle, its flexuose flattened smooth unfreaked rachis, and the outer calycine glumes nine-nerved.

He informs us that Dr. Goodenough suspects Mr. Hudson's full description under his *P. maritima* may belong to this plant.

He observes farther, that *P. procumbens*, with *maritima*, *distans*, *Festuca fluitans*, and *Cynosurus durus*, form a very natural tribe of *Poa*, with blunt florets, whose valves are ribbed, and whose spikelets are scarcely so truly ovate as the character of this genus requires. They are joined to the other species by means of *P. rigida* and *compressa*, and, no doubt, form a natural genus with them.

Mr. Curtis first discovered this grass in the autumn of 1793, at the foot of St. Vincent's rocks, on the edge of the river. Sir Thomas Frankland found it growing in some plenty in the inundated parts of the waste ground west of the wet dock, below Clifton; and afterwards abundantly on the pier at Scarborough, within the spray of the sea. Mr. Curtis was informed, that it had also been found on the Essex coast. He says, that culture produces little alteration in its appearance.

43. Root annual, furnished with few fibres. Culms several, about four inches high, (or from four to eight) almost upright, but in maritime situations often prostrate, rigid, round, purplish, very smooth and shining, leafy at the base, with two knots or joints. Leaves acute, often involute-setaceous, nerved, very smooth underneath, rugged above, the length of the sheath, nearly upright. Sheath smooth and very finely grooved. Stipule short, obtuse, jagged at the end. Panicle rigid, lanceolate, an inch and half to near three inches long, directed one way in a double row, with a flexuose winged rachis, and rugged angles. Spikelets linear, pedicelled, smooth, from four to eight or ten-flowered. Calycine glumes nearly equal, keeled, acute, appearing roughish when viewed with a magnifier. Florets bluntish, cylindrical, scarcely keeled, altogether nerveless, rugged towards the tip; inner glumes ciliate. Filaments the length of the corolla, anthers very minute and short. Nectary, two small glumes, ovate-acute, the length of the germ, visible only by the help of a microscope. Germ turbinate; styles branched to the bottom. Seed ovate-acute, convex on one side, concave on the other^c.

In *Systema Vegetabilium* these marks of discrimination are given.—Culm rigid, very short. Panicle lanceolate, rigid, decompounded: branches alternate, alternately spikeletted; pedicels rigid, shorter than the spike. Spikelets linear, acute, with eight flowers or thereabouts. Florets sharpish, somewhat scariose at the tip. Calyx keeled.

Dr. Withering remarks, that this may be distinguished from all the other species by the principal or main fruit stalk (rachis) being broad on

^c Curtis and Smith.

the side opposite to the direction of the branches, convex, and edged with a paler green border.

Mr. Curtis observes, that in dry and barren situations, the stalks sometimes are found simple, the panicle also not branched, and the spikelets, instead of containing about eight flowers, have no more than three or four. In this state Scheuchzer makes another species of it. This alteration, from an excess or scantiness of nourishment, is what most plants are subject to; and to form species from such a cause, is to multiply plants without end. A complete knowledge of a plant, (particularly of a grass,) is only to be attained, by observing it at the different periods of its growth, in all the various situations in which it occurs.

Native of England, Holland, France, Italy and Germany; also in Barbary; in dry sandy or stony places, on walls and roofs; flowering from May to August.

44. See the description of this grass under *Festuca spinosa*.

45. Root perennial, creeping, consisting of downy fibres, thrown out from the lowest part of the stem, which is decumbent at the base, then rises obliquely, and is upright at top; where it is naked; at bottom it is leafy; the first or lower joints are bent, the uppermost very long; it is striated, smooth and about a foot high, and is very much compressed. Leaves flat, acute, of a glaucous green, smooth and even. Sheaths the length of the leaves, ancipital, striated, a little ventricose. Stipule short, bluntish. Panicle glaucous, upright, directed one way, bluntish, condensed, two inches long; with the rachis from roundish-flatted; and all the branchlets at first close and erect, acutely angular and rough, a little zigzag; as they flower they spread considerably, but immediately after the discharge of the pollen they become again close-pressed to the main branch, so that the upper part of the panicle looks as if it expanded first. By this mark the grass may be known at a distance. Spikelets subsessile, ovate or ovate-lanceolate, much larger than those of *P. pratensis*. Calycine glumes almost equal, ovate, nerved. Florets from three to nine (mostly three or four, Linneus says six,) closely imbricate, ovate, angular, three-nerved, bluntish, purple below the tip, which is silvery and scariose, at the base connected by very fine, complicated, shorter villose hairs^f. Dr. Withering says they are rarely woolly at the base.

Native of most parts of Europe, in dry pastures, on the tops of walls that are a little covered with earth, on house-tops, and in other very dry places; where it may be found in flower from June to September, and may be easily distinguished by its compressed stem^g.—It is also found in North America, where it has usually three florets in a calyx; the European has commonly more, but the habit and structure is the same in both^h.

This Grass can scarcely be put to any agricultural use, though all cattle eat it; for it does not thrive in moist or manured ground, and there are many better grasses for dry situationsⁱ.

46. 47. Found by Thunberg at the Cape of Good Hope.

48. Culm evidently compressed. Panicle short, contracted, spike-shaped. Inner valve of the corollas linear, curved, ciliate, like *P. ciliaris*; from which it differs in having the cilia many times smaller, the culms depressed, and the leaves short, scarcely an inch in length^k.

According to Linneus, this grass resembles *P. compressa* very much, but the culm is round; the flowers are paniced, whorled, five-flowered; the anthers red, and the pistils white.

Native of the East Indies, where it was observed by Koenig.—Retzius remarks, that *Phoenix amboinica* of Rumphius is very different from this, as appears both from his figure and description.

49. Roots articulate, stoloniferous, producing bundles of leafy culms, a span high, and round. Leaves filiform, convoluted, distich, short, somewhat rigid.

^f Smith and Withering.
ⁱ Engl. bot.

^g Smith.

^h Retzius.

^k Linn.

Panicle ovate-oblong, with short spreading and very branching peduncles. Spikelets linear-lanceolate. One glume of the calyx longer than the other, which is very near the corolline glume: these latter are like those of the preceding: that is, the inner valve is linear and recurved towards the outer valve, and a little ciliate on the back. The colour of the panicle is commonly greenish, sometimes hoary, and not unfrequently blood-red.—The culms, peduncles, pedicels and calyxes are all so clammy, as to besmear the feet and legs of those who walk among this grass, and cover them with the glumes. It fills the air with an odour of turpentine that is not unpleasant, especially in the evening. Found in the dry gravelly soils of Malabar by Koenig¹.

50. Root creeping a little. Culms several, upright, a foot and half high, slender, slightly compressed, striated, smooth. Leaves almost all on the stem, narrow, attenuate-bristle-shaped, acute, striated, the upper ones rough on both sides and at the edge, the lower ones smooth underneath. Sheaths scarcely the length of the leaves, compressed, smoothish. Stipule very short, crenate. Panicle almost upright, diffused; branches slender, half whorled, angular, rugged, often flexuose, more or less branched. Spikelets sharp, shining a little, smooth. Calycine glumes almost equal, a little shorter than the spikelet, lanceolate, acuminate, three-nerved, rugged on the keel towards the tip. Florets two to four, approximating, lanceolate, acute, scarce apparently five-nerved, membranaceous on the edge and at the tip, more or less silky on the back, somewhat hairy at the base, but free, and not connected by bundles of villose hairs that admit of being drawn out, as in *pratensis* and *trivialis*: inner valves acute, keeled within, subpubescent on the margin.

This is the *Poa angustifolia nemoralis* of Hudson.

β. Has a firmer habit, the stem and leaves less attenuated, the panicle denser, the florets commonly more numerous. It has the appearance of *P. pratensis* or *trivialis*; but it is distinguished by the florets being unconnected, though hairy at the base, more acute, and less nerved; and by the stipule being very short, subcrenate or ciliate: inasmuch that it cannot by any means be associated with them.

This is *P. angustifolia* α. of Hudson; the second variety of *pratensis* in Withering; and seems to be *P. trivialis* of Leers^m.

Native of many parts of Europe, in woods and shady places: with us it is more common in the northern parts of the island. It flowers in June.

51. This is a very smooth grass, two feet high and more, with a thick culm. The panicle scarcely issues from the sheath of the upper leaf. Peduncles long, strict. Calyxes acute, three-flowered, naked, shorter than the flowers, alternate, sessile. Observed by Koenig in the East Indiesⁿ.

52. Found by Thunberg at the Cape of Good Hope.

53. Root perennial, fibrous, whitish, from which arise in clusters a sort of bulbs, involved in several whitish or whitish brown coats, which are the sheaths of the leaves, stretched out almost an inch in length, and produce bundles of leaves, or else the culms. Culm a foot high, slender, smooth, erect, leafy. Leaves short, linear, channelled, blueish: stem-leaves very short, with long striated sheaths. Stipule short, bluntish. Panicle ovate. Spikelets broad ovate, compressed, glaucous, variegated with the colour of dried vine leaves, commonly four-flowered. Calycine glumes ovate, three-nerved, with the keel rugged at the tip, silky at the edge, whitish. Florets lanceolate, silky towards the edge, connected by complicated villose hairs at the base^o.

Native of Sweden, Germany, Switzerland, France, Spain, Barbary and the Levant. Hudson found it near Clapham in Surrey, and on his authority it rests, that it is a native of England. The above description is from the specimen in the Linnean herbarium.

Desfontaines says, that the panicle is loosish and purple; that there are several unequal capillary pedun-

cles from the same point; that the spikelets are three or four-flowered; that the outer valve of the corolla is mucronate; and that the flowers are often bulbiferous.

54. This grass is a middle species between *Poa*, *Cynosurus* and *Triticum*; on account of the form of the spikelets (which are from three to six-flowered) it belongs to this genus, although it is different from the other Poas in its habit^p.

Native of Carinthia, Switzerland and Italy, on the tops of the mountains.

55. The whole of this grass is smooth. Culm filiform. Spikelets lanceolate, compressed; lower eleven-flowered; lowest sometimes three-flowered; upper ones nineteen-flowered. Rachis flat on one side, convex on the other. Outer valve of the corolla ovate, keeled, bluntish, one-nerved on both sides. This species is easily distinguished from the rest by its simple spike a long span in length, with the upper spikelets recurved. Native of the East Indies^q.

56. Culms infracted, smooth, covered with the sheaths of the leaves. Leaves alternate, two inches long, striated, glaucous-green. Sheaths striated, with the mouth bearded, shorter than the leaves. Spike an inch and half long, distich, almost simple. Spikelets compressed, smooth, an inch in length, twenty-five-flowered and more; lower ones with two-flowered pedicels. Valves of the corolla scarcely ciliate at the edge^r.

Vahl had it from the Paris garden; and it is supposed to be a native of Lima.

57. Culms several, ascending from the base, a hand in height, covered on every side with the sheaths of the leaves. Leaves linear, narrow, even, with thicker sheaths. Raceme contracted into a spike, almost the length of the culm, unequal. Outer valve of the calyx short, ovate; inner double the length. Florets distant, with the outer valve oblong, acuminate. Anthers yellow, cloven at both ends. Styles feathered, white. It has the habit of a Festuca.

Native of Portugal; where it was observed by Vandelli^s.

58. Root perennial, fibrous. Culms several, decumbent at the base, about a foot high, (a span, a foot, or a foot and half, *Curtis*: from nine to twelve inches or more, *With.*) round, leafy, striated, smooth. Leaves with long sheaths, sharpish, even, glaucous; flat; the root-leaves a little rolled in. Stipule obtuse, emarginate. Panicle erect, with the branches in half whorls, angular, rugged, somewhat flexuose, spiked or branched, of various lengths, finally very much bent back. Spikelets linear, smooth, from four to seven-flowered (five-flowered more or less, *Curtis*: five or six-flowered, *With.*) variegated with white or purple. Calyx unequal, keeled, small, blunt, membranous at the edge, the outer glume obsoletely three-nerved. Florets remote, almost as in *P. aquatica*, subcylindrical, very blunt, retuse, five-nerved, scarious at the tip; with the inner glumes emarginate^t.

Culms bent at the lower joint. Root-leaves short, stiffish, slender, smooth. Stem-leaves sheathing, rough at the edges near the end. Stipule short, broad. Panicle about three inches long, and two inches wide: branches in distant whorls, four or three in a whorl; greatly spreading, when ripe more so. Calyx smooth, one valve twice as large as the other. Corolla smooth, shining at the edge and the point, not woolly at the base, unequal, blunt^u.

Culms oblique, slightly elbowed below. Stem-leaves from upright spreading, with a smooth sheath. Panicle a hand's breadth or half a foot in length; the lowermost branches about five in number. Valves of the calyx ovate, concave. Valves of the corolla nearly equal, but the outer a little larger, concave, bluntish; the inner usually bifid, and, when magnified, appearing to be edged on each side with hairs. Germ obovate. Styles spreading, branched to the bottom. Nectary, composed of two small glumes, ovate and pointed, at the base of the germ.

^p Willdenow.

^q Vahl.

^r Idem.

^s Linn. mant.

^t Smith.

^u Withering.

¹ Retzius.

^m Smith.

ⁿ Retzius.

^o Smith.

Though at first sight this grass bears a near resemblance to *P. annua*, and no doubt is often mistaken for it; yet it is considerably taller, its leaves narrower in proportion and much more glaucous, its spikelets also are much narrower as well as longer, and of course contain many more florets, which are for the most part prettily variegated with pale green and purple; but the chief character which distinguishes this from *P. annua* and all the other species, is to be drawn from the branches of the panicle; these, as the plant goes out of bloom, are reflected or stretched out backwards, so as sometimes to touch the culm: this is effected by little tubercles at the base of the branches on their upper sides only, which increasing in size as the plant advances in its flowering, forces them backwards^x.

Linneus remarks, that the florets are so distant, that it might easily be taken for a species of *Agrostis*, if the calyx were not examined.

According to Vahl, *P. divaricata* of Gouan is the same species with this; but the specimens sent by Jacquin agree exactly with *P. salina*, which is certainly very different from *P. divaricata*^y.

Native of the Palatinate, Silesia, Austria and England. Found by Hudson in Devonshire, Kent, Yorkshire and Lancashire, on a sandy soil. Mr. Curtis says it is common in pastures and by road sides, on our sea coasts; but that, like *Plantago maritima*, and some other plants, it is not confined to maritime situations, for he found it, in July 1786, among the grassy herbage, on the right hand of the horse-road, leading up the hill to Hampstead, in tolerable plenty.

Mr. Curtis farther informs us, that six years culture made no alteration in the appearance of this grass, that it flowers from June to September, and that there does not appear to be sufficient merit in it to recommend it for agricultural purposes.

59. Culms several, a hand in height, with one or two leaves on them, white or reddish. Leaves two or three inches long, with wide sheaths. Panicle subdichotomous, consisting of six or seven branches in pairs, spreading out at right angles. Lower branches trichotomous, upper twice trifid. Pedicels more swelling at the tip, very short. Calycine glumes hardly to be distinguished by the naked eye, unless when the florets fall off, and then the pedicels appear forked with the permanent calyxes. Florets acuminate, in threes or fours, a third of a line in length, membranaceous and whitish at the tip, little distant from each other^z.

It is an annual grass, native of Montpellier. Desfontaines found this elegant grass flowering early in the spring, in cultivated fields near Mascara, in Barbary.

He describes the culms as filiform, erect, smooth; the leaves awl-shaped and smooth; the panicle very much branched, the branches capillary, solitary in twos or threes, unequal, spreading, divaricate, branched at the tip, subtrichotomous, branchlets unequal. Pedicels gradually thickening upwards. Spikelets oblong, small, loose, greenish white, disposed in loose bundles. Outer calyx very small; glumes unequal, membranaceous. Inner calyxes of the same shape. The florets fall off when the seed is ripe, leaving the outer calyx on.

60. Root caespitose, composed of simple tomentose fibres. Culms solitary, simple, erect, a span high, even, leafy especially at the base. Leaves linear, smooth, somewhat rigid, with long sheaths and a short stipule. Panicle erect, dense, green and silvery, with pubescent branched peduncles, and very short erect pedicels. Flowers ovate-lanceolate. Calyx two-flowered, seldom three-flowered, never four-flowered, (seldom four-flowered, *Leers*) obsoletely pubescent, composed of two unequal, acute, keeled glumes, nerved on both sides, scarious on the edge, green on the back. Outer petals similar to the calyx; inner much more slender and narrow, but a little shorter.—From the habit, this grass should be considered as an *Aira*, rather than a *Poa*; nor does the number of florets much stand in the way, there being for the most part only two: the point of the glumes is sometimes extended into a short awn^a.

Dr. Smith suspects, that Linneus, in his *Systema Vegetabilium*, confounded some other grass with this; and hence removed it to this genus; whereas in his *Species Plantarum* it stood among the *Airas*. I follow Willdenow, Pollich, Leers, Krock, Desfontaines, and most of our own writers in continuing it here. Krock approves of Linneus's alteration, on account of the spikelets being two or three-flowered, flat, acuminate, imbricate, like the *Poas*.

Native of Germany, Switzerland, France, England, Barbary, in dry pastures, by way and wood sides, in barren land, and sometimes on walls; flowering from June to August.

61. This species was raised from seed by Professor Jacquin, and is an annual species, flowering all summer in the open air, but must be put into the stove in the winter. The stems are about a foot and half high; scarcely branched, generally prostrate: the leaves have long sheaths, and measure, exclusive of the sheath, about six inches: the sheath is hairy and roughish: the panicle terminal, contracted, unequally cylindric, and about an inch long, composed of lateral ramules thickly placed and pressed to the general spike. The glumes contain from five to eight flowers, and are rather acute; the one somewhat shorter than the other, which is rather whitish and chaffy. The valves of the corolla are sharp, aculeated on the back, and often purplish above. It is an annual grass; native of Peru^b.

62. Found at the Cape of Good Hope by Thunberg.

63. Culm from two inches to half a foot in height, simple, slender, erect, smooth. Leaves linear, short, even. Panicle or compound spike contracted, with short branchlets pressed close. Florets ovate, of a cinereous rust colour, minute, shining, villose. Calycine glume from two to four-valved, from six to eight-flowered: valves equal, ovate, acute, keeled, awnless, beardless. Upper valve of the corolla ovate, obtuse, not keeled, ciliate at the edge: lower valve keeled, entire at the edge, the keel appearing serrate when magnified, inclosing the upper one at the base. Anthers purple. Stigmas villose, pale. Seed oblong.

This is a middle species between *Briza* and *Poa*^c.

Linneus remarks, that the panicle is red, and the cilia of the glumes white^d.

Browne says, this little plant seldom rises above six or seven inches, and is sustained by a very slender weakly stalk; it is easily distinguished by its delicate branches, fine leaves and downy head.

Native of Jamaica, (and other islands of the West Indies, in dry sandy grounds). Introduced in 1776, by Mons. Thouin. It flowers in July and August, and is annual^e.

64. Culms several, crowded, from six inches to a foot in height, filiform, leafy. Leaves from one to two inches long, linear, even, the opening of the sheaths terminating in long white hairs. Peduncles branched, flexuose. Flowers numerous minute. Calyx almost equal, acute, keeled; outer valve appearing with a magnifying glass very minutely ciliate at the back, five or six-flowered. Outer glume of the corolla like the outer calycine valve, but a little larger: inner narrow, recurved, ciliate at the back, but with the cilia smaller than in *P. ciliaris*.

The flowers and seeds, in a magnifier, appear pellucid. This grass differs from *P. ciliaris* in the form of the panicle; and the flowers as well as the cilia are smaller.

Native of the East Indies. Koenig sent it from Tranquebar^f.

65. Culms several, a span high, ascending, knee-jointed, with about three knots, leafy, somewhat angular at top, striated, glaucescent. Leaves from erect spreading, flat, narrow, acute, rugged above, with all the sheaths elongated, loose, a little compressed, striated, smooth; all the stipules lanceolate, acute, those of the stem-leaves commonly jagged. Panicle ovate,

^x Curtis.

^y Willdenow.

^z Gouan.

^a Smith.

^b Jacquin.

^c Swartz.

^d Syst. veg.

^e Hort. kew.

^f Retzius.

abbreviated, somewhat condensed; branches in pairs, alternately branched, more or less flexuose at the base, angular above and rugged. Spikelets broad-ovate, compressed, glaucous, variegated with whitish and purple. Calycine glumes a little unequal, lanceolate-ovate, acute, scarcely sickle-shaped, rugged along the keel. Florets lanceolate, sharpish, naked at the edge, rugged along the keel, connected at the base by very fine complicated hairs: inner valves scarcely ciliate.

This is distinct from *P. alpina* in its glaucous colour, more leafy culm, narrower sharper leaves, rugged above, with longer sheaths, all the stipules of the same shape, the peduncles flexuose, the glumes narrower and connected, and the keel and edge not bristly and silky.

Native of the Highlands of Scotland. Mr. Mackay found it on Ben Nevis. It is a perennial grass, and flowers in July.

66. Root subcespitose, perennial. Herb glaucous. Culm a foot high, erect, round, striated, smoothish, towards the base leafy and having two knots; above simple, straight, naked. Leaves lanceolate, bluntish, flat, levigated on the back next the base, but in other parts rugged. Sheaths the length of the leaves, striated, somewhat rugged. Stipules very variable, sometimes extremely short, inclosed in the sheath, sometimes elongated, lanceolate, jagged, especially on the stem-leaves. Panicle erect, very much branched, little elongated; branches half-whorled, angular, rugged; branchlets in pairs. Spikelets erect, variegated with blueish, whitish and purple. Calycine glumes almost equal, lanceolate, acute, keeled, obsoletely three-nerved, rugged towards the tip. Florets somewhat remote, lanceolate, obtuse, scariose at the tip, torn, woolly at the back, scariose at the edge, silky, free at the base; inner valves rugged at the edge; rachis flexuose, villose.

It seems to be very different from *P. glauca* of Vahl in the *Flora Danica*; that approaches nearer to *P. nemoralis* ^g.

It is probably *P. glauca* of Withering, though he refers to Vahl. He describes it as ten inches high, the stem smoothish, the leaves rough at the edges, the panicle two inches long, hardly one broad, few-flowered, but little branched, three or four florets in each spikelet.

Mr. Fairbairn had it from Scotland. Mr. Mackay found it in the mountains of Bredalbane. It flowers in June and July ^h.

67. Height of *P. angustifolia*; the leaves much longer, but involuted, striated and ash-coloured within; panicle of a pleasant purple colour; corolla lanceolate, ciliate at the base; spikelets compressed. Perennial. Perhaps a variety of *P. angustifolia*.

68. Height about a foot. Leaves narrow, often dry at the time of fructification; panicles whitish and purple mixed, composed of spikes which grow in pairs, on waved or flexuose peduncles, one shorter than the other and nearer to the axis. Spikelets oblong, almost cylindrical. Glumes obtuse, concave. Corollas purple at the base. The spikelets, in shape, resemble those of *Festuca fluitans*. It is perennial.

69. Height two feet. The leaves are not involuted and are wider. The panicles are more branched and open; the spikelets oblong, smooth but a little rugged. It is perennial, and is found in Dauphiné, with the two preceding, in stony places, with *Rhododendron* and other alpine plants ⁱ.

70. Culms straight, hard, with black knots. Leaves straight, not more than a line wide. Panicle thin, not much diffused, violet-colour mixed with green, and of a golden colour on the upper glume. Calycine glumes unequal, mucronate. All parts of this grass are hard. The spikelets are four times smaller than those of *alpina*. Native of Switzerland and Piedmont.

71. Culm three feet high, erect. Leaves smooth, not more than three lines wide, rough from drawn through the fingers. Panicle a foot long, not much scattered, very thin; on loosely branched peduncles,

naked for a long space. Calycine valves unequal, mucronate. Florets sessile and petioled. Glumes equal, long, slender, marked with lines, and having a white point. Styles large, feathered. All parts are green and smooth. The spikelets are much larger than in the other Poas, and this grass has the appearance of an *Avena*, but there are no awns. Found by Monf. de Saussure in Savoy, between Salenche and Chamouny ^k.

PROPAGATION AND CULTURE.

See GRASS, MEADOW and PASTURE. Also n. 6. and n. 9. of this genus.

POA. See *Agrostis*, *Aira*, *Briza*, *Bromus*, *Dactylis*, *Festuca*, *Holcus*, *Melica*, *Triticum*.

Poa decumbens. See *Festuca decumbens*.

— *dulcis*. See *Aira aquatica*.

— *dura*. See *Cynosurus durus*.

— *fluitans*. See *Festuca fluitans*.

— *multiflora* is *Briza Eragrostis*.

— *scula*. See *Triticum unioides*.

POCELLARIA. See *Agaricus*.

POCKWOOD. See *Guaiacum*.

PODAGRARIA. See *Ægopodium*.]

PODOPHYLLUM. (From *πους*, *podos*, a foot, and *φυλλον*, a leaf. The leaf resembling the webbed foot of water-fowl.)

Lin. gen. n. 646. Reich. n. 702. Schreb. n. 879.

Juss. 235. Anapodophyllum. Tournef. t. 122.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Rhæadææ*. *Ranunculaceæ* Juss.

GENERIC CHARACTER.

CAL. Perianth three-leaved, large, coloured, concave-erect: leaflets ovate, concave, deciduous.

COR. Petals nine orbicular, concave, plaited at the edge.

STAM. Filaments very many, very short. Anthers oblong, large, erect.

PIST. Germ roundish. Style none. Stigma blunt, plaited.

PER. Berry ovate, crowned with the stigma, one celled.

SEEDS very many, roundish. Receptacle free.

ESSENTIAL CHARACTER.

Cal. three-leaved. Cor. nine-petalled. Berry one-celled, crowned with the stigma.

SPECIES.

1. *Podophyllum peltatum*. Duck's-foot or May-apple.

Lin. spec. 723. Juss. 489. Reich. 2. 568. hort. cliff.

202. upf. 137. Gron. virg. 57. Trev. Ebret.

t. 29.

Anapodophyllum canadense. Catesb. car. 1. t. 24.

Aconitifolia humilis, flore albo unico campanulato, fructu cynosbati. Mentz. pug. t. 11.

Leaves peltate lobate.

[2. *Podophyllum diphyllum*.

Lin. spec. 723. Juss. 489. Reich. 2. 569.

Leaves binate fœmiformate.]

DESCRIPTIONS, &c.

1. This plant grows naturally in many parts of North America. The root is composed of many thick tubers which are fastened together by fleshy fibres, which spread, and propagate greatly under ground, sending out many smaller fibres which strike downward. In the spring arise several foot-stalks about six inches high, which divide into two smaller, each sustaining one leaf, composed of five, six, or seven lobes, the five middle being deeply indented at the top; these join together at their base, where the foot-stalk meets, which is fastened to the under side of the leaf like the handle of a target; the leaves are smooth, and of a light green. At the division of the foot-stalk comes out the flower, with a large calyx covering it like a sheath; the flower has nine pretty large white petals, which are roundish at the top, and plaited on their borders. The flowers appear in May, and when they fall off, the germ swells to a fruit of the size and shape of the common Hip or fruit of the wild Rose. This is at first green, but when ripe changes to a yellow colour.

[It appears from Evelyn's Kalendar that it was cultivated here in 1664 ^l.

^g Smith.

^h Idem.

ⁱ Villars.

^k Haller.

^l Hort. kew.

2. This was sent to Linneus from Peter Collinson, as a species of *Podophyllum*. He had it from Virginia. Linneus doubts whether it may not be rather a species of *Sanguinaria*, since it has a single binate leaf, a leafless radical scape, and an oblong capsule.]

PROPAGATION AND CULTURE.

1. This plant propagates so fast by its creeping roots, that few persons are at the trouble of sowing the seeds. Every part of the roots will grow, so they may be annually parted, either in autumn when their leaves decay, or in the spring just before the roots begin to shoot; they require no other culture but to keep them clean from weeds. It loves a light loamy soil and a shady situation, and is so hardy as seldom to be injured by the frost.

[POENOE. See *Vateria*.

POERINSII. See *Sapindus*.

POET'S CASIA. See *Osyris*.

POHLIA.

Lin. gen. Schreb. n. 1649. Hedw. musc. 1. 96.

Class. 24. 3. Cryptogamia Musci.

GENERIC CHARACTER.

CAPS. ovate-oblong, placed on an obconical, narrower apophysis. *Peristome* double; outer with sixteen broadish teeth; inner with a sixteen-parted membrane.

MALES gemmaceous, on a distinct plant.

OBS. This genus is included in *Bryum* of Linneus.

Pohlia elongata of Hedwig is *Bryum elongatum* of Withering, p. 832.]

POINCIANA. (So named by Tournefort, from De Poinci, governor of the Antilles. Ab illustrissimo viro D. de Poinci, insularum Antillarum præfecto. Tournef.—He is placed by Linneus among the Promotores.)

Swartz has united it with *Casalpinia*, which see.

[POISON-ASH. See *Rhus*.

POISON-NUT. See *Strychnos*.

POISON-OAK. See *Rhus*.]

POKE, Virginian. See *Phytolacca*.

POLEMONIUM. (Πολεμώνιον of Dioscorides: from πολεμος, war.)

Lin. gen. n. 217. Reich. n. 233. Schreb. n. 289.

Tournef. t. 61. Juss. 136. Gært. t. 62.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Campanaceæ*. *Polemonia*. Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, half-five-cleft, inferior, goblet-shaped, acute, permanent.

COR. one-petalled, wheel-shaped. *Tube* shorter than the calyx, closed by five valves placed at the top. *Border* five-parted, wide, flat: *segments* roundish, blunt.

STAM. *Filaments* five inserted into the valves of the tube, filiform, shorter than the corolla, inclining. *Anthems* roundish, incumbent.

PIST. *Germ* ovate, acute, superior. *Style* filiform, the length of the corolla. *Stigma* trifid, revolute.

PER. *Capsule* three-cornered, ovate, three-celled, three-valved, opening three ways at top, covered. *Partitions* contrary to the valves.

SEEDS very many, irregular, sharpish.

ESSENTIAL CHARACTER.

Cor. five-parted, the bottom closed by valves bearing the stamens. *Stigma* trifid. *Caps.* three-celled, superior.

SPECIES.

1. *Polemonium cœruleum*. Common *Polemonium*.

Lin. spec. 230. syst. 205. Reich. 1. 453. Willd.

886. fl. lapp. n. 86. succ. n. 175. hort. cliff. 163.

Gært. fruct. 1. 299. Hudf. angl. 89. Wither.

arr. ed. 3. 241. Smith angl. 234. Engl. bot. t. 14.

Fl. den. t. 255. Hall. belv. n. 665. Hoffm. germ.

70. Roth. germ. 1. 94. 2. 242. Krock. files. n.

309. Sabb. hort. 2. t. 82. Kniph. cent. 5. n. 68.

2. *P. vulgare cœruleum*. *Tournef. inst. 146. Raii*

syn. 288. Blue-flowered Polemonium, Greek Vale-

rian, Jacob's-ladder, or Ladder to Heaven.

Valeriana cœrulea. Baub. pin. 164.

V. græca. Dod. pempt. 352. 1. Ger. 918.

5. emac. 1076. 5. Park. theat. 123. 12.

Raii hist. 1102. — quorundam flore cœruleo.

Baub. hist. 3. 212. 2. Best. syst. æstiv. 9. t. 11. f. 2.

3. *Flore albo. White-flowered Polemonium or Greek Valerian. Baub. hist. 3. 212. Best. syst. f. 3. Kniph. cent. 5. n. 69. &c.*

γ. *P. calycibus lanatis. Lin. upf. 40. Gmel. fib. 4. 103. t. 50.*

Leaves pinnate, flowers erect, calyxes longer than the tube of the corolla.

2. *Polemonium reptans. Creeping Polemonium or Greek Valerian.*

Lin. spec. 230. syst. 205. Reich. 1. 453. Willd.

886. Gron. virg. 22. Mill. fig. 140. t. 209.

Leaves pinnate with seven leaflets, flowers terminating nodding.

[3. *Polemonium dubium. Doubtful Polemonium.*

Lin. spec. 231. syst. 205. Reich. 1. 453. Willd.

887. Gron. virg. 142.

Lower leaves hastate, upper lanceolate.

4. *Polemonium Roelloides. Roella-like Polemonium.*

Lin. syst. 205. Willd. 887. suppl. 139. Thunb.

prodr. 35.

Erect, stem filiform, leaves lanceolate ciliate, panicle few-flowered peduncled naked.

5. *Polemonium Campanuloides. Campanula-like Polemonium.*

Lin. syst. 206. Willd. 887. suppl. 139. Thunb.

prodr. 35.

Erect smooth, leaves linear-lanceolate entire erect, flowers terminating solitary.

DESCRIPTIONS, &c.

1. Root perennial, fibrous. Herb smooth. Stems upright, rising to the height of eighteen or twenty inches, seldom more, leafy, paniced. Leaves alternate, unequally pinnate, many-paired; leaflets elliptic-lanceolate, quite entire. Corolla between bell-shaped and wheel-shaped, blue. Calyx bell-shaped, half-five-cleft^m: Gærtner says, five-toothed. Filaments dilated at the base and membranaceous. Capsule clothed with the calyx, ovate-globular, obsoletely three-grooved, thin, subpellucid. Seeds six in each cell, in a double row, fastened to the inner angle of the cell, variously angular, eroded on the surface, of a dark rust colour. Umbilicus on the middle of the bellyⁿ.]

Mr. Miller remarks, that the lower leaves have eleven or twelve pairs of leaflets, besides the odd one, that they are broadest at the base, end in points, and are sessile; that the stem-leaves are of the same form, but decrease upwards in size; that the stalks are hollow, channelled, and terminated by bunches of flowers which sit very close, and are of a beautiful blue colour.

Besides the variety with white flowers, which is very common, and frequently rises from the seeds of the blue; (Linneus says from the same root) he mentions another with variegated flowers; and a third with variegated leaves.

The flowers appear at the end of may, and the seeds ripen in august.

[Native of Asia, and of the north of Europe, in Germany, Switzerland, Sweden, Lapland, Denmark. Though very common with us in gardens, it is one of the plants most rarely found wild in this country. In the last century it was found in Yorkshire, about Malham Cove, by Dr. Lister, Mr. Ray and Dr. Richardson; it has occurred there since to Mr. Wood and others; Mr. Gough gathered it in Gordale. In 1764, I found it near Matlock in Derbyshire; it has since been found in the same county, near Bakewell by Mr. Whaley, and at the Lover's-leap, Buxton, by Mr. Wood.

Caspar Bauhin remarks, that this plant has nothing in common with the Valerians except something in the shape of the leaves.—It has not indeed the least affinity in appearance, character, sensible qualities or medical virtues^o.]

2. The North American *Polemonium*, has creeping roots, by which it multiplies very fast. The leaves have seldom more than three or four pairs of leaflets, which stand at a much greater distance from each other

^m Smith.

ⁿ Gærtner.

^o Engl. bot.

than those of the common sort, and are of a darker green. The stalks rise nine or ten inches high, sending out branches their whole length. The flowers are produced in loose bunches, on pretty long peduncles; they are smaller than those of the common sort, and of a lighter blue colour. [Linneus remarks that the flowers nod a little, having weaker pedicels; and are not stiff and upright, like those of the preceding.]

3. Style semibifid. The appearance is different from that of the Polemoniums, and the genus is doubtful. This, as well as the preceding, is a native of Virginia^p.

4. Found at the Cape of Good Hope by Thunberg.

5. This also is a native of the Cape. It very much resembles *Campanula persicifolia*, but the stigma is simple, which is the only difference of *Polemonium*, as two stigmas are of *Roella*^q.]

PROPAGATION AND CULTURE.

1. Sow the seeds in the spring, upon a bed of light earth: when they come up pretty strong, prick them out into another bed of the same earth, four or five inches asunder, shading and watering them until they have taken root; keep them clear from weeds until Michaelmas, and then transplant them into the borders of the pleasure garden.

It is not of long duration; but by taking up the plants in autumn and parting them, they may be continued some years: but as seedling plants flower stronger than offsets, few persons propagate them by slips.

The varieties may be continued by parting the roots at Michaelmas. They should have a fresh light soil; if it be too rich, the roots will be apt to rot in winter, and the stripes on the leaves to go off.

2. The American sort may be increased by seeds or offsets like the other, and is equally hardy, but much less beautiful.

[*POLEMONIUM NYCTELEA*. See *Ellisia*.

— *RUBRUM*. See *Ipomœa*.

POLEY-MOUNTAIN. See *Teucrium*.]

POLIANTHES. (From *πολις* a city, and *ανθος* a flower. *Flos urbanus*.)

Lin. gen. n. 426. *Reich. n.* 460. *Schreb. n.* 576. *Juss.* 56.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Coronariæ*. *Narcissi* Juss.

GENERIC CHARACTER.

CAL. none.

COR. one-petalled, funnel-form. Tube curved inwards, oblong. Border patulous, with six ovate segments.

STAM. Filaments six, thick, blunt, at the jaws of the corolla. Anthers linear, longer than the filaments.

PIST. Germ roundish, at the bottom of the corolla. Style filiform, mostly shorter than the corolla. Stigma trifid, thickish, melliferous.

PER. Capsule roundish, obtusely three-cornered, at the base involved in the corolla, three-celled, three-valved.

SEEDS very many, flat, incumbent in a double row, semiorbiculate.

ESSENTIAL CHARACTER.

Cor. funnel-form, curved in, equal. Filam. inserted into the jaws of the corolla. Germ at the bottom of the corolla.

SPECIES.

1. *Polianthes tuberosa*. *Tuberoſe*.

Lin. spec. 453. *ſyst.* 335. *Reich. 2.* 76. *hort. cliff.* 127. *upf.* 76. *fl. zeyl n.* 225. *Kniph. cent.* 11. *n.* 76. *Knorr. del.* 1. *t.* T. 12.

Hyacinthus indicus tuberosus, flore *narcissi*. *Bauh. pin.* 47. *Rudb. elyf.* 2. 39. *f.* 4.

H. ind. major, tub. rad. *Park. parad.* 111. *Raii hiſt.* 1164.

β. *Hyacinthus indicus tuberosus*. *Ger. emac.* 115. 16. —flore *hyacinthi orientalis*. *Bauh. pin.* 47.

Rudb. elyf. 2. 39. *f.* 2.

H. ind. tuberosa radice. *Clus. hiſt.* 1. 176. *Mor. hiſt.* 2. 376. *f.* 4. *t.* 12. *f.* 22.—minor. *Park. parad.* 111. *Raii hiſt.* 1164.

Amica nocturna. *Rumph. amb.* 5. 285. *t.* 98.

Flowers alternate.

^p Linn.

^q Linn. suppl.

DESCRIPTION, &c.

The varieties of this are the *Tuberoſe* with a double flower, the striped-leaved *Tuberoſe*, and the *Tuberoſe* with a smaller flower; the last is mentioned by several authors as a distinct species, but is certainly a variety. This is frequent in the south of France, whence the roots have been often brought to England early in the spring, before those roots have arrived from Italy; which are annually imported; the stalks of this are weaker, and do not rise so high, and the flowers are smaller than those of the common *Tuberoſe*, but in other respects it is the same.

The *Tuberoſe* grows naturally in India, whence it was first brought to Europe, where it now thrives in the warmer parts, as well as in its native soil. The *Genoeſe* are the people who cultivate this plant, to furnish all the other countries where the roots cannot be propagated without great trouble and care, and thence the roots are annually sent to England, Holland, and Germany. In most parts of Italy, Sicily, and Spain, the roots thrive and propagate without care, where they are once planted.

This plant has been long cultivated in the English gardens for the exceeding beauty and fragrancy of its flowers; as the roots are too tender to thrive in the full ground in England, there are few persons who care to take the trouble of nursing up their offsets, till they become blowing roots, because it will be two or three years before they arrive to a proper size for producing flowers; and as they must be protected from the frost in winter, the trouble and expense of covers is greater than the roots are worth; for they are generally sold pretty reasonable, by those who import them from Italy.

The double flowering is a variety of the first, which was obtained from the seed by Monſ. Le Cour, of Leyden in Holland, who for many years was so tenacious of the roots, even after he had propagated them in such plenty as to have more than he could plant, that he caused them to be cut in pieces, to have the vanity of boasting that he was the only person in Europe who possessed this flower; but of late years the roots have been spread into many parts.

[It appears from Evelyn's Kalendar, that the *Tuberoſe* was cultivated here in 1664*. It is said to have been first brought from the East Indies by Father Theophilus Minuti, who went three times into that country: and to have been first cultivated at Boisgencier (in horto Belgenſeriano) near Toulon. Cluſius first saw it in december 1594: he had it from Bernard Paludanus, a learned physician; and two years after he received farther information of it from Simon de Tovar, who gave it to Paludanus.]

PROPAGATION AND CULTURE.

As there is no other method to propagate the double-flowering *Tuberoſe* but by the offsets, most people are careful to increase it; which is done by planting the offsets upon a moderate hot-bed early in march, and covering the bed in cold weather with mats or straw, and in summer they must have plenty of water in dry weather. In this bed the roots may remain till the leaves decay in autumn, but if there should happen any frost before that time, the bed should be covered because if the frost enters so low as to reach the roots it will kill them; and if the leaves are injured by the frost, it will weaken the roots. Where there is due care taken to screen them from frost, and too much wet, it will be the best way to let the roots remain in the bed till the end of november or the beginning of december, provided hard frosts do not set in sooner; for the less time the roots are out of the ground, the stronger they will be, and the sooner they will flower; when the roots are taken up, they should be cleaned from the earth, and laid up in dry sand, where they may be secure from frost and wet; here they should remain until the season for planting them again; this same method should be practised by those who are desirous to cultivate the single sort in England, and also that with striped leaves must be propagated the same way.

* Hort. kew.

I shall next give directions for the management of these roots, which are annually brought from Italy. And first, in the choice of the roots, those which are the largest and plumpest, if they are perfectly firm and sound, are the best; and the fewer offsets they have, the stronger they will flower; but the under parts of the roots should be particularly examined, because it is there that they first decay; after the roots are chosen, before they are planted, the offsets should be taken off; for if these are left upon the roots, they will draw away part of the nourishment from the old root, whereby the flower-stems will be greatly weakened.

As these roots commonly arrive in England in the month of february or march, those who are desirous to have these early in flower, should make a moderate hot-bed soon after the roots arrive, which should have good rich earth laid upon the dung, about seven or eight inches deep; this bed should be covered with a frame, and when the bed is in a proper temperature for warmth, the roots should be planted at about six inches distance from each other every way. The upper part of the root should not be buried more than one inch in the ground; when the roots are planted, there should be but little water given them until they shoot above ground; for too much wet will rot them, when they are in an inactive state, but afterward they will require plenty of water, especially when the season is warm. When the flower-stems begin to appear, the bed should have a large share of air given to it, otherwise the stalks will draw up weak, and produce but few flowers; for the more air these plants enjoy in good weather, the stronger they will grow, and produce a greater number of flowers; therefore, toward the beginning of may, the frame may be quite taken off the bed, and hoops fastened over it, to support a covering of mats, which need not be laid over but in the night, or in very cold weather, so that by enjoying the free open air their stems will be large; and if they are well watered in dry weather, their flowers will be large, and a great number on each stem.

This first planting will require more care than those which are designed to come after them, for in order to have a succession of these flowers, the roots should be planted at three different times, viz. the first the beginning of March, the second the beginning of april, and the third at the end of that month, or the beginning of may; but these beds will require a much less quantity of dung than the first, especially that bed which is the last made; for if there is but warmth enough to put the roots in motion, it is as much as will be required; and this last bed will need no covering, for many times those roots which are planted in the full ground at this season, will produce strong flowers in autumn; but in order to secure their flowering, it is always the best way to plant them on a gentle hot-bed. As to the second bed, that should be arched over with hoops, and covered with mats every night, and in bad weather, otherwise the late frosts which frequently happen in may will pinch them.

These plants may remain in the beds until the flowers are near expanding, at which time they may be carefully taken up, preserving the earth to their roots, and planted in pots, and then placed in the shade for about a week to recover their removal; after which time the pots may be removed into halls or other apartments, where they will continue in beauty a long time, and their fragrant odour will perfume the air of the rooms where they are placed; and by having a succession of them, they may be continued from midsummer to the end of october, or middle of november; but as the stems of these plants advance, there should be some sticks put down by each root, to which the stems should be fastened, to prevent their being broken by the wind.

It is a common practice with many people, to plant these roots in pots, and plunge the pots into a hot bed; but there is much more trouble in raising them in this method, than in that before directed; for if the roots are not planted in very small pots, there will be a necessity of making the beds much larger, in order to

contain a quantity of the roots; and if they are first planted in small pots, they should be shaken out of these into pots of a larger size, when they begin to shoot out their flower-stems, otherwise the stalks will be weak, and produce but few flowers; therefore I prefer the other method, as there is no danger in removing the roots if it is done with care.

When the roots are strong and properly managed, the stems will rise three or four feet high, and each stem will produce ten or twelve flowers or more; and in this the great beauty of these flowers consists, for when there are but a few flowers upon the stalks they will soon fade away, so their places must be frequently renewed; for the flowers are produced in spikes coming out alternately upon the stalk, the lower flowers opening first; and as these decay, those above them open, so that in proportion to the number of flowers upon each stalk, they continue in beauty a longer or shorter time.

The sort with double flowers will require a little more care, in order to have the flowers fair, but this care is chiefly at the time of blowing, for the flowers of this sort will not open, if they are exposed to the open air; therefore when the flowers are fully formed and near opening, the pots should be placed in an airy glass-case, or a shelter of glasses should be prepared for them, that the dews and rains may not fall upon them, for that will cause the flowers to rot away before they open, and the heat of the sun drawn through the glasses will cause their flowers to expand very fair. With this management, I have had this sort with very double flowers extremely fair, and upward of twenty upon one stem, so that they have made a beautiful appearance; but where this has not been practised, I have rarely seen one of them in any beauty.

[POLIIFOLIA. See *Andromeda*.

POLIUM. See *Teucrium*.

POLIIA.

Lin. gen. Schreb. n. 572. Thunb. nov. gen. 11. flor. japon. 8. Juss. 45.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Junci*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. six-petalled. *Petals*, the three outer ovate, concave, wider at the tip, blunt; the three inner alternate with the outer, bending in, nerved, very slender.

STAM. *Filaments* six, capillary, curved in at the tip, inserted into the receptacle. *Anthers* round, twin.

PIST. *Germ* globular, superior. *Style* filiform-subulate, incurved. *Stigma* simple, blunt.

PER. *Berry* globular, surrounded by the permanent reflex corolla.

SEEDS very many (as far as twenty) angular.

ESSENTIAL CHARACTER.

Cor. inferior, six-petalled. *Berry* many-seeded.

SPECIES.

1. *Pollia japonica*.

Lin. syst. 332. Thunb. jap. 138. Hornst. diff. 1. 11, 12, 13.

DESCRIPTION, &c.

Stem angular, erect, jointed, little branched, rough with villose hairs, two feet high. Branches alternate, short, flowering successively, resembling the stem. Leaves on the lower part of the stem approximating, on the upper very remote, alternate, embracing, ensiform, nerved longitudinally, entire, smooth but feeling rough when stroaked backwards, whitish underneath, patulous, a foot long, (the upper ones shorter) more than an inch wide. Flowers verticillate-corymbed. Peduncles verticillate, four to six in a whorl, villose, green, spreading, two or three-flowered, an inch in length. Pedicels short, snow-white. Bracte under each peduncle lanceolate, convex, white.

Native of Japan, near Nagasaki, and of the island of Java; flowering in september¹.

Jussieu doubts whether this plant may not be more nearly allied to the *Asparagi* than the *Junci*; and whether the fruit be really a berry.

¹ Thunb. jap.

POLLICHIA. (So named by Dr. Solander, in honour of John Adam Pollich, M. D. author of an History of the Native Plants of the Palatinate of the Rhine.)

Lin. gen. Schreb. n. 1705. p. 782. Ait. kew. 3. 505. Smith spicil. 1. t. 1.

Class. 1. 1. Monandria Monogynia.

Nat. order of *Amaranthi*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, pitcher-shaped, slightly five-cornered, five-toothed, permanent; its orifice contracted by an elevated, pellucid, reticulated ring; teeth rather obtuse, concave, spreading, somewhat membranaceous in the margin.

COR. *Petals* five, alternate with the divisions of the calyx, fixed in the ring, small, triangular.

STAM. *Filament* one, incurved, proceeding from the orifice of the calyx, through a cleft in the ring, opposite to and about the length of its upper segment, which is a little larger than, and somewhat remote from the rest. *Anther* roundish, two-lobed, incumbent.

PIST. *Germ* superior, in the bottom of the calyx, ovate, smooth. *Style* filiform, as long as the calyx, forked. *Stigmas* obtuse, fringed.

PER. none, except a thin membrane.

SEED solitary, filling the cavity of the thickened calyx.

RECEPT. A scale under each flower, roundish, succulent, often compound; after flowering gradually enlarging, and at length becoming very fleshy, pellucid, white and shining, obtuse, incurved, supporting the fruit on the inside about half way up.

OBS. This well-marked and singular genus is allied to *Herniaria*, but is sufficiently distinct from it in many particulars.

ESSENTIAL CHARACTER.

Cal. one-leafed, five-toothed. *Cor.* five-petalled. *Seed* solitary. *Recept.* producing succulent aggregate scales, sustaining the fruit.

SPECIES.

1. *Pollichia campestris.* Whorl-leaved *Pollichia*.

Lin. spec. ed. Willd. 23. Ait. kew. 1. 5. Smith spicil. 1. t. 1.

Neckeria campestris. Gmel. syst. 16.

DESCRIPTION, &c.

Root fibrous, biennial. Stems several, inclined, round, invested with a thin white down, branched, leafy. Branches mostly alternate, erect, leafy, many-flowered. Leaves in whorls six together, of which the two outermost are generally the largest, except in the lower part of the stem; all spreading in various directions, sessile, linear-lanceolate, acute, contracted at the base, entire, smooth, a little glaucous, somewhat succulent. Stipules numerous, small, lanceolate, membranous, permanent. Flowers in sessile, opposite, axillary clusters, at almost every whorl of the branches, numerous, sessile, small, green. Bractes mixed with the flowers, lanceolate, membranaceous, ciliate. Calyx smooth and full of honey. Petals white. Anther tawny. Scales full of sweet juice.

Native of the Cape of Good Hope, where it was found by Mr. William Paterson, who transmitted the seeds to the Countess of Strathmore, by which means it was introduced into the Kew garden, and flowered there, for the first time in Europe, in the year 1780*. It flowers here in september.

POLLUERIA. See *Pyrus*.

POLYACANTHA. See *Carduus*.

POLYANTHEMUM. See *Leucium*.

POLYANTHES. See *Agapanthus* and *Crinum*.]

POLYANTHUS. See *Primula*.

[**POLYANTHUS-NARCISSUS.** See *Narcissus*.

POLYCARDIA. (*Pluries cordata*.)

Willd. 1121. Juss. gen. 377. Lamarck, 132.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Dumosa*.—*Rhamni*, Juss.

GENERIC CHARACTER.

CAL. very small, five-lobed.

COR. *Petals* five, rounded.

STAM. *Filaments* five, very short. *Anthers* roundish.

* Smith.

PIST. *Germ* broad. *Style* one. *Stigma* lobed.

PER. *Capsule* coriaceous, five-celled, five-valved (sometimes three or four-celled, three or four-valved) valves septiferous in the middle, partitions feminiferous on each side at the base.

SEEDS few, oblong, half arilled at the hilum: *aril* calyx-form, lacinated.

ESSENTIAL CHARACTER.

Pet. five, rounded. *Stigma* lobed. *Caps.* five-celled, five-valved. *Seeds* arilled.

SPECIES.

1. *Polycardia madagascarensis*.

Lin. spec. ed. Willd. 1121. Lamarck, encycl. t. 132.

DESCRIPTION, &c.

This is a singular shrub, approaching in habit to *Xylophylla* and *Phyllanthus*. Leaves alternate, petioled; the barren ones lanceolate, acute or obtuse, veined, quite entire; the fertile or floriferous ones quite entire, obcordate, wedge-form at the base. Flowers three or four on the top of the fertile leaf, at the end of the midrib*.

Native of Madagascar, where it was found by Commerfon.

POLYCARPON. (From πολυς and καρπος, much fruit or seed.)

Lin. gen. n. 105. Reich. n. 112. Schreb. n. 138.

Gertn. t. 129. Juss. 299. Loeffling.

Class. 3. 3. Triandria trigynia.

Nat. order of *Caryophyllei*.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: leaflets ovate, concave, keeled, mucronate, permanent.

COR. *Petals* five, very short, ovate, emarginate, alternate, permanent.

STAM. *Filaments* three, filiform, shorter by half than the calyx. *Anthers* roundish.

PIST. *Germ* ovate. *Styles* three, very short. *Stigmas* blunt.

PER. *Capsule* ovate, one-celled, three-valved.

SEEDS very many, ovate.

ESSENTIAL CHARACTER.

Cal. five-leaved. *Pet.* five, ovate, very small. *Caps.* one-celled, three-valved. *Seeds* very many.

SPECIES.

1. *Polycarpon tetraphyllum.* Four-leaved *All-seed*.

Lin. spec. 131. syst. ed. 13. 116. ed. 14. 129.

Reich. 1. 247. Willd. 490. suppl. 116. Gertn.

fruct. 2. 224. Lamarck illustr. n. 1194. t. 51.

Huds. angl. 60. Wither. arr. ed. 3. 176. Smith

angl. 162. Dicks. succ. 17. 6. Hoffm. germ. 44.

Krock. files. n. 198. t. 32. Scop. carn. n. 131.

Allion. pedem. n. 1698. Villars dauph. 3. 652.

Desfont. atlant. 115.

Mollugo tetraphylla. Lin. spec. ed. 1. 89. hort. cliff. 28.

Holosteum tetraphyllum. Thunb. prodr. 24.

Triclis tristemon, foliis conjugatis. Hall. goett. 25.

Herniaria Alfine folio. Tournef. inst. 507.

Anthyllis marina alfinefolia. Bauh. pin. 282.

A. alfinefolia polygonoides major. Barr. rar. 103 t. 534.

A. maritima incana. Park.

A. marina incana alfinefolia. Lob. ic. 468. adv. 196.

1. Ger. emac. 622.

Paronychia altera Matthioli. 734. Dalech. hist. 1213. f. 2.

P. alfinefolia incana. Bauh. hist. 3. 366. 2. Raii hist. 1026. 8.

DESCRIPTION, &c.

Stem very much branched, diffused, divaricating. Leaves opposite or in fours, obovate, quite entire, somewhat fleshy, smooth. Stipules and bractes acuminate, scarious, white. Panicles terminating, dichotomous. Flowers numerous, small. Calyx edged with white. Petals very small, fugacious, white; sometimes emarginate. Valves of the capsules lanceolate, bent in at the edge†.

According to Desfontaines, the whole plant is smooth; the stems sometimes erect, sometimes procumbent at the base, round, knobbed, jointed, almost

* Willdenow.

† Idem.

filiform.

filiform. Leaves on very short petioles, commonly in whorls of four together, unequal. Stipules small; the middle ones membranaceous, white, entire or torn. Flowers panicle-corymbed. Calyx five-parted; the parts keeled, acute. Both he and Hudson remark that the petals are sometimes abortive.

The capsule is small; the valves membranaceous, rolling up inwards after the capsule opens. Seeds many, as far as fifteen, very small, ovate with a beak, shagreened, or before they are fully ripe angular and smoothish, they are of a pale colour^a.

Mr. Woodward observes, that it alters in habit so much by cultivation as hardly to be known at first sight.

This insignificant plant may boast a great variety of names. It is annual, and flowers from may to august, and even in winter.

Native of many parts of Europe, in a dry light soil: as Germany, the South of France, Istria, Italy, Barbary. In the West of England; as in various parts of the coast of Devonshire and Dorsetshire; about Lymington near Exeter, Mr. Hudson; on the neck of the Isle of Portland, close to the shingly beach, Mr. Hudson and Dr. Goodenough. In Portland, at the north end, and about Exmouth in Devon, Mr. Lightfoot. On Chefil bank, A. B. Lambert, Esq;^a

POLYCARPUS. See *Scleranthus*.

POLYCEPHALOS. See *Sphaeranthus*.

POLYCNEMUM (of Pliny, Πολυκνήμων of Dioscorides: from πολυ *multiplex*, and κνήμη *crus*: many-legged.)

Lin. gen. n. 53. Reich. n. 59. Schreb. n. 72. Gært. t. 128. Juss. 84.

Class. 3. 1. Triandria Monogynia.

Nat. order of *Holoraceæ*. *Atriplices*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved: leaflets ovate, erect, mucronate, permanent.

COR. none.

STAM. Filaments two or three, capillary, shorter than the calyx. Anthers twin.

PIST. Germ roundish. Style very short, two-parted. Stigmas obtuse.

PER. Capsule ovate, with the top flattish and margined, acuminate with the permanent style, membranaceous, thin, valveless, not opening.

SEED single, kidney-form.

OBS. Most of the species have two bractes, under the calyx, and which are taken by some for the calyx, and the calyx for the corolla. Other species have two, three, or four calycine leaflets. The stamens are one, two, three, five in number. One style or two. Pallas.

ESSENTIAL CHARACTER.

Cal. three-leaved. Pet. five, calycine. Seed one, almost naked.

SPECIES.

1. Polycnemum monandrum. One-stamened Polycnemum. Lin. spec. ed. Willd. 192. Pallas it. 1. app. n. 94. t. G. f. 1.

Monandrous, leaves linear acute, stem erect.

2. Polycnemum sclerospermum.

Linn. spec. ed. Willd. 192. Pallas it. 3. app. n. 84. t. M. f. 2. E. e.

Diandrous, leaves cylindric fleshy, stem erect branched.

3. Polycnemum arvense. Trailing Polycnemum.

Lin. spec. 50. syst. 83. Reich. 1. 96. Willd. 192. Gært. fruct. 2. 211. Sauv. monsp. 45. Gouan. hort. 24. Hall. belv. n. 1570. Leers herb. n. 31. Jacqu. austr. 4. 34. t. 365. Roth. germ. 1. 18. 2. 45. Hoffm. germ. 12. Krock. files. n. 54. t. 7. Aillon. pedem. n. 1894. Guett. stamp. 14. (Chenopodium.)

Chenopodium annuum humifusum, folio breviori & capillaceo. Tournef. inst. 506.

Camphorata congener. Baub. pin. 486.

Herniaria foliis longis angustis acuminatis & glabris. Magn. char. 51.

Triandrous, leaves awl-shaped three-sided, stem diffused.

^a Gærtner.

^x Pulteney's Dorsetshire plants.

4. Polycnemum falsum. Triandrous Polycnemum.

Lin. spec. ed. Willd. 192.

P. triandrum. Pallas it. 1. app. n. 95. t. G. f. 2. & H. f. 1.

Triandrous, leaves filiform fleshy sheathing, stem diffused.

5. Polycnemum oppositifolium. Opposite-leaved Polycnemum.

Linn. spec. ed. Willd. 193. Pallas it. 1. app. 98. t. H. f. 2.

Pentandrous, leaves opposite fleshy semicylindrical, stem erect.

DESCRIPTIONS, &c.

1. This is a perennial plant, found by Professor Pallas, in a dry salt soil in Siberia.

2. An annual plant, found also in the muddy salts of Siberia, by the Jaik and the lake Altan^y.

3. Root annual. Stem short, branched from the very base. Branches procumbent, simple or subdivided, striated, somewhat hairy, knobbed with a callus at the inside of the base, prostrate. Leaves numerous, keeled, mucronate. Flowers axillary, sessile, solitary. Calycine leaflets constantly two, lanceolate, awned, twice as long as the corolla. Petals five, ovate, acuminate. Stamens three, shorter than the corolla. Germ within a coat, fastened by a thread coming out of the side not from the base. Style bifid, ascending from the opposite side, and perforating the apex of the membrane, as in some of the Chenopodiums. Stigmas globular. A kidney-form dotted seed is inclosed in a thin membranaceous capsule, like that of *Herniaria*, and is let out at the base by a very slight pressure^z.

Gærtner describes the capsule as utricular, roundish, turgidly lenticular, very thin, pale, terminated at top by a double rudiment of the styles. Seed rounded-kidney-form, lenticular, having very minute raised dots scattered over it, rufescent, erect, fastened by a long filiform umbilical cord, ascending from the base of the capsule to the other margin of the seed.

Gærtner commends Adanson for having united this genus with *Camphorosma*, the number of parts in the flowers being so various, as the observations of Pallas have abundantly shown.

Haller describes the flowers as seated between two awned bristles: and Krock says, there are five calyx-shaped scales, permanent, membranaceous, awned, and no other calyx or corolla visible.

Native of France, Italy, Germany, Switzerland and Austria, in corn fields.

Cultivated in 1758, by Mr. Miller. It flowers in July^a.

4. This is perennial, and was found by Pallas in sandy saltish wet places of Siberia.

5. This is annual, and was discovered by Pallas in salts and marshes near the Caspian sea^b.

POLYGALA. (From πολυ, much and γαλα, milk. This plant being supposed to make cattle yield much milk.—The name occurs in Pliny, and Dioscorides has πολυγαλον.)

Lin. gen. n. 851. Reich. n. 921. Schreb. n. 1155.

Tournef. t. 79. Juss. 99. Gært. t. 62. Chamæbuxus. Tournef. act. gall. 1705. Polygaloides. Dill. gen. 9. Penæa. Plum. 25. Heisteria, edit. prior.

Class. 17. 3. Diadelphia Octandria.

Nat. order of *Lomentaceæ*. *Pediculares*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-leaved, small: leaflets ovate, acute: two below the corolla, one above that, and two in the middle, subovate, flat, very large, coloured, (the wings) permanent.

COR. subpapilionaceous. Standard almost cylindrical, tubular, short, with a small reflex mouth, bifid. Wings, (Jacqu.) Keel concave, compressed, ventricose towards the tip. Appendix of the keel, in most of the species two, three-parted, pencil-shaped bodies, fastened to the keel towards the tip.

STAM. Filaments diadelphous (eight connected) inclosed within the keel. Anthers eight, simple.

PIST. Germ oblong. Style simple, erect. Stigma terminating, thickish, bifid.

^y Willdenow.

^z Leers.

^a Hort. kew.

^b Willdenow.

PER. Capsule obcordate, compressed with an acute margin, two-celled, two-valved: partition contrary to the valves; opening at each margin.

SEEDS solitary, ovate, (with a glandular umbilicus. G.)

OBS. The appendix to the keel is different in the several species; and in many the pencil-shaped appendix is wanting; whence they are called beardless.

In *Heisteria* the calyx is five-parted and equal, the corolla not cloven, and the germ four-borned. The fruit of *P. spinosa* is a berry (or a drupe) and the branches are pungent. Jussieu.

ESSENTIAL CHARACTER.

Cal. five-leaved, with two of the leaves shaped like wings and coloured. Legume obcordate, two-celled.

SPECIES.

* Crested (the flowers having a pencil-shaped appendix).

- [1. *Polygala incarnata*. Flesh-coloured Milk-wort.
Lin. spec. 986. Reich. 3. 382. Pluk. mant. t. 438. f. 5. Raii suppl. 639. n. 7.
Flowers in spikes, stem herbaceous branched erect, leaves alternate awl-shaped.
2. *Polygala aspalatha*.
Lin. syst. 637. Reich. 3. 382. mant. 99.
Flowers in heads, stems quite simple, leaves bristle-shaped, scattered.
3. *Polygala brasiliensis*. Brazilian Milk-wort.
Lin. syst. 638. Reich. 3. 382. mant. 99.
Flowers subsplined, stems quite simple, leaves lanceolate scattered.
4. *Polygala trichosperma*. Hairy-seeded Milk-wort.
Lin. syst. 638. Reich. 3. 383. mant. 259. Jacqu. obs. 3. 16. t. 67.
Flowers in spikes, stems rod-like striated, leaves linear.
5. *Polygala amara*. Bitter Milk-wort.
Lin. spec. 987. syst. 638. Reich. 3. 383. Jacqu. vind. 262. austr. 5. p. 6. t. 412. Scop. carn. n. 868. Hall. helv. n. 343. Fl. dan. t. 1169. Krock. files. n. 1142. Villars dauph. 3. 388. Allion. pedem. n. 1087. Zorn. ic. t. 83.
P. amarella. Crantz. aust. 438.
P. vulgaris, foliis circa radicem rotundioribus, flore cæruleo, sapore admodum amaro. Bauh. pin. 215.
P. buxi minoris folio. Vaill. par. 161. t. 32. f. 2.
Flowers in racemes, stems almost upright, radical leaves obovate larger.]
6. *Polygala vulgaris*. Common Milk-wort.
Lin. spec. 986. syst. 638. Reich. 3. 383. amoen. 2. 136. vir. cliff. 70. hort. cliff. 351. fl. suec. n. 632. Gärtn. fruct. 1. 294. Hudf. angl. 310. Wither. arr. ed. 3. 622. Smith angl. 752. Engl. bot. 76. Lightf. scot. 381. Relb. cant. n. 511. Sibth. oxon. n. 610. Hall. helv. n. 344. Scop. carn. n. 867. Pollich pal. n. 664. Fl. dan. t. 516. Krock. files. n. 1141. Villars dauph. 3. 387. Allion. pedem. n. 1088. Desfont. atlant. 127. Thunb. jap. 277. Bauh. pin. 215. Kniph. cent. 11. n. 84.
Polygala. Ger. 449. 4. emac. 563. Raii hist. 1335. syn. *287.
P. minor. Park. theat. 1332. 2.
P. recentiorum. Lob. ic. 1. 416. 2. & 417. 1.
Polygalon. Trag. 571.—multis. Bauh. hist. 3. 362. Flos ambarvalis. Dod. pempt. 253.
Flowers in racemes, stems herbaceous simple procumbent, leaves linear-lanceolate.
- [7. *Polygala major*. Large Milk-wort.
Lin. syst. 638. Jacqu. austr. 5. t. 413. Bauh. pin. 215. Park. theat. 1332.
P. vulgaris major. Bauh. hist. 3. 387. Clus. hist. 325. Raii hist. 1335. syn. *287.
Flowers in racemes, stems herbaceous simple more erect, leaves linear-lanceolate.]
8. *Polygala monspeliaca*. Montpellier Milk-wort.
Lin. spec. 987. syst. 638. Reich. 3. 384. Sauv. monsp. 53. Magn. monsp. 208. Villars dauph. 3. 388. Allion. pedem. n. 1089. Krock. files. n. 1143. Desfont. atlant. 129.
P. vulgaris coloris obsoleti, foliis angustissimis. Bauh. hist. 3. 338. Raii hist. 1336. Tournef. inst. 175.
P. acutioribus foliis monspeliaca. Bauh. pin. 207.

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Flowers in racemes, stem upright, leaves lanceolate-linear acute.

- [9. *Polygala paniculata*. Panicked Milk-wort.
Lin. spec. 987. Reich. 3. 384. amoen. 5. 402. Swartz obs. 272. t. 6. f. 2. Brown. jam. 287. n. 1.
Racemes naked, stems herbaceous erect branched at top, leaves linear.
10. *Polygala fibrica*. Siberian Milk-wort.
Lin. spec. 987. syst. 638. Reich. 3. 384. Gmel. fib. 4. 64. t. 32.
P. multicaulis. Amm. ruth. n. 43. 44. 45.
Raceme lateral naked, stems herbaceous, leaves lanceolate.
11. *Polygala bracteolata*. Spear-leaved Milk-wort.
Lin. spec. 987. syst. 638. Reich. 3. 385. amoen. 2. 137. Berg. cap. 182. Buxb. cent. 3. 41. t. 71. Pluk. phyt. t. 53. f. 2. Raii suppl. 640. n. 20. Curt. magaz. 345.
β. Lin. amoen. 2. 137. hort. cliff. 353. Burm. afr. 202. t. 73. f. 2.
γ. Lin. amoen. 2. 137. Burm. afr. 203. t. 73. f. 3. Breyn. cent. t. 49.
δ. Lin. amoen. 2. 138. Pluk. mant. t. 404. f. 6. Burm. afr. 204. t. 73. f. 4.
Flowers in racemes, bractes three-leaved, leaves linear-lanceolate, stem shrubby.
12. *Polygala umbellata*. Umbelled Milk-wort.
Lin. syst. 638. Reich. 3. 385. mant. 259. Burm. afr. 204. t. 73. f. 5.
Flowers subumbelled, leaves linear subciliate.]
13. *Polygala myrtifolia*. Myrtle-leaved Milk-wort.
Linn. spec. 988. syst. 638. Reich. 3. 386. amoen. 2. 138. hort. cliff. 353. Mill. illustr. ic. Comm. hort. 1. 87. t. 46. Raii suppl. 640. n. 19. Pluk. mant. t. 437. f. 4. Burm. afr. 200. t. 73. f. 1.
P. frutescens, folio buxi, flore maximo. Tournef. inst. 175.
Keel of the corolla crescent-shaped, stem shrubby, leaves even oblong blunt.
- [14. *Polygala tinctoria*.
Vahl. symb. 1. 50.
P. bracteolata. Forsk. descr. 213.
Villose, bractes three-leaved, leaves obovate, stem shrubby.
15. *Polygala oppositifolia*. Opposite-leaved Milk-wort.
Lin. syst. 638. Reich. 3. 386. mant. 259.
P. fruticosa. Berg. cap. 183.
Stem shrubby, leaves opposite ovate acute.
16. *Polygala spinosa*. Prickly Milk-wort.
Ait. hort. kew. 3. 5.
α. P. spinosa ovalifolia.
Oval-leaved prickly Milk-wort.]
P. spinosa. Lin. spec. 989. syst. 638. Reich. 3. 386. mant. 437. amoen. 2. 141.
Leaves oval obtuse.
β. P. spinosa angustata.
Narrow-leaved prickly Milk-wort.
Ulex capensis. Lin. spec. 1046. Reich. 3. 418. Mill. dict. n. 2. Pluk. phyt. t. 185. f. 6. Petiv. gaz. t. 83. f. 9.
Leaves lanceolate-linear smooth acute, branches and branchlets leaf-bearing.
Flowers lateral, stem shrubby, branches spiny, leaves scattered oval-oblong, fruit drupaceous.
- [17. *Polygala teretifolia*.
Lin. syst. 638. suppl. 316.
Flowers lateral, stem shrubby branched, leaves filiform sickle-shaped.

** Beardless (the flowers without any pencil keeled) frutescent.

18. *Polygala theezans*.
Lin. syst. 639. Reich. 3. 387. mant. 260. Burm. ind. 154. Feuill. peruv. 1. t. 13. Burm. zeyl. 195. t. 85.
Peduncles one-flowered, stem shrubby, leaves alternate lanceolate.
19. *Polygala trinervia*.
Lin. syst. 639. suppl. 315.
Peduncles one-flowered, stem shrubby angular, leaves alternate cordate cusped three-nerved.

20. *Polygala Penæa*.
Lin. spec. 988. *Reich.* 3. 387. *amoen.* 2. 140.
Penæa arborescens, buxi folio aspero. Plum. spec. 22.
it. 214. *f.* 1.
Flowers lateral solitary, stem arboreous, leaves obtuse petioled.
21. *Polygala diversifolia*.
Lin. spec. 988. *Reich.* 3. 387. *amoen.* 2. 140. *hort.*
cliff. 353. *Swartz obs.* 273. *Brown. jam.* 287.
n. 3. *t.* 5. *f.* 3. *Sloan. jam.* 2. 32. *t.* 170. *f.* 2.
Flowers in racemes, stem arboreous, older leaves oblong-ovate, younger subovate.
22. *Polygala microphylla. Small-leaved Milk-wort.*
Lin. spec. 989. *Reich.* 3. 388.
P. lusitanica frutescens, magno flore, foliis minimis.
Tournef. inst. 175.
Flowers in racemes, stems shrubby, leaves very minute elliptic.
23. *Polygala æstuans*.
Lin. syst. 839. *suppl.* 315.
Flowers in racemes, stem shrubby, leaves lanceolate petioled.
24. *Polygala violacea*.
Vahl symb. 2. 79.
Flowers in racemes lateral and terminating, stem shrubby hairy, leaves oblong.
25. *Polygala chinensis*.
Lin. spec. 989. *Reich.* 3. 388. *Brown. jam.* 287.
n. 4.
Flowers in spikes axillary, stems suffruticose, leaves oval.]
26. *Polygala Chamæbuxus. Box-leaved Milk-wort.*
Lin. spec. 989. *syst.* 639. *Reich.* 3. 388. *amoen.* 2.
140. Hall. belv. n. 345. *Jacqu. vind.* 126.
austr. 3. 19. *t.* 233. *Villars dauph.* 3. 389.
Krock. filif. n. 1145. *Scop. carn. n.* 869. *Allion.*
pedem. n. 1090. *Curt. magaz.* 316.
Polygaloides procumbens, foliis duris ovatis, nervo aristato. Hall. belv. n. 345.
Chamæbuxus flore Coluteæ. Baub. pin. 471.
Anonymos flore Coluteæ. Clus. hist. 1. 105.
Pseudo chamæbuxus. Park. theat. 1429.
Flowers scattered, keel rounded at the tip, stem shrubby, leaves lanceolate.
- [27. *Polygala alopecuroides*.
Lin. syst. 639. *Reich.* 3. 388. *mant.* 260.
Flowers sessile, leaves crowded ovate acute keeled hairy.
28. *Polygala mexta*.
Lin. syst. 639. *suppl.* 316.
Flowers sessile, stem shrubby, leaves round mucronate very much crowded.
29. *Polygala squarrosa*.
Lin. syst. 639. *suppl.* 315.
Stem shrubby, leaves aggregate lanceolate patulous.
30. *Polygala Heisteria. Heath-leaved Milk-wort.*
Lin. spec. 989. *syst.* 639. *Reich.* 3. 389. *Curt.*
magaz. 340.
Heisteria. Lin. hort. cliff. 352.—*pungens. Berg.*
cap. 185.
Thymbra capensis. Pluk. phyt. t. 229. *f.* 5.—*africana*
foliis spinosis. Barth. act. 1673. *p.* 57.
Flowers lateral, stem arborescent, leaves three-sided mucronate-spiny.
31. *Polygala stipulacea*.
Lin. syst. 639. *Reich.* 3. 389. *mant.* 260. *Burm.*
prodr. 20.
Heisteria mitior. Berg. cap. 187.
Spartium africanum frutescens, Ericæ folio. Comm.
hort. 2. 193. *t.* 97.
Suffrutex Ericæ forma, flore ruberrimo. Seba. mus.
2. 63. t. 62. *f.* 2.
Flowers lateral, stem suffruticose, leaves in threes linear acute.]
- *** *Beardless, herbaceous, with a single stem.*
32. *Polygala Senega. Official Milk-wort or Rattlesnake root.*
Lin. spec. 990. *Reich.* 3. 390. *amoen.* 2. 139. *t.* 2.
mat. med. 169. *Woodv. med. bot.* 253. *t.* 93.
Gron. virg. 1. 80. 2. 103. *Mill. dict. ic. Raii*
suppl. 640. *n.* 25. (*Plantula marilandica*)
Flowers in spikes, stem erect quite simple, leaves broad-lanceolate.

- [33. *Pylogala lutea. Yellow-flowered Milk-wort.*
Lin. spec. 990. *Reich.* 3. 390. *amoen.* 2. 140.
Pluk. amalth. t. 438. *f.* 6. *Raii suppl.* 639. *n.*
14. Pet. succ. 58.
Flowers in oblong heads, stem erect quite simple, leaves lanceolate acute.
34. *Polygala viridescens. Green-flowered Milk-wort.*
Lin. spec. 990. *Reich.* 3. 390. *amoen.* 2. 140.
Gron. virg. 1. 80. 2. 104.
Flowers in globular heads, stem erect quite simple, leaves lanceolate bluntish.
35. *Polygala triflora. Three-flowered Milk-wort.*
Lin. spec. 991. *Reich.* 3. 391. *fl. zeyl. n.* 269.
Peduncles subtriflorous, stem erect, leaves linear alternate.
36. *Polygala glaucoides*.
Lin. spec. 991. *Reich.* 3. 391. *fl. zeyl. n.* 270.
Peduncles many flowered lateral, stems diffused, leaves acute.
 **** *Beardless, herbaceous, branched.*
37. *Polygala ciliata. Fringe-capsuled Milk-wort.*
Lin. spec. 991. *Reich.* 3. 391. *fl. zeyl. n.* 268.
Capsules ciliate-toothed, stem erect.
38. *Polygala sanguinea. Red-spiked Milk-wort.*
Lin. spec. 991. *Reich.* 3. 391. *Pluk. mant. t.* 437.
f. 5.
Peduncles squarrose, stem erect.
39. *Polygala verticillata. Whorl-leaved Milk-wort.*
Linn. spec. 991. *Reich.* 3. 391. *amoen.* 2. 159.
Gron. virg. 1. 172. 2. 103. *Pluk. mant. t.* 438.
f. 4. *Raii suppl.* 639. *n.* 8.
Flowers separate, leaves linear in whorls.
40. *Polygala cruciata. Cross leaved Milk-wort.*
Lin. spec. 992. *syst.* 640. *Reich.* 3. 392. *amoen.* 2.
138. Gron. virg. 2. 103. *Raii suppl.* 639.
n. 10.
Leaves in fours.
-
41. *Polygala oxycoccoides*.
Desfont. atlant. 127. *t.* 174.
Stem shrubby procumbent, leaves elliptic obtuse thickish.
42. *Polygala faxatilis*.
Desfont. atlant. 128. *t.* 175.
Stem shrubby decumbent, branchlets pubescent, leaves lanceolate acute, flowers capitate-racemed.
43. *Polygala rosea*.
Desfont. atlant. 128. *t.* 176.
Stem shrubby at the base, rod-like, simple, leaves lanceolate, flowers in loose racemes, corollas fringed.]
44. *Polygala mariana*.
Mill. dict. n. 6. *Pluk. mant. t.* 438. *f.* 5.
Flowers beardless in oblong heads, stem erect branched, leaves linear.
45. *Polygala americana*.
Mill. dict. n. 7.
P. americana erecta flore purpureo-cæruleo, folio molli incano. Houst. MSS.
Flowers crested, raceme terminating, stem erect branched, leaves lanceolate tomentose.

DESCRIPTIONS, &c.

1. Root annual. Stem a span or a foot in height, filiform, angular. Branches commonly three, in the upper axils, long, narrow. Leaves flat, very sharp, remote, scarcely eight for the most part upon the stem. Spikes terminating, solitary, oblong, of a very lively flesh-colour; corollas three times as long as the calycine axils, furnished with a multifid dilated flesh-coloured pencil, erect like the corolla.—Native of Virginia and Canada^c.

Ray informs us that Vernon and Krieg introduced it from Maryland.

2. The stems about a foot high. Leaves filiform, acuminate, spreading, an inch long; the upper ones shorter. Flowers terminating, in a sort of head, on pedicels the length of the flowers. Under each flower is a lanceolate-subulate coloured bracte, the length of the pedicel. Corolla white, with lanceolate wings, and a pencilled keel. It has the appearance of an *Aspalathus*.—Native of Brasil. Arduini^d.

^c Linn. spec.^d Linn. mant.

3. Stems a hand high, filiform, prostrate, sometimes, but seldom, having a lateral branch. Spike straight, terminating, white; with the flowers on very short pedicels, without bractes. Wings ovate, obtuse: keel pencilled. Capsules with solitary seeds. The peduncle of the spike lengthens out as the flowers fall off, whence the rachis becomes toothletted.—Native of Brasil^c.

4. Root perennial. Stems erect, striated, even, rod-like. Leaves scattered, lanceolate-subulate, acute, remote, smooth. Spikes terminating, oblong, toothletted below from the falling of the flowers. Keel without a crest, but instead of it a point cut multifariouly. Corolla minute, white. Awns of the seeds turned downwards, bristle-shaped, numerous^f.

Stems herbaceous, slender, quite simple, or at most having a branch or two; covered their whole length with numerous leaves, the lowest sometimes above wider and blunt, gradually smaller upwards, and the uppermost very small. Spikes dense, an inch long, slender. Seeds conical, their blackness appearing through the very thin capsules: they are surrounded outwardly with long awns, whence with the slightest compression they fly out of the capsules. The keel equals the wings in length. It has no slight affinity with the first species, yet it is abundantly different.—Native of New Granada^g.

5. This agrees so much with our common Milk-wort in habit, that it may be easily mistaken for it. The radical leaves are thicker and obovate, wider and very blunt; the stem-leaves are more declining. The whole plant, except the root, is always extremely bitter; a leaf slightly chewed affects the tongue very strongly, soon diffuses itself over the whole jaws, and continues a long time^h.

Scopoli doubts whether it differs from the common fort. Linneus calls it the daughter of that species, but having larger leaves, those next the root ten times as big; however very nearly allied to it; distinguished chiefly by its bitterness.

Krocker remarks, that the stems are more declined, not branching, shorter, somewhat angular, filiform, in tufts. Root-leaves roundish, firm, blunt; the upper leaves linear, all quite entire (and in alpine situations, as Haller observes), all ovate-lanceolate. The flowers, according to Villars, are of a beautiful sky blue, but vary sometimes to white.

Probably the same qualities which are ascribed to *P. Senega* may reside in this, and it might be used as a succedaneum for that. Gesner asserts, that an infusion of it purges without any harm. A tincture of four ounces of it in a pint of Canary wine is extremely bitter and of a brownish colourⁱ. It is employed in the pleurisy, in malignant and milk fevers, and in phthisis pulmonalis. A dram of the root in powder is given as a dose: or an ounce of it is boiled in a pint and half of water to a pint, and drank with milk. The stimulating and resolving principles are stronger in *P. Senega*, but this seems to abound more in a balsamic resin^k.

It is more efficacious than our common Milk-wort, but that may be owing in great measure to its mountainous or subalpine situation.

Native of France, Switzerland, Silesia, Austria, Carniola, Piedmont.—Introduced in 1775, by Drs. Pitcairn and Fothergill^l.

Allioni considers it as being biennial.

6. The perennial woody root throws out many spreading procumbent stems, clothed with deep green smooth leaves, which vary much in size and figure. The flowers, commonly blue, are often white, flesh-coloured or purple, but in all cases marked with green lines. The permanent calyx turns at length wholly green, and wraps up the young pod, closing and drooping to protect it from rain. So the elegant fringed crest of the corolla protects the stamens and pistil, admitting air, but scarcely wet or insects^m.

Dr. Withering adds, that the stems are four-cor-

nered and undivided; the leaves alternate or in pairs, a little rolled back at the edges, the upper lanceolate, the lower ovate; calyx-leaves lanceolate, concave, coloured; wings of the corolla lanceolate, more fully coloured; standard composed of two petals, joined by a hairiness at the edges; keel cylindrical below, but towards the top expanding into two sets of club-shaped glandular appendages. Filaments in two sets, like two expanded hands with four fingers in each. Anthers yellow or orange. Style thicker upwards. Stigma with two lips, the one a fleshy knob, the other lanceolate, concave.]

Mr. Miller says, three or four slender, trailing herbaceous stalks about six inches long, come out from a perennial root; the leaves are about half an inch long, and an eighth part of an inch broad in the middle.

[Capsule small, obcordate, with a groove on each side, compressed, bordered with a membrane, marked with minute dots in rows. Seeds rusty brown, covered with whitish villose hairs, and having a linear hilum or scar on one side. The umbilicus or navel has a white glandular caruncle unequally trifid, two segments larger and equal, the third smaller, all linear-acuminate, reflex, united in form of a little crown on the top of the umbilicus. The form and situation of this and the embryo, indicate a near affinity between *Polygala* and the *Tithymali* or *Spurges*, as Adanson suggestedⁿ.

Linneus found the common Milk-wort to possess the properties of *P. Senega*, in an inferior degree. Duhamel used it in pleuritic cases, with the desired success; the powdered root may be given in doses of half a dram^o.

An infusion of the herb, says Dr. J. E. Smith, taken in a morning fasting, about a quarter of a pint daily, promotes expectoration, and is good in a catarrhus cough. I tried it at Montpellier by the advice of Professor Gouan with success, and have since known it useful^p.

Allioni says, it has the same properties with *P. amara*, but weaker and with less of the balsamic principle; that it is not to be despised as a succedaneum to *P. Senega* in the Pleurisy and Peripneumony, and that it promotes expectoration.

Native of most parts of Europe, and of Barbary, in dry healthy pastures and on rocks, flowering in June and July.

Foreign writers celebrate it as a grateful and nutritious food for cattle. According to the Swedish experiments, kine, sheep and goats eat it, but swine refuse it.

With us it is found chiefly in dry barren pastures, heaths or sheep-walks.

7. This is extremely allied to the *P. vulgaris*, but the flowers are always of a bright red-purple: the whole plant is also larger and more upright. It is found in great plenty in Austria according to Professor Jacquin, who considers it as distinct from the common *Polygala*; but confesses at the same time, that he cannot find any other distinguishing characters than what are mentioned above; so that it may perhaps be considered as a remarkable variety.

8. Root annual. Stem herbaceous, commonly branched but sometimes simple. Branchlets filiform; smooth. Leaves narrow-lanceolate, sessile, very sharp, sometimes almost awl-shaped, clustered in some, rather remote in others, quite entire. Flowers pedicelled, nodding after floescence: wings lanceolate-elliptic, membranaceous, sharpish, pale rose-coloured or greenish, three-nerved, netted^r.

Villars remarks, that it is very small in all its parts, and that it is straighter and harder than *P. amara*. Crantz and Gerard consider it as a variety of *P. vulgaris*. N. 5, 6, 7, 8. are indeed very nearly allied.

Native of the South of France, Piedmont and Algiers, on dry barren hills. Cultivated by Mr. Miller, in 1759.

9. Root annual. Stem from half a foot to a foot in height, round, smooth, divided above the middle. Branches filiform, erect, leafy, smooth. Leaves sub-

^c Linn. mant.

^f Idem.

^g Jacquin.

^h Idem.

ⁱ Idem.

^k Allioni, Krocker.

^l Hort. kew.

^m Engl. bot.

ⁿ Gartner.

^o Withering.

^p Engl. bot.

^q Jacquin.

^r Desfontaines.

sessile, alternate, acute, entire, dotted, smooth. Peduncles or racemes terminating, filiform, erect, many-flowered. Flowers minute, purplish, nodding, on very short pedicels. Calyx three-leaved, coloured; hinder leaflet larger, ovate, the two anterior oblong, acuminate. Standard consists of two oblong obtuse erect petals, covering the keel and wings, and converging in front at top: wings less than the standard, pale, lanceolate, converging above the keel; which is also less than the standard, covered, gibbous at the base, four-cleft at the tip, deciduous. Filaments shorter than the corolla, distinct in front, all united below, white and pellucid. Anthers oblong, yellow. Germ ovate, compressed a little, convex, twin. Style thick, curved, like a cornucopia. Stigma funnel-form, oblique, bearded at the anterior tip, pellucid. Seed-vessel, which Swartz calls a filicle, oblong, emarginate at the tip and base, compressed, convex, two-celled, opening at the sides, two-seeded. Seeds oblong, convex, brown, hairy; appearing echinated in a magnifier^a.

This beautiful little plant is a native of Jamaica, (and Hispaniola.) It has much of the smell and taste of the Senega Snake-root; but is not so strong or disagreeable. It is a mild attenuant and sudorific, and may be administered in infusions or decoctions. It grows generally to the height of six or seven inches, and is seldom branched below the middle^c.

10. This has the habit of the preceding. Lower leaves ovate; upper lanceolate. Raceme single, (seldom two) loose, and without bractes at the base of the partial pedicels. Native of Siberia^a.

11. There are four varieties of this, particularly distinguished in the *Amœnitates academicæ*. The first has the keel longer than the crest, the stem branched, and linear-lanceolate leaves. The second has the leaves linear-subulate, and the keel shorter than the crest, with a larger purple flower. The third has subulate leaves, the stem quite simple, and a smaller purple flower. The fourth has the leaves linear blunt and rugged, the stem branched, the flowers very small, whitish or pale purple.—The stem is shrubby in all, and the bractes are remarkable; whence the trivial name.

Native of the Cape of Good Hope. Introduced in 1787, by Mr. Francis Masson^a. It flowers from may to july; and is a plant of great singularity and beauty: the purple of its flowers is brilliant in the extreme^c.

12. Stem scarcely suffruticose, a span high, somewhat branched, erect. Leaves scattered, acute, erect, scarce manifestly ciliate. Flowers terminating, copious, in a sort of umbel. Peduncles filiform, one-flowered, even, almost equal. Calycine petals ovate, acute. Allied to the preceding. It is an annual or biennial plant; native of the Cape of Good Hope^a.]

13. Stem shrubby, covered with a smooth brown bark, rising four or five feet high, and sending out several spreading branches towards the top. Leaves about an inch long and a quarter of an inch broad, lucid green, and sessile. The flowers are produced at the ends of the branches; they are large, white on the outside, but of a bright purple within: wings expanded wide, and standard incurved. It continues flowering most part of the summer. Each cell of the seed-vessel contains one hard smooth shining seed. It grows naturally at the Cape of Good Hope. [Cultivated in 1707, by the Dutchess of Beaufort^a.

14. The whole plant is villose; the branches round and rod-like; the leaves subpetioled, alternate, mucronate, sometimes emarginate, an inch long. Racemes axillary and terminating, an inch and half long. Bractes three-leaved, ovate, minute. Calycine leaflets oblong, acute, unequal. Wings roundish, three times as large as the calyx, permanent, pubescent. Legume oval, emarginate, shorter than the wings. It is very nearly allied to the preceding, but differs in the form of the leaves, in its hairiness, smallness of the

flowers, and shape of the wings, which are rounded, not ovate-rhomboidal, acute^b.

15. This is a shrub two feet high, branched at top; branches alternate, erect, without scars. Leaves sessile, quite entire, smooth. Racemes terminating, short. Calycine petals subcordate, red, large. Capsule like that of *Thlaspi*, compressed, orbicular, emarginate, bordered. It is allied to *P. myrtifolia*, and has the leaves of *Penca*.

Native of the Cape of Good Hope, in the mountains, flowering in august^c.

16. This is a stout shrub, with the branches terminated by a strong spine. Flowers axillary, sessile, small, white with a red keel. The fruit is an esculent berry.—Native of the Cape^d.

β. This variety is placed by Linneus and Miller under another genus, that of *Ulex*.] Stem woody and hard, covered with a greenish bark when young, but afterwards becoming grayish. Branches slender and woody. Shoots terminating with spines. Native of the Cape.

[17. Found at the Cape of Good Hope, by Thunberg^e.

18. Stem white at bottom, as in *Betula* or the Birch-tree. Native of Japan and Java^f.

19. Stem green, even, branched, high. Leaves sessile, acute, small. Peduncles axillary, bristle-shaped. Flowers small. Capsules oblong, two-horned at the tip. Native of the Cape of Good Hope^g.

20. Native of South America. A shrub^h.

21. This is a small tree, with loose rod-like branches, subdivided, even, round. Leaves alternate, elliptic, acuminate, blunt at the tip, entire, smooth on both sides, on shortish petioles. Flowers axillary, crowded. Peduncles axillary, longer than the petioles, scaly, many-flowered. Corollas small, greenish white. Calyx three-leaved: leaflets ovate, green, permanent; one superior. Standard of the corolla of two lower, reflex, whitish petals: wings large, ovate, on the outside of the standard and keel, similar to the calyx-leaves, permanent: keel larger than the standard, concave, green. Filaments open in front, free at the top, very minute. Anthers minute. Germ roundish, compressed. Style the length of the stamens. Stigma obtuse. Seed-vessel or filicle pedicelled, roundish, compressed, emarginate. Seeds reniform-oblong.—Native of Jamaica, in woods, but not commonⁱ.

Browne calls it Bastard *Lignum Vitæ* of the red hills, where this shrub grows very plentifully, generally rising to the height of seven or eight feet, or more. It is called there Bastard *Lignum Vitæ*, because it tastes not unlike the gum of that wood, and is sometimes used for the same purposes.

Swartz does not see why Linneus named it *diversifolia*, the leaves being all alike; the reason however, whether well-founded or not, is apparent from the specific character.

22. Stems rod-like, a foot high, filiform, green, toothed with the bases of the deciduous leaves. These are the smallest of any, alternate, remote, sessile, awl-shaped or elliptic. Racemes terminating, short. Flowers rather large.

Native of Spain and Portugal. *Alstroemer*^k.

23. Stem striated a little. Leaves alternate, distinct, veinless, naked, an inch long, articulated as it were into the petiole. Racemes terminating, two or three, often longer than the leaves. Standard of the corolla blue. Capsules ovate, wrinkled, pendulous, hard.

Native of New Granada, found there by Mutis^l.

24. Stem erect, round, softly hairy. Leaves on very short petioles, an inch long, smooth above, somewhat hairy underneath. Racemes both opposite to the leaves and terminating, three or four inches long, villose. Peduncles toothletted from the fall of the flowers. Bractes minute, deciduous. Flowers nodding, a little larger than those of the common sort. Calyx-leaves ovate, concave. Wings green. Keel violet. Capsules oblong, smooth. Seeds villose

^a Swartz.
^x Hort. kew.

^b Browne.
^y Curtis.
^z Hort. kew.

^c Linn. spec.
^z Linn. mant.

^b Vahl.
^c Linn. suppl.
^d Linn. spec.

^c Linn. mant.
^f Linn. syst. and mant.
ⁱ Swartz.
^l Linn. suppl.

^d Idem, and syst.
^g Linn. suppl.
^k Linn. spec.

backwards, oblong, cylindric. It is different from *P. violacea* of Aublet, which has crested flowers, and a herbaceous stem. Found by von Rohr in Cayenne^m.

25. Stems a foot high, decumbent, woody, not smooth. Leaves quite entire, the size of the outer joint of the thumb, subpetioled, naked, blunt with a point. Branches lateral, very thinly disposed. Spikes lateral, often longer than the leaves, green.

Native of the East Indiesⁿ. How comes this to be the same with the larger *Polygala* of Browne, which he found in the woods of St. Elizabeth's, Jamaica, and is frequently above twenty feet in height?

26. This rises with a slender, branching, woody stalk, about a foot high, when it grows upon good ground, but on a rocky soil it is seldom more than half that height. The branches are closely garnished with stiff, smooth leaves, of a lucid green. From between the leaves, towards the top of the branches, the flowers come out upon very short peduncles; they are white on the outside, but within are of a purplish colour mixed with yellow, and have a grateful odour. The seed-vessels are shaped like those of *P. myrtifolia*.

[It is an elegant little evergreen shrub of low growth, with leaves like those of Box, producing flowers from may to october, but most plentifully in may and june. Each flower stands on a peduncle proceeding from a kind of triphyllous cup, formed of floral leaves; the true calyx is composed of three leaves, which are nearly white; the two outermost petals, similar to the wings of a papilionaceous flower, are also white, or nearly so; the third petal, which forms a kind of tube, and contains the stamens and pistil, is white at the base, but yellow towards the extremity, where it changes by degrees to a bright bay colour.—Clusius gives an accurate description and good figure of this plant, which was before unnoticed by any author^o.

Villars remarks, that the keel or lower petal has two little ears at its extremity; and that the plant bears little resemblance to the preceding European species: Tournefort, Haller and others have considered it as of a different genus.

It differs, according to Scopoli, from the others, by its three-leaved perianth; the upper leaf convex, covering the germ and an elliptic cavity, left by the upper gape of the tube of the corolla and the curved bases of the wings. Corolla one-petalled, with the tube gaping at the base on the upper side, where the germ is; the border trifid, the two upper segments like wings, the lower ovate, longer, contracted behind, having two little ears at top. Filaments four on each side, slightly united at the base. Style flaccid. Stigma cylindric, bifid; the upper segment tubular, larger, the lower acuminate. Capsule margined, rugged, naked.

Clusius and Jacquin mention a variety of this plant, with the calyx and wings of a beautiful purple. Scopoli has noticed four varieties: 1. With white wings, and a yellow keel. 2. With white wings, and the keel red at the tip. 3. With red wings and the tip of the keel yellow. 4. With red wings and keel, but the tip of the latter variegated with red and yellow.

Native of Austria, Switzerland, Alsace, Germany, Dauphiné, and Italy, in mountains.—Cultivated in 1658, in the botanic garden at Oxford^p.

27. Stem shrubby, procumbent, branched: the branches covered with leaves and flowers. Leaves very much crowded, at each point three or five, sessile, not rigid, hairy underneath and at the edge. Flowers among the leaves, shorter than the leaf. Calyx glumose, smooth, like that of *P. Heisteria*. Native of the Cape of Good Hope^q.

28. This is a shrub extremely resembling the preceding species, but with the leaves of *P. Heisteria*, cylindric, very much crowded, mucronate, even, not ovate-lanceolate or ciliate or flat. The flowers are like those of *Alopecuroides*, and not of *Heisteria*. Native of the Cape.

^m Vahl.ⁿ Linn. spec.^o Curtis.^p Hort. kew.^q Linn. mant.

29. Stem frutescent, rod-like. Buds alternate, from each bristle. Leaves numerous, sessile, spreading or reflex, stiffish like those of *Androsace*. Flower from little leafy roses, often solitary, purplish, like that of *P. Heisteria*.

Native of the Cape^r.

30. This is a polymorphous plant, when young very different from what it is when it becomes old: α , with ovate leaves, ciliate on the edge and keel— β , with linear rugged leaves— γ , with awl-shaped hairy leaves.—Fruit four-horned^s.

In the course of a few years it becomes a shrub of considerable size, equalling a small furze bush, to which it bears a distant resemblance; and perhaps *furze-leaved* would have been a more expressive name than *heath-leaved*.

The purple of the flowers is brilliant in the extreme, and they are plentifully produced almost the year through.

After receiving various names, this plant has been finally placed in the genus *Polygala*; it retains the trivial name of *Heisteria*, which had been bestowed on it, in honour of Professor Heister, the celebrated German Surgeon.

In Holland it appears to have been long since known, but was a stranger here^t, till introduced from the Cape of Good Hope by Francis Masson, in 1787^u.

31. Stem filiform. Leaves sessile, ternate, linear-subulate, flattish, mucronate, the middle one longer than the two others. Calyx glumose as in *P. Heisteria*. Fruit in this genus different in the several species; but in this species very much resembling that of *P. Heisteria*, of which this plant was originally the daughter. Native of the Cape of Good Hope^x.

32. Root perennial, woody, branched, contorted, about the thickness of a finger, and covered with ash-coloured bark. It sends up several stems, which are simple, erect, slender, round, smooth, of a dark reddish colour, and about a foot in height. Leaves alternate, acute, pale green, on short footstalks^y.] The flowers are produced in loose terminating spikes; they are small, white, and shaped like those of the common fort, but their keel has no beard or crest. It flowers here in july, but does not produce ripe seeds. It grows naturally in most parts of North America, [and was cultivated by Mr. Miller, in 1759^z.

The root of this plant, under the name of Rattle-snake root was first introduced to the attention of physicians near seventy years ago, by Dr. John Tennent, whose intercourse with the Indians led him to discover that they possessed a specific remedy for the bite of the Rattle-snake, which for a reward was revealed to him, and found to be the root of this plant. He was afterwards fully convinced of the efficacy of this medicine from his own experience: and observing that pleuretic or peripneumonic symptoms were generally produced by the action of this poison, he inferred that this root might be an useful remedy in such disorders. It was accordingly tried in pleurifies, not only by Tennent himself, but by several French academicians and others; who all unite in testimony of its good effects. However, in many of these cases, recourse was had to the lancet. The repute which this root obtained in peripneumonic affections, induced some to employ it in other inflammatory disorders, particularly in rheumatism. It has been prescribed with much success in dropsies; and this we can the more easily credit, from its effects in increasing the different secretions; for it produces a plentiful spitting, increases perspiration and urine, and frequently purges or vomits. It is likewise reported to be a medicine of great power, in rendering the siness of the blood more fluid; De Haen however brings a strong fact to contradict this report. The usual dose is from one scruple to two of the powder; or two or three spoonfuls of a decoction, prepared by boiling an ounce of the root in a pint and half of water, till it is reduced to a pint. A little Madeira wine is most effectual for removing

^r Linn. suppl.^s Berg. in Linn. spec.^t Curtis.^u Hort. kew.^x Linn. mant.^y Woodville.^z Hort. kew.

the pungent taste, and making the medicine sit easy on the stomach^a.

Ray informs us, that Krieg gathered it in Maryland, but its virtues were not then known.

33. Leaves not unlike those of the common fort, frequent on the stem. Spike terminating, large for the size of the plant, composed of yellow flowers closely set on it. Vernon brought it from Maryland^b. Petiver gives it the epithet of *virginiana*, and Plukenet of *floridana*, it is therefore probably a native of most parts of North America. Linneus marks it as annual.

34. Root annual. Stem a span or a foot high, angular, without any branches. Leaves alternate, linear or linear-lanceolate, even, quite entire. Head of flowers terminating, subglobular, greenish with a mixture of dusky red in the wings of the flower. Native of Virginia^c.

35. Stem the length of the finger, without branches. Leaves quite entire, long, acute. Flowers axillary, on solitary branched peduncles, commonly three-flowered, shorter than the leaf. Corolla white. Annual. Native of Ceylon.

36. This has the appearance of our common Milk-wort. Stems several, filiform, undivided, quite simple, a finger's length. Leaves obovate, somewhat oblong, smooth, scarcely petioled. Raceme axillary, capillary, containing a few white flowers, shorter than the leaves, branchletted, not racemed or spiked. Native of Ceylon. Perennial.

37. Root annual. Stem a finger's length, tender, angular, branched. Leaves ovate-lanceolate, sessile, smooth, quite entire. Spikes longish, peduncled. Flowers sessile, directed one way. The calyx has five acute small leaflets, and hence recedes from the other species. Seeds globular.

Native of Ceylon, being found in Herman's herbarium^d, now in the possession of Sir Joseph Banks.

It varies with heart-shaped leaves, and stems half a foot high and branched^e.

38. Root annual. Stem from a span to a foot in height, firm, angular, with the branches higher than the stem. Leaves alternate, narrow-lanceolate. Spikes terminating, loose, blood-red, ovate. The lower flowers, when mature, drop off, whilst new ones are coming on, whence the peduncle is jagged or squarrose. Native of Virginia^f.

39. Root annual. Leaves commonly five at a joint, sometimes alternate. Spikes white, very narrow, with the flowers remote. Stem slender^g.

This little plant is exceedingly branched, and at each joint puts forth four or five narrow oblong leaflets. On the tops of the stems and branches it produces slender oblong spikes composed of whitish flowers.

Native of Maryland. Probably it does not differ from *P. quadrifolia minor* *Virginiana*, *spica parva rubente*. **Banist. cat. virg.*^h If so, it is a native of that province also.

40. The head of flowers is of a green rufescent colourⁱ. Native of Virginia.

41. This is a procumbent branched shrub. The older branches are tubercled and jointed; the younger ones are smooth. Leaves perennial, very smooth, alternate, subsessile. Flowers raceme-headed, terminating; each pedicelled, the same size with the common fort. Calyx five-parted; the three outer parts small, concave, oblong; the two inner much larger, elliptic, coloured, whitish at the edge, greenish in the middle, subpedicelled, resembling wings. Corolla two-lipped: upper lip cloven, longer than the lower, appendicled, with narrow segments somewhat bowed; lower lip keeled, two-lobed at top and fringed. Stamens in two bundles. Capsule flat, obcordate, two-celled, two-seeded.

Native of mount Atlas, in fissures of rocks; flowering early in spring.

42. Stems frequently very much branched: branchlets filiform, pubescent. Leaves alternate, scattered,

smooth, perennial; lower elliptic, blunt; branch-leaves narrow-lanceolate, subsessile. Flowers like those of the preceding; from which it differs in having lanceolate leaves, more slender and acute, and pubescent branchlets. Native of the same places.

43. Stems several from the same common tuft, smooth, slender, erect. Leaves alternate, smooth; those next the root elliptic, blunt; the upper ones lanceolate, acute. Flowers pedicelled, nodding after flowering time. Wings elliptic, blunt, bright rose-coloured, netted, a little larger than those of the common fort. Calyx five-parted: the three outer segments small and subulate; the two inner rose-coloured, ovate, blunt, resembling petals. Corolla tubular: upper lip two-lobed; lower fringed at the top, bright rose-coloured, often exceeding the wings. Capsule flat, obcordate, with a membranaceous rim, two-celled, two-valved. Seeds brown, oblong, pubescent, warted at top. It is allied to the common fort, but is larger in all its parts: and the stem is frutescent at the base. Native of mount Atlas near Tlemsen^k.]

44. Root perennial. Stems two or three, about eight inches high, dividing into several erect branches. Leaves small, of a dark green colour. Flowers small, of a purplish blue colour. Native of Maryland.

45. Root perennial, taper, running deep in the ground. Stems several, slender, six or seven inches high. Leaves an inch long, and half an inch broad in the middle, drawing to a point at both ends. The flowers are produced in loose spikes; they are larger than those of the common fort, and of a blueish purple colour. It was discovered by Dr. Houstoun at Vera Cruz in New Spain.

PROPAGATION AND CULTURE.

5, 6, 7, 8. Sow the seeds soon after they are ripe. They are rarely admitted in gardens, nor do they thrive well there.

13. This plant is propagated by seeds, which should be sown in small pots, filled with light loamy earth; soon after they are ripe, these pots may be placed where they may have the morning sun only till october, when they should be placed under a hot-bed frame, and plunged into old tanners bark, which has lost its heat, where they may be defended from frost during the winter, and in the spring the pots should be plunged into a moderate hot-bed, which will bring up the plants. When these appear, they should not be too tenderly treated, but must have a large share of free air admitted to them; when they are fit to transplant, they should be carefully shaken out of the pots, and separated, planting each into a small pot filled with soft loamy earth, and plunged into a very moderate hot-bed to forward their taking new root, observing to shade them from the sun, and gently refresh them with water as they may require it, but they must not have too much wet. When they are rooted, they must be gradually inured to the open air, and in june they may be placed abroad in a sheltered situation, where they may remain till the middle or latter end of october, according as the season proves favourable; then they must be removed into the green-house; and treated in the same way as Orange-trees, being careful not to give them too much wet during the winter season. In the summer they must be placed abroad with other green-house plants, where, by their long continuance in flower, they will make a fine appearance.

[This, and the other Cape sorts (11, 12, 15, 16, 17, 19, 27, 28, 29, 30, 31) may be increased by cuttings, some more readily than others.]

26. This plant is very difficult to cultivate in gardens, for it commonly grows out of the fissures of rocks, so cannot be easily transplanted, and the seeds are with difficulty obtained from abroad; nor do these vegetate till they have been a whole year in the ground, unless they are sown soon after they are ripe, when the plants will come up the spring following; when the plants first come up, they make very little progress here, and are as difficult to transplant as almost

^k Desfontaines.

^a Woodville.

^b Ray.

^c Linn. spec.

^d Linn. zeyl.

^e Linn. spec.

^f Id. ib.

^g Id. ib.

^h Ray.

ⁱ Linn. syst.

any plant at present known, which occasions its present scarcity in England.

The best method of cultivating this is by seeds, which should be procured as fresh as possible from the places of its natural growth, and sown in pots as soon as it arrives; the pots may be plunged into the ground, where they may have only the morning sun. If the seeds are sown before Christmas, there will be a chance of the plants coming up the following spring; but those which are not sown till towards spring, will remain in the ground a year; therefore the pots should be plunged into the ground, where they may have but little sun the following summer, and in autumn they may be removed, and plunged into an old tan-bed under a hot-bed frame, where they may be protected from severe frost; for although this plant is a native of the Alps and other cold mountains, yet as the seeds will not be covered with snow here, as they are in their native soil and situation, they are frequently spoiled by the inconstancy of the weather in England. When the plants come up, they should be placed in shade during summer; and in autumn they may be turned out of the pots, and planted in a border where they may have only the morning sun, for this plant will not thrive long in pots. If the winter proves very severe, it will be proper to cover the surface of the ground about their roots with mulch to keep out the frost. If the plants take root in the border, they should remain there undisturbed, and be only kept clean from weeds, for the ground about their roots should not be dug or dunged.

[Boxleaved Milkwort is not now regarded as a plant difficult of cultivation. It has creeping roots, and such plants are generally increased without difficulty, and so is this. Planted in bog earth on a shady border, it thrives extremely well, and spawns much, so that there is no necessity of having recourse to its seeds¹].

32. The seeds of the Snake-root Milk-wort rarely succeed; the best way therefore to propagate it, is to procure the roots from America, and to plant them in a bed of light earth, in a sheltered situation. In summer keep them clean from weeds, and cover the surface of the ground about their roots with old tanners' bark, or any other kind of mulch, in winter, to keep out the frost.—These directions apply to the forty-fourth species.

45. This is too tender to live in the open air in England, and not thriving in a pot, is difficult to preserve here. It is propagated by seeds procured from abroad. The seeds sent by Houstoun remained a year in the ground before the plants appeared, and the plants lived only one year.

[POLYGALA. See *Coronilla*, *Illecebrum*, *Viola*.

POLYGALOIDES. See *Polygala*.

POLYGALON. See *Coronilla* and *Hedysarum*.

POLYGALUM. See *Coronilla*.]

POLYCONATUM. See *Convallaria* [and *Uvularia*.

POLYCONIFOLIA. See *Corrigiola*.

POLYCONI GENUS. See *Illecebrum*.

POLYCONOIDES. See *Calligonum*.

POLYGONUM (of Pliny, *Πολύγωνον* of Dioscorides. From *πολυ* and *γωνυ*; on account of the many knots in the stalks).

Lin. gen. n. 495. Reich. n. 537. Schreb. n. 677. Tourn. t. 290. Juss. 82. Gært. t. 119. Bistorta. Tourn. t. 291. Persicaria. Tourn. t. 290. Gært. t. 119. Fagopyrum. Tourn. t. 290. Gært. t. 119. Helxine edit. prior.

Class. 8. 3. Octandria Tryginia.

Nat. order of *Heloraceæ*. *Polygonaceæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth turbinate, coloured internally, five-parted; segments ovate, blunt, permanent.

COR. none, unless the calyx be taken for it.

STAM. Filaments commonly eight, awl-shaped, very short. Anthers roundish, incumbent.

PIST. Germ three-sided. Styles commonly three, filiform, very short. Stigmas simple.

PER. none. Calyx involving the seed.

SEED single, three-sided, acute.

OBS. Stamens in some six, in others seven, in others five. Pistil in some species bifid.

P. frutescens has a two-leaved calyx, and three petals.

ESSENTIAL CHARACTER.

Cal none (or five-parted, coloured.) Cor. five-parted, calycine: (or none, if this be considered as the calyx.) Seed one, angular.

SPECIES.

* *Atraphaxoides*, with a frutescent stem.

1. *Polygonum frutescens*. Shrubby *Polygonum*.

Lin. spec. 516. Syst. 376. Reich. 2. 203. hort. ups. 95. Gært. fruct. 2. 182. Willch illustr. n. 8. Gmel. sib. 3. 60. t. 12. f. 2.

Atraphaxis inermis foliis planis. Lin. hort. cliff. 138.

Lapathum orientale, frutex humilis, flore pulchro. Tournef. cor. 38.

L. dauricum montanum fruticans, ramis late sparsis. Amm. ruth. 227.

Stem shrubby, calycine leaflets two reflex.

2. *Polygonum atraphaxoides*.

Thunb. prodr. cap. 77.

Atraphaxis undulata. Lin. & Diet. nostr.

Polygonum undulatum. Berg. cap. 135.

Flowers hexandrous digynous, leaves ovate waved.

** *Bistorta*, with a single spike.

3. *Polygonum Bistorta*. Great Bistort or Snakeweed.

Lin. spec. 516. Syst. 376. Reich. 2. 204. mat. med. 421. Woodv. med. bot. 100. t. 34. Hudf. angl. 168. Wither. arr. ed. 3. 382. Smith angl. 427. Engl. bot. t. 509. Curt. lond. 1. 22. Lightf. scot. 206. Relb. cant. n. 302. Sibth. oxon. n. 380. Abbot, bedf. 88. Fl. dan. t. 421. Hall. helv. n. 1559. Pallich pal. n. 382. Villars dauph. 3. 519. Allion. pedem. n. 2045. Krock. files. n. 603. Gmel. sib. 3. 40. Thunb. jap. 163. Ludw. est. t. 31. Kniph. cent. 1. n. 65. Blackw. t. 354. Mill. fig. t. 66. Plenck, ic. 306. Regn. bot.

Bistorta. Lin. hort. cliff. 150. ups. 95. Camer. epit. 683. Matth. 946. Dalech. 1285. Dod. pempt. 333.

B. major. Clus. hist. 2. 69. 1. Trag. 321. Ger. 322. 1. emac. 399. 1. Raii hist. 186. syn. 147. —vulgaris. Lob. obs. 156. 3. Park. theat. 392. 1. —rugosioribus foliis. Baub. hist. 3. 539. 1. —radice minus intorta. Baub. pin. 192. Mor. hist. f. 5. t. 28. f. 2. ord. 3. Mill. dict. ed. 7.

[*Serpentaria femina* & *colubrina*. Fuchf. hist. 774.

Colubrina. Lonic. 1. 202. 3.

β. B. media folio minus rugoso. Baub. hist. 3. 539. Raii hist. 186.

B. major radice magis intorta. Baub. pin. 192. Park. theat. 391. n. 2.

B. latifolia. Ger. 322. 3.

Serpentaria mas f. *Bistorta*. Fuchf. 773.

Stem quite simple with a single spike, leaves ovate waved decurrent.

4. *Polygonum viviparum*. Small or Alpine Bistort or Viviparous Snakeweed.

Lin. spec. 516. Syst. 376. Reich. 2. 204. fl. suec. n. 340. Hudf. angl. 169. Wither. arr. ed. 3. 383. Smith angl. 428. engl. bot. t. 669. Lightf. scot. 206. Fl. dan. t. 13. Gunn. norv. n. 9. Hall. helv. n. 1558. Scop. carn. n. 470. Villars dauph. 3. 520. Allion. pedem. n. 2046. Krock. files. n. 605. Gmel. sib. 3. 44. t. 7. f. 2. Kniph. cent. 2. n. 61.

Bistorta foliis lanceolatis. Lin. lapp. n. 152. hort. cliff. 150.

B. montana minor, &c. Amm. ruth. 169.

B. alpina media. Baub. pin. 192. Pluk. phyt. t. 151. f. 2. Raii hist. 187.

B. alp. minor. Baub. pin. 192. Amm. ruth. 169.

B. alp. minima. Hall. opusc. 234. Baub. hist. 3. 539. 1.

B. alp. f. minor. Camer. epit. 684.

B. minor. Clus. hist. 2. 69. 2. Ger. 322. 2. emac. 399. 2. Park. theat. 392. 4. Raii hist. 187. syn. 147. Petiv. brit. t. 5. f. 2. Mor. hist. f. 5. t. 28. f. ult.

β. B.

¹ Curtis, magaz.

- β. *B. minima alpina*, foliis imis subrotundis & minutissime ferratis. *Raii syn.* 147.
 Welch Bistort. *Petiv. brit. t.* 5. f. 3.
Stem quite simple with a single spike, leaves lanceolate rolled back at the edge.
 *** *Perficariae*, with a bifid pistil, or fewer stamens than eight.
5. *Polygonum virginianum*. *Virginian Polygonum*, or *spotted Virginian Arsmart.*
Lin. spec. 516. *Reich.* 2. 205. *hort. cliff.* 42. *Gron. virg.* 43. *Wach. ultr.* 258. (*Perficaria.*)
Perficaria virginiana. *Gært. fruct.* 2. 180.
Perf. frutescens maculosa virg. flore albo. *Park. theat.* 857. f. 6, 7. *Mor. hist.* 2. 589. *Raii hist.* 183.
Flowers pentandrous semidigynous, corollas quadrifid unequal, leaves ovate.
6. *Polygonum lapathifolium*. *Pale-flowered Perficaria*, or *pale-leaved dead Arsmart.*
Lin. spec. 517. *synt.* 377. *Reich.* 2. 205. *Ait. kew.* 2. 30. *Smith angl.* 425. *Sibth. oxon. n.* 383. *Abbot, bedf.* 89.
P. pensylvanicum. *Curt. lond.* 1. t. 24, 25. *Huds. angl. ed.* 1. 148. *Relb. cant. n.* 305.
P. perficaria ζ. *Huds. angl.* 170.
P. pallidum. *Wither. arr. ed.* 3. 381.
Perficaria mitis major, foliis pallidioribus. *D. Bobarti. Raii syn.* 145.
Hydropiper. *Lob. ic.* 315. 1. *Ger. emac.* 445.
 β. *Caule et floribus rubris.* *Curtis sub. t.* 25.
 γ. *Caule maculato.* *Curtis t.* 25.
Perficaria latifolia geniculata, caulibus maculatis. *Dillen. in Raii syn.* 145.
 δ. *Foliis subtus incanis.* *Curtis sub. t.* 25.
Perf. maculosa procumbens, fol. subtus incanis. *Dillen. in Raii syn.* 146.
White branched Arsmart. *Petiv. brit. t.* 3. f. 10.
Flowers hexandrous digynous, peduncles rugged, stipules awnless, seeds concave on each side.
7. *Polygonum amphibium*. *Amphibious Perficaria.*
Lin. spec. 517. *synt.* 377. *Reich.* 2. 205. *fl. suec. n.* 341. *Huds. angl.* 169. *Wither. arr. ed.* 3. 379. *Smith, angl.* 423. *engl. bot. t.* 436. *Curt. lond.* 4. t. 28. *Lightf. scot.* 207. *Relb. cant. n.* 303. *Sibth. oxon. n.* 381. *Fl. dan. t.* 282. *Hall. belv. n.* 1565. *Pollich pal. n.* 383. *Neck. gallob.* 186. *Villars dauph. 3.* 520. *Krock. files. n.* 606. *Gmel. fib. 3.* 46. *Allion. pedem. n.* 2047.
Perficaria Salicis folio perennis, Potamogeton angustifolium dicta. *Raii syn.* 145. *hist.* 184. *Tournef. inst.* 509.
Potamogeton angustifolium. *Ger.* 675. 2. *emac.* 821. 2. *Tabern.* 740.
Pot. Salicis folio. *Baub. pin.* 139. *Mor. hist. f.* 5. t. 29. f. 2.
Pot. seu Fontalis Perficariae foliis. *Baub. hist.* 3. 777.
Fontalis major longifolia. *Park. theat.* 1254. 2.
F. f. Potamogeton. *Dod. cereal.* 227.
Amphibious Arsmart. *Petiv. brit. t.* 3. f. 12.
Flowers pentandrous semidigynous, spike ovate.
8. *Polygonum filiforme.*
Lin. synt. 377. *Thunb. jap.* 163.
Flowers pentandrous digynous, spikes filiform, leaves ovate, stipules ciliate.
9. *Polygonum ocreatum*. *Spear-leaved Polygonum.*
Lin. spec. 517. *synt.* 377. *Reich.* 2. 206. *Gmel. fib. 3.* 51. n. 39. t. 8. (*Perficaria.*)
Flowers pentandrous trigynous, leaves lanceolate.
10. *Polygonum Hydropiper*. *Water or biting Perficaria* or *Arsmart.*
Lin. spec. 517. *Reich.* 2. 206. *mat. med.* 104. *fl. suec. n.* 343. *Huds. angl.* 170. *Wither. arr. ed.* 3. 379. *Smith, angl.* 426. *Lightf. scot.* 207. *Relb. cant. n.* 306. *Sibth. oxon. n.* 384. *Curt. lond.* 1. t. 26. *Hall. belv. n.* 1554. *Scop. carn. n.* 467. *Pollich pal. n.* 384. *Neck. gallob.* 185. *Leers herb. n.* 297. *Krock. files. n.* 607. *Villars dauph. 3.* 521. *Allion. pedem. n.* 2050. *Gmel. fib. 3.* 50. *Lour. cochinch. 240.* *Blackw. t.* 119. *Trew. comm. ncr.* 1737. t. 5. f. 7, 8. *Ludw. eet. t.* 168. *Plenck, ic.* 308.]

- Perficaria fol. lanceolatis, flor. hexandris, stylo bifido.* *Mill. diet. ed.* 7. n. 1.
Perficaria urens f. Hydropiper. *Baub. pin.* 101. *Tournef. inst.* 509. *Mor. hist. f.* 5. t. 29. f. 6.
 [P. vulgaris acris f. Hydropiper. *Baub. hist.* 3. 780. *Raii hist.* 182. *syn.* 144.
 P. vulg. acr. f. minor. *Park. theat.* 856. n. 1.
Hydropiper. *Fuchs. hist.* 843. *Matth.* 583. *Dod. pempt.* 607. *cer.* 269. *Ger.* 361. *emac.* 445.
Common Arsmart. *Petiv. brit. t.* 3. f. 5.
Flowers hexandrous semidigynous, leaves lanceolate waved unspotted, spikes filiform nodding, stem erect.
11. *Polygonum Perficaria*. *Spotted Perficaria*, *Dead or Spotted Arsmart.*
Lin. spec. 518. *synt.* 377. *Reich.* 2. 207. *fl. suec. n.* 342. *Huds. angl.* 169. *Wither. arr. ed.* 3. 380. *Smith, angl.* 424. *Curt. lond.* 1. t. 23. *Lightf. scot.* 207. *Relb. cant. n.* 304. *Sibth. oxon. n.* 382. *Fl. dan. t.* 702. *Hall. belv. n.* 1557. *Pollich pal. n.* 385. *Neck. gallob.* 185. *Leers herb. n.* 298. *Scop. carn. n.* 468. *Krock. files. n.* 608. *Villars dauph. 3.* 521. *Allion. pedem. n.* 2048. *Gmel. fib. 3.* 47. *Lour. cochinch. 240.* *Plenck, ic.* 307. *Blackw. t.* 118. *Kniph. cent.* 4. n. 63.
Perficaria florum staminibus senis, stylo simplici. *Lin. hort. cliff.* 42. *Gron. virg.* 157.]
Perf. flor. hexandris digynis, spicis ovatis oblongis, fol. lanc. acutis. *Mill. diet. ed.* 7. n. 2.
Perf. mitis. *Baub. hist.* 3. 779. *Lin. lapp. n.* 71.
Perf. vulgaris mitis f. maculosa. *Park. theat.* 857. 2.
Perf. mitis macul. & non maculosa. *Baub. pin.* 101. [Trew. comm. ncr. 1737. t. 5. f. 3—6. *Mor. hist. f.* 5. t. 29. f. 1, 2.
Perf. maculosa. *Ger.* 361. 2. *emac.* 445. 2. *Raii hist.* 183. *syn.* 145.
Spotted Arsmart. *Petiv. brit. t.* 3. f. 37.
 β. *Perf. folio subtus incano.* *Tournef. inst.* 510. *Dillen. in Raii syn.* 145. *Lin. spec.* 518. γ. *Hall. belv. n.* 1556.
Spotted hoary Arsmart. *Petiv. brit. t.* 3. f. 8.
 γ. *Perf. foliis Salicis albæ vulgaris.* *Buddl. hort. succ.* 4. f. 20. *Dillen. in Raii syn.* 145.
Silver Arsmart. *Petiv. brit. t.* 3. f. 9.
Flowers hexandrous semidigynous, spikes ovate-oblong erect, peduncles even, stipules ciliate.
12. *Polygonum minus*. *Small creeping Perficaria.*
Huds. angl. ed. 1. 148. *Curt. lond.* 1. t. 28. *Wither. arr. ed.* 3. 380. *Smith, angl.* 426. *Relb. cant. n.* 307. *Sibth. oxon. n.* 385. *Abbot, bedf.* 89. *Lin. spec.* δ. *Hall. belv. n.* 1555.
P. strictum. *Allion. pedem. n.* 2051. t. 67. f. 1.
P. Hydropiper β. *Huds. angl.* 170.
Perficaria pusilla repens. *Ger. emac.* 446. 3. *Park. theat.* 857. *Raii hist.* 183. *syn.* 145.
P. minor. *Baub. pin.* 101. *Mor. hist. f.* 5. t. 29. f. 5.
 β. *Perf. angustifolia ex singulis geniculis florens.* *Raii syn.* 145. 3?
Flowers hexandrous submonogynous, leaves linear-lanceolate flat, spikes filiform almost erect, stem rooting at the base.
13. *Polygonum barbatum*. *Bearded Polygonum.*
Lin. spec. 518. *synt.* 377. *Reich.* 2. 208. *Gmel. fib. 3.* 52. *Thunb. jap.* 165. *prodr.* 77. *Lour. cochinch. 241.* *Burm. ind.* 89. *Retz. obs.* 4. 25. n. 75.
Perficaria maderaspatana, longiore folio, hirsuta. *Pluk. phyt. t.* 210. f. 7?
Velutia-modela-mucu. *Rheed. mal.* 12. 145. t. 77.
Flowers hexandrous trigynous, spikes rod-like, stipules truncate setaceous-ciliate, leaves lanceolate.
14. *Polygonum tinctorium*. *Dyer's Polygonum.*
Ait. hort. kew. 2. 31. *Lour. cochinch. 241.*
Flowers hexandrous trigynous, spikes rod-like, stipules smooth contracted truncate ciliate, leaves ovate sharpish smooth.
15. *Polygonum orientale*. *Oriental Perficaria.*
Lin. spec. 519. *Reich.* 2. 208. *Thunb. jap.* 166. *Kniph. cent.* 4. n. 62. *Curt. mag.* 213. *Krock. files. n.* 609. *Gært. fruct.* 2. 182.

- Perficaria florum staminibus sex pluribusque, stylo duplici. *Lin. hort. cliff. 42. upf. 96.*
 Perf. fol. ovato-lanceolatis acutis, flor. pentandris, caule erecto. *Mill. dict. ed. 7. n. 4. fig. 1. 201.*
 Perf. orientalis, nicotianæ folio, calyce florum purpureo. *Tournef. cor. 38. æt. gall. 1703. Comm. rar. t. 43.*
 [Schovanna modela muccu. *Rheed. mal. 12. 147. t. 76.*
Flowers heptandrous digynous, leaves ovate, stem erect, stipules rough-haired salver-shaped.
 16. Polygonum pensylvanicum. *Pennsylvanian Perficaria. Lin. spec. 519. syst. 377. Reich. 2. 209.*
Flowers octandrous digynous, peduncles hispid, leaves lanceolate, stipules awnless.
 **** Polygonæ with undivided leaves, and octandrous flowers.
 17. Polygonum maritimum. *Sea Polygonum or Knot-grafs. Lin. spec. 519. Reich. 2. 209. Thunb. prodr. 77. Kniph. cent. 11. n. 85. Camer. epit. 691. Allion. pedem. n. 2054. Villars dauph. 3. 523. Krock. files. n. 610. Desfont. atlant. 332.*
P. marit. latifolium. Baub. pin. 281. Tournef. inst. 510. Zannich. t. 229. Mor. f. 5. t. 29. f. 3. Lob. ic. 419.
P. maritimum. Baub. hist. 3. 376.—majus. Park. theat. 444.
Flowers octandrous trigynous axillary, leaves oval-lanceolate evergreen, stem suffrutescent.
 18. Polygonum aviculare. *Common Knot-grafs. Lin. spec. 519. syst. 378. Reich. 2. 209. mat. med. 105. hort. cliff. 150. fl. suec. n. 339. Hudf. angl. 171. Wither. arr. ed. 3. 383. Smith angl. 429. Curt. lond. 1. t. 27. abr. t. 20. Lightf. scot. 208. Relb. cant. n. 308. Sibth. oxon. n. 386. Fl. dan. t. 803. Hall. helv. n. 1560. Neck. gallob. 184. Scop. carn. n. 471. Pollich pal. n. 386. Krock. files. n. 611. Villars dauph. 3. 522. Allion. pedem. n. 2053. Gron. virg. 44. Gmel. fib. 3. 40. n. 32. Thunb. jap. 166. Lour. cochinch. 241. Desfont. atlant. 333. Blackw. t. 315. Regn. bot. Plenck, ic. 309. Fl. rust. t. 91.*
P. latifolium. Baub. pin. 281. Tournef. inst. 510. Mor. hist. f. 5. t. 29. f. 1.
P. f. Centinodia. Baub. hist. 3. 374. t. 375. 1.
P. mas. Fuchf. hist. 614. Dod. pempt. 113. 1. Lob. obs. 228. 3. ic. 419. Camer. epit. 638. Matth. 951.
P. masculum. Trag. 391.
P. mas vulgare. Ger. 451. emac. 565. Raii hist. 184. syn. 146.
P. majus. Tabern. ic. 832.
P. mas vulg. majus. Park. theat. 443. 1.
Common Knot-grafs. Petiv. brit. t. 10. f. 1.
β. Pol. brevi angustoque folio. Baub. pin. 281. Raii syn. 146.
P. mas minus. Ger. 451.
Short-leaved Knot-grafs. Petiv. brit. t. 10. f. 1.
γ. Pol. oblongo angusto folio. Baub. pin. 281. Raii syn. 146. Linn. lapp. n. 153. Tabern. ic. 833.
Narrow Knot-grafs. Petiv. brit. t. 10. f. 4.
δ. Pol. fol. rotundo. Dillen. in Raii syn. 147.
Thick-set Knot-grafs. Petiv. brit. t. 10. f. 2.
ε. Pol. marinum. Raii syn. 147.
Flowers axillary, leaves elliptic-lanceolate rugged at the edge, nerves of the stipules remote, stem procumbent herbaceous.
 19. Polygonum erectum. *Upright Polygonum. Lin. spec. 520. Reich. 2. 210.*
Flowers axillary, leaves oval, stem erect herbaceous.
 20. Polygonum articulatum. *Jointed-spike Polygonum. Lin. spec. 520. Reich. 2. 210.*
Spikes jointed paniced, stipules sheathing truncated.
 21. Polygonum divaricatum. *Divaricated Polygonum. Lin. spec. 520. syst. 378. Reich. 2. 210. Kniph. cent. 11. n. 77. Fabric. helmst. 46. Hall. helv. n. 1564. Villars dauph. 3. 522.—P. alpinum. Allion. pedem. n. 2049. t. 68. f. 1.*

- Helxine fol. lanceolatis, caule diffuso. Lin. upf. 96.]*
Perficaria flor. octandris trigynis racemosis, fol. lanceolatis, caule divaricato patulo. Mill. dict. ed. 7. n. 3.
Fagopyrum orientale ramosum & multiflorum, Perficariae folio. Tournef. cor. 39. [Buxb. cent. 2. t. 31.
Flowers racemed, leaves lanceolate, stem divaricated patulous.
 22. Polygonum undulatum. *Wave-leaved Polygonum. Lin. syst. 378. Murr. in comm. gott. 1774. p. 34. t. 5.*
P. fibricum. Lin. suppl. 228.
Flowers racemed, leaves lanceolate acuminate waved.
 23. Polygonum ferratum. *Notch-leaved Polygonum. Lin. spec. 517. Reich. 2. 211. Shaw. afr. 489.*
Leaves crenate.
 ***** Helxine with subcordate leaves.
 24. Polygonum chinense. *Chinese Polygonum. Lin. spec. 520. syst. 378. Reich. 2. 211. Burm. ind. 90. t. 30. f. 3. Lour. cochinch. 241. Thunb. jap. 166.*
Flowers octandrous trigynous, peduncles rugged, leaves ovate, bractes cordate.
 25. Polygonum sagittatum. *Prickly Polygonum. Lin. spec. 521. syst. 378. Reich. 2. 211. Gmel. fib. 3. 65. t. 13. f. 2. Thunb. jap. 167. Pluk. mant. t. 398. f. 5.*
Helxine caule aculeato, foliis sagittatis. Gron. virg. 44. Cold. noveb. 92.
H. caule erecto aculeis reflexis exasperato. Lin. hort. cliff. 151. t. 12.
Planta posterior e novo belgio. Laet. amer. 73. t. 74. Leaves sagittate, stem prickly.
 26. Polygonum arifolium. *Arum-leaved Polygonum. Lin. spec. 521. syst. 378. Reich. 2. 211. Thunb. jap. 168. Pluk. amalth. 87. t. 398. f. 3. 4.*
Planta prior e novo belgio. Laet. amer. 73.
Leaves hastate, stem prickly.
 27. Polygonum crassifolium. *Thick-leaved Polygonum. Lin. syst. 378.*
P. hastatum. Murr. in comm. gott. 1774. p. 37. t. 6.
P. fibricum. Laxm. in nov. comm. petrop. 18. p. 531. t. 7. f. 2.
Flowers octandrous trigynous, leaves hastate fleshy, stem decumbent unarmed.
 28. Polygonum perfoliatum. *Perfoliate Polygonum. Lin. spec. 521. syst. 378. Reich. 2. 212. Burm. ind. 90. t. 31. f. 2. Thunb. jap. 168. Lour. cochinch. 242. Pluk. phyt. t. 398. f. 1.*
Leaves triangular, stem prickly, stipules perfoliate-leafy spreading roundish.
 29. Polygonum tataricum. *Tartarian Polygonum. Lin. spec. 521. syst. 378. Reich. 2. 212. Gmel. fib. 3. 64. t. 13. f. 1. Lour. cochinch. 242. Lin. hort. upf. 96. cliff. 151. (Helxine.)*
Fagopyrum tataricum. Gært. fruct. 2. 182.
Fagotriticum sibiricum. Aët. Stockh. 1744. p. 117 t. 4.
Frumentum Saracenicum. Aët. nat. cur. 3. p. 1.
Leaves cordate-sagittate, stem unarmed erect, seeds somewhat toothed.
 30. Polygonum Fagopyrum. *Cultivated Polygonum or Buckwheat. Lin. spec. 522. Reich. 2. 212. mat. med. 105. fl. suec. n. 345. Hudf. angl. 172. Wither. arr. ea. 3. 384. Smith, angl. 430. Sibth. oxon. n. 387. Hall. helv. n. 1563. Neck. gallob. 183. Leers herb. n. 300. Krock. files. n. 612. Villars dauph. 3. 525. Thunb. jap. 169. Knor. del. 2. t. F. Mill. illustr. Regn. bot. Fl. rust. t. 46. Plenck, ic. 310.*
Erysimum Theophrasti, folio hederaceo. Baub. pin. 27. theat. 530.
Ocymum cereale. Tabern. hist. 276. Trag. 648.
Frumentum sarracenicum rectum, femine triangulo, nigro majore. Mor. hist. f. 5. t. 29. f. 1.
Fegopyron. Dod. pempt. 512. Lob. obs. 513. 3. Raii hist. 182. syn. 144.
Tragopyron. Ger. 82. emac. 89. Park. theat. 1141.
 9 F *Fagotriticum.*

- Fagotriticum. *Baub. hist.* 2. 993.
 Buck-wheat. *Petiv. brit. t.* 11.
Leaves cordate-sagittate, stem almost upright unarmed, angles of the seeds equal.
31. Polygonum Convolvulus. *Black Buck-wheat or Black Bindweed.*
Lin. spec. 522. *syst.* 379. *Reich.* 2. 213. *fl. suec.* n. 344. *Huds. angl.* 171. *Wither. arr. ed.* 3. 385. *Smith, angl.* 430. *Curt. lond.* 4. t. 29. *Lightf. scot.* 208. *Relb. cant. n.* 309. *Sibth. oxon. n.* 388. *Fl. dan. t.* 744. *Hall. belv. n.* 1561. *Scop. carn. n.* 469. *Neck. gallob.* 184. *Pollich pal. n.* 387. *Leers, herb. n.* 301. *Krock. fles. n.* 613. *Villars dauph.* 3. 524. *Allion. pedem. n.* 2055. *Gmel. fib.* 3. 62. *Pallas* 1. 39. *Thunb. jap.* 169.
Helixine caule volubili. Lin. lapp. n. 154. *hort. cliff.* 150. *Gron. virg.* 157.
H. femine triangulo. Baub. hist. 2. 157.
Fagopyrum vulgare scandens. Tournef. inst. 511.—
minus. Vaill. par. 52.
Fagopyrum scandens sylvestre. Raii syn. 144.
Fruentum farracen. alterum, &c. Mor. hist. f. 5. t. 29. f. 2.
Convolvulus minor femine triangulo. Baub. pin. 295.
C. minor Atriplicis folio. Park. theat. 172. 8. *Raii hist.* 182.
Convolvulum nigrum. Dod. pempt. 396.
Volubilis nigra. Tabern. ic. 876. *Ger.* 713. 4. *emac.* 863.
Trailing Buck-wheat. Petiv. brit. t. 2. f. 12.
Leaves cordate-sagittate, stem twining angular, calycine segments bluntly keeled.
32. Polygonum multiflorum. *Many-flowered Polygonum.*
Lin. syst. 379. *Thunb. jap.* 169.
Leaves cordate, stem twining angular, panicle of flowers branched.
33. Polygonum dumetorum. *Wood Polygonum.*
Lin. spec. 522. *syst.* 379. *Reich.* 2. 213. *Willch illustr. n.* 9. *Fl. dan. t.* 756. *Hall. belv. n.* 1562. *Pollich, pal. n.* 388. *Leers herb. n.* 302. *Krock. fles. n.* 614. *Villars dauph.* 3. 524. *Gmel. fib.* 3. 63.
P. scandens. Grim. isen. in nov. act. nat. cur. t. 3. p. 308.
Fagopyrum praelongum dumetorum, feminibus alatis duplici more dispositis. Dill. giff. app. 60.
F. scandens altissimum dumet. feminibus tribus alis pellucidis. Rupp. gen. 99.
F. sylvaticum scandens, flore foliaceo. Ponted. anth. 265.
F. majus scandens. Vaill. par. 52.
Leaves cordate, stem twining even, flowers keel-winged.
34. Polygonum scandens. *Climbing Polygonum.*
Lin. spec. 522. *syst.* 379. *Reich.* 2. 214.
Fagopyrum scandens americanum maximum. Tournef. inst. 511.
F. scand. caule rubente femine nigro. Gron. virg. 44. *Cold. noveb.* 93.
F. scand. f. Volubilis nigra major, flore & fructu membranaceis compressis. Sloan. jam. 1. 138. t. 90. f. 1.
Fagotriticum volubile majus virginianum. Pluk. phyt. t. 177. f. 7.
Leaves cordate, stem erect, scandent.

35. Polygonum ciliatum.
Lour. cochinch. 243.
Flowers ostandrous trigynous, stipules striated blunt ciliate, spikes very short.
36. Polygonum odoratum.
Lour. cochinch. 243.
Flowers ostandrous trigynous, spikes long terminating, root creeping.

DESCRIPTIONS, &c.

The flowers in *Bistorta* are in terminating spikes, nine-stamened, three-styled, with a triangular seed and a twice-turned root. In *Perficaria* they are spiked and paniced, axillary and terminating, with five, six, seven or eight stamens and two styles or sometimes three styles, with an ovate seed. In *Polygonum* *Tournef.* they are axillary, eight-stamened, three-styled, with a

round seed. In *Fagopyrum* corymb-paniced, eight-stamened, three-styled, with a triangular seed^m. The outer crust of the seed is thick and hard enough in several species of *Polygonum* to be accounted a nucamentaceous pericarp.

1. Calyx five-leaved; leaflets when ripe equal or unequal, coloured or uncoloured, but constantly loose from the seed. Corolla none. Stamens eight. Germ superior. Styles three. Pericarp none, except the outer crust of the seed. Seed ovate-acuminate, three-sided, shining, of a very dark chestnut colour, fastened to the bottom of the calyx: outer cover crustaceous-coriaceous; inner membranaceous: albumen farinaceous, very white: embryo on one side: cotyledons short, curved, incumbentⁿ.

Native of Siberia. Introduced in 1770, by Monf. Richard. It flowers in July^o.

2. See the description, &c. under *Atraphaxis undulata*.

3. Root perennial and not easily extirpated, somewhat woody, more or less bent or crooked, whence its names *Bistort Snakeweed* and *Adder's-wort*, outwardly of a chestnut, inwardly of a flesh-colour, furnished with numerous fibres and creepers. Stem from one to two feet high, quite simple, straight, upright, round, smooth, swelling at the joints. Leaves waved, veiny, entire, smooth, of a fine green, and glaucous beneath, their base running down so as to render the footstalk winged. The bottom leaves are rather cordate-lanceolate. The stalks of the stem-leaves are dilated and sheathing, or arise from long sheaths inclosing the stem; these sheaths are membranous and withered at top, and the mouth is oblique. Spike solitary, terminating, cylindrical, blunt, nearly upright, composed of many beautiful pink-coloured flowers, having the proper number of stamens and styles that belongs to the genus, and standing on a slender red pedicel, with a pair of membranous bractes at the base^p: the lower of these is three-cusped, the middle point running out into a kind of awn: pedicels longer than the calyx^q. Each pair of bractes (or common calyx of two valves) contains two flowers, one on a pedicel, the other sessile surrounded with a kind of proper cup, thin, membranous, nearly cylindrical, with an even very entire mouth. One of the bractes (or valves) is large, truncate, the other smaller and terminated by a skinny projection^r. The nectary is several small red glands in the bottom of the calyx. Filaments longer than the calyx^s. Anthers double, the two parts being only united by the filaments^t; they are of a purplish colour. Germ deep red: styles the same length with the stamens: stigmas small and round. Seed three-sided, pointed, dark brown, and shining as if varnished^u.

Native of many parts of Europe, Siberia, and Japan. In Britain it is most common in the northern parts, particularly in moist meadows, where it is often a noxious weed, frequently forming large patches, and not easily extirpated; it flowers in May and June. Near London it occurs at Battersea, and in a meadow by Bishop's-wood near Hamstead; in meadows about Uxbridge; near Rickmansworth in Hertfordshire; Hyde Mill, Luton, and Thurleigh in Bedfordshire; banks of the Isis beyond Isley, and near Gosford-bridge in Oxfordshire; Ham-green near Mathon and Martley in Worcestershire; near the infirmary, Stafford; closes near Howes house, Whitwell and Shelford, Cambridgeshire; Brome and Heigham in Norfolk; Tamworth and Fazeley in Warwickshire; near Derby; Cofgrave in Northamptonshire: Lenton in Nottinghamshire; about Sheffield, Hallifax, Bradford and Settle in Yorkshire, very common; Kendal in Westmoreland; near Newcastle upon Tyne. In Scotland, about Inverary.

The root of *Bistort*, being one of the strongest vegetable astringents, might well be applied to the purpose of tanning leather, if it could be procured in sufficient quantity. The young shoots are eaten in herb

^m Jussieu. ⁿ Cærtner. ^o Hort. kew. ^p Smith.
^q Curtis. ^r Withering. ^s Curtis. ^t With.
^u Curt's.

pudding in the north of England, where the plant is known by the name of *Easter Giant*: and about Manchester they are substituted for greens, under the name of *Patience Dock*^x.

The root was formerly considered to be alexipharmic and sudorific; but its uses seem only to be derived from its styptic powers. Dr. Cullen frequently employed it in intermittent fevers; and gave it both alone and with Gentian, to the quantity of three drams a day. The dose of the root in substance is from a scruple to a dram^y.

4. This has the same habit with the preceding, but is much less. Stem a hand or hardly a span in height, (according to Villars only two or three inches). Leaves linear-lanceolate, veined, sometimes hirsute underneath; the root-leaves often elliptic-roundish^z; stem-leaves linear, arising from a sheath, which incloses the stem, and is terminated by a blunt membrane^a. Spike linear, blunt. Flowers rose-coloured, (whitish, *With.* often white, seldom purple, *Krock.*) with eight stamens and three styles^b, the lower ones frequently changing, as Clusius, Boccone, Linneus, &c. observe, into vegetating bulbs, whence the trivial name of the plant: these bulbs are darkish purple, ovate, mealy and white within^c. Germ acutely three-sided. The seeds are seldom perfected^d.

According to Scopoli, the leaves are lanceolate; the spike slender, two inches long, with the axis three-cornered; peduncles solitary, shorter than the calyx, which is white; bracte ovate, acuminate, permanent; stamens eight, with the filaments alternately shorter; anthers two-horned, of a dusky rufous colour; styles two terminated by a pellucid ferruginous globule.

The roots of this species have the same qualities with the preceding; they are eaten by the northern nations, and in some parts of Siberia and Tartary^e.

Plants cultivated during four years in a garden constantly produced perfect seeds in July, and flowered as constantly a second time in September. These latter germs vegetated on the stem^f.

Native of many parts of Europe, in mountainous pastures. In England, in several parts of Westmoreland, as at Crosby Ravensworth, found by Mr. Lawson, in fields between Shap and Hardingdal, by Mr. Gough; shewn to Mr. Ray by Thomas Willisel, near Wherf, near the foot-way leading thence to Settle; on the edge of Lemer water at Carr End, Wensley Dale by Mr. Curtis. In Scotland not unfrequent in dry stony pastures by the sides of mountains, as about the pass of Killicranky, near Blair, about Lock Rannoch in Perthshire, Loch Urn in Inverness-shire, &c. and on Benhuardal, in Strath, in the isle of Skye^g. Dr. Smith found it near the top of Ben Lomond.

Welsh Bistort is a small variety, about four inches high, with the root-leaves roundish and minutely serrate. It was found by Lhwyd, on a very high rock near Lhan-berys^h.

5. Stems hard, round, green, with great joints on them. Leaves large, broad, dark blueish green, with long points on them, often spotted, but often also without marks, many six inches long or more, and three inches and a half broad, with sundry compassing veins from the midrib, and others smaller transverse. At the tops of the stalks, and from the joints of the leaves, spring spikes of white flowers, succeeded by flat, black, shining seeds. Root perennial, consisting of a great bush of long black fibresⁱ.

Calyx one-leafed, four-cleft. Stamens five. Germ superior. Styles two, filiform. Seed ovate, lenticular-compressed, very smooth and shining, of a pale chestnut colour. Outer coat crustaceous, thin, brittle; inner membranaceous, with a ferruginous mark at the base. Embryo on one side: cotyledons ovate-lanceolate, accumbent, cutting one side of the albumen with a vertical cleft^k.

Native of North America. It was cultivated in 1640 by Mr. John Morrice, as appears from Parkin-

son^l. Ray also had it in his little garden at Cambridge: It flowers in August and September.

6. Root annual. Stem about three feet high; round, smooth, hollow; branched; the branches spreading, swelling very much above the joints; patulous and sometimes decumbent. Leaves ovate-lanceolate; smooth above, sometimes spotted, underneath dotted with small glands, and often pubescent, edged with little hairs: petioles hairy underneath; and slightly rugged. Stipules nerved at the base; not terminated by any hairs, but sometimes subciliate. Spikes short, blunt, when the seeds are ripe drooping a little. Peduncles rugged with short glanduliferous hairs. Flowers of a greenish colour, (or pale red) on short peduncles; growing thickly together. Stamens a little shorter than the corolla. Style divided nearly down to the base. Seed heart-shaped, pointed, flat, with a depression in the middle, shining, sometimes obtusely triangular.

Mr. Curtis has fully discriminated this species from *Polygonum Persicaria*, of which Haller considers it as a variety, by the following circumstances. That usually grows by the sides of moist ditches; this prefers a more luxuriant soil, and is common on dunghills: it is not a variety however arising merely from this circumstance, Mr. Curtis having seen *Pol. Persicaria*; *Hydropiper* and this, all growing by the side of a stream, within six inches of each other. In its most common state, as described above, it is much larger than *P. Persicaria*, and its joints are more swelled; its stipules are much more strongly ribbed at bottom, and have no ciliae; its leaves are broader, the veins somewhat deeper, and more strongly marked; the hairs on the edges of the leaves more visible, but particularly so under the petiole, to which they give a manifest roughness; in the uppermost leaves the under side is generally dotted with very minute glands, whilst in the lowermost it is covered with a kind of down, which, contrary to what Linneus asserts, is never in *Pol. Persicaria*, but in this species is always seen more or less predominant; the peduncles are thickly beset with little yellowish glands on short foot-stalks; which sometimes extend half down the plant, this appearance never, or very rarely occurs in *P. Persicaria*: the flowers are of a pale or greenish hue, and form thicker and larger spikes than in *P. Persicaria*, and in their mature state are so heavy as frequently to hang down a little: the style is divided nearly down to the germ, whilst in *P. Persicaria* it is divided only half way: in that species, the seeds are either triangular, or of a pointed oval shape, with a little convexity on each side; in this it is flat, with a depression on each side, it is also larger and broader; now and then a seed occurs, forming an unequal triangle, but these are very rare; whilst the triangular seed is most frequent in *P. Persicaria*.

Mr. Hudson first supposed this to be the *pen-sylvanicum* of Linneus, but afterwards considered it as a variety of *P. Persicaria*. Dr. Withering has made it a distinct species, under the name of *pallidum*. But it is now ascertained to be the same with the *lapathifolium* of Linneus; which he says is found in France; but he did not know that it is indigenous of England, and gave Bobart's name, in Ray's synopsis, to his *pen-sylvanicum*, which is a native of North America.

β. The variety with a red stalk and red flowers is often found on dunghills and in corn fields, and is like the true species in every respect excepting its colour, but the red of the flowers is not so bright.

γ. This not only differs in having its stalk spotted with red, but the spikes are much more slender, rather more so than those of *P. Persicaria*, of a red colour, but not so bright: the under side of the petiole is remarkably rough: and the seeds are smaller. It grows much in the same situations, and often with *P. Persicaria* in the ditches about St. George's Fields. When this variety grows in a rich soil, it is full as large as the species; but in a different soil and situation, as on the watery parts of Blackheath and Peckham Rye, it becomes much smaller, generally has its leaves white

^x Curtis, Withering.

^y Woodville.

^z Smith.

^a Woodward.

^c Withering.

^d Smith.

^e Linn. amœn. & succ. Gmel. Gunn. &c.

^f Gough in Withering.

^g Lightfoot.

^h Ray syn.

ⁱ Parkinson.

^k Gartner.

^l Hort. kew.

underneath, and may be taken for *P. Persicaria*, if not attentively examined: its spotted stalk, and the roughness of the petioles, will however readily discover it.

6. The variety with leaves hoary on the under side, is found here and there in corn-fields and other places, where the soil is not very rich, and is obviously enough distinguished.

Besides these striking varieties, it varies in size, according to the richness or poverty of the ground, and like *P. Persicaria*, the leaves are sometimes spotted and sometimes not.

Small birds are very fond of the seeds of this species and its varieties. The farmer should carefully weed them from his dunghills^m.

7. Root perennial, creeping. Stems rooting, erect or floating, a foot and half or more in length, generally simple, or branching only in the lower part, round, hollow, commonly red, with the joints a little swelled, invested with tubular membranous entire stipules, which sheath it above as well as below the insertion of the foot-stalks. Leaves alternate, petioled, lanceolate with a heart-shaped base, acute, ferrulate, and edged with hairs, harsh to the touch, deep or bright green, often spotted, somewhat waved. Peduncles solitary or two together, erect, red, on one side flattened, and slightly grooved. Spikes bright red, at first pyramidal, afterwards ovate, thickly set, bracted at the base: at first they are terminating, but at length the stem is protruded beyond them. Bractes ovate, membranous, pointed. The flowers are on short pedicels, and are composed of a rose-coloured funnel-shaped calyx, divided into five obtuse segments. Stamens only five, in the jaws of the calyx, of different lengths. Germ superior, red, bearing two styles, united and red a considerable way above the base, white in the upper part, tipped with red globular stigmas. Seed ovate, flattened on one side, pointed, glossy, brown or of a dark chestnut colour, with blunt cornersⁿ.

This is the only European species in the *Persicaria* division of this genus, which has a perennial root; it may also be distinguished from the others by the leaves being hollowed at the base, and fringed with hairs at the edges, they are also harsher to the touch, especially when the plant grows out of the water; its stipules more closely surround the stalk, which has generally two spikes, neither of them perfectly terminating; these spikes are more pyramidal when young, and of a brighter red colour than any of the species related to it; when it grows in the water the whole plant becomes smoother, and is more disposed to blossom; it is also observed that the stamens are longer than the calyx when the plant grows on land, and shorter when it grows in the water, but this is by no means constant^o.

Native of most parts of Europe, in ponds, ditches, rivers, and sometimes on arable land. In water its long creeping roots run deep into the mud, throwing out whorls of fibres here and there, whilst the leaves float upon the surface, and the beautiful spikes of flowers, in July and August, are elevated above it. Here the leaves are smooth and of a bright green. Frequently however, as Ray observes, the roots are thrown out with the mud in clearing ditches, and if by that, or any other accident, the plant gets out of the water, the stems grow more erect, the leaves become narrower and hairy, and the flowers are more sparingly produced^p:

As a weed, few plants are more pernicious, for the roots not only creep, but penetrate so deep into the earth, that they are seldom or never eradicated: but as it flowers rarely on arable land, it is a more local plant than some of the same genus, the seeds of which are either sown, or introduced with manure. Water-fowl are fond of the seeds.

This species has the name of *amphibium*^{*} from its growing both on land and in water. We may conclude that the latter is its natural situation, from its seldom producing the fructification in dry places.

^m Curtis.

ⁿ Curtis, Smith.

^o Curtis.

^p Engl. bot.

^{*} Curtis.

From its floating leaves the older botanists conceived it to be a *Potamogeton* or *Pondweed*. Ray, more attentive to the fructification, ascertained it to be a *Persicaria*^q.

Villars informs us, that it was supposed in Alsace to be injurious to cattle, but he is of opinion that it is rather useful to them, on account of its acid antiseptic qualities. He remarks very justly, that all marshy situations being unwholesome, the plants which are most common there are accused of doing all the mischief.

8. Stem round, marked with obsolete raised lines, erect, villose with close-pressed hairs, ferruginous. Branches alternate, hirsute, erect. Leaves alternate, acute, entire, ciliate, nerved, villose, erect, an inch long. Petioles dilated at the base, embracing, sheathing. Stipules inflated, truncate, membranaceous. Spike terminating, drooping at the top, a span long. Flowers ovate at bottom, close at top, minute, opening in succession. Bractes embracing, bearded, three-flowered: within this two other bractes involving each flower, lanceolate, entire. Corolla (or rather calyx) four-parted almost to the base, smooth: segments ovate, half a line in length; the three upper ones red, bent towards the lower ones, which are white. Filaments white, inserted near the germ, a little shorter than the calyx, three shorter than the other two. Germ three-sided, superior. Styles two, awl-shaped, erect, the length of the filaments. Stigmas simple, blunt, patulous, white.

It is very nearly allied to *P. barbatum*, but the flowers have five stamens and two styles; the spikes are filiform, quite simple, and very long; the stipules have short ciliae; and the leaves are ovate, not elliptic.—Native of Japan, near Nagasaki; flowering in September and October^r.

9. The stipules are entire, ventricose, even sheaths, much wider than the stem. Leaves lanceolate, revolute. Flowers in racemes.

Native of Siberia, where it was found by Gmelin^s. Introduced in 1780, by Peter Simon Pallas, M.D. It flowers in July and is perennial^t.

10. Root annual, fibrous. Stem about two feet (or from one to three feet) high, branched, round, swelling above the joints, finally becoming very red, sometimes creeping at bottom. Leaves of a yellowish green colour and smooth. Stipules ciliate, obsoletely nerved. Spikes terminating, linear or slender, loose, nodding, (even before flowering.) Flowers pale red, (or green, but red towards the end) with glandular dots on the outside. Stamens the length of the calyx. Anthers white. Style divided to the middle or deeper. Stigmas blunt. Seed ovate-acuminate, compressed, of a chestnut colour^u.

Dr. Stokes remarks, that the whole plant is sprinkled with minute glandular dots, but even with the surface, and more obvious with a moderate than a higher magnifier, probably the seat of its very acrid property. Mr. Curtis adds, that these little cells or glands are more particularly observable on the calyx, which is accordingly more biting than any other part of the plant. From its hot acrid taste it has the name of *Hydropiper*, *Water Pepper*, *Biting Persicaria*, &c. Although the herb and calyx are so acrid, the seeds are insipid and nutritive.

It is the only *Persicaria* that has any pretensions to be an active medicine: given in infusion or decoction, it proves diuretic, and hence is used in the dropsy and jaundice; the distilled water is recommended by Boyle in the stone and gravel^x. The ashes of the plant, mixed with soft soap, is a nostrum for dissolving the stone in the bladder; but it may be reasonably questioned whether it has any advantage over other semicaustic preparations of the vegetable alkali. Its acrimony rises in distillation, and the distilled water, drank to the amount of two or three half pints daily has been found very effectual in some nephritic cases^y.

Linneus informs, that the plant will dye woollen cloth of a yellow colour: and that all domestic quadrupeds reject it.

^q Curtis.

^r Thunberg.

^s Linn. spec.

^t Hort. kew.

^u Curtis and Smith.

^x Curtis.

^y Withering.

It is native of most parts of Europe; and is found in great abundance in places that lie under water during the winter; flowering in September, generally a month later than *P. Persicaria*. From this it differs principally in its leaves, spikes, form and size of its seeds. Its leaves are of a yellower hue, more undulated, and never marked with any spots; its spikes are slender, and when the seeds are ripe, bend and hang down; (Mr. Woodward observes that they droop even before flowering) the seeds are much larger, more acuminate, and of a chestnut colour; the stipules are very evidently ciliate, though Haller makes the want of ciliae one of its striking characters, and Linneus calls them *submuticae*. Notwithstanding its obvious difference, Scopoli and Haller seem to entertain a doubt whether it be really distinct from *P. Persicaria* and *minus*. There are indeed some intermediate varieties which bring them very near together, and perhaps justify such suspicion. A variety of the *Hydropiper*, scarcely differing in any other respect but its insipidity, is now and then met with, in the same situation as we usually find the true species².

11. Root simple, fibrous. Stem upright, sometimes rooting at bottom, two feet (or from two to three feet) high, alternately branched, round, smooth, gradually thickened above the joints, often red. Leaves on very short petioles, spreading and bent down, lanceolate, acute, quite entire, the edge and midrib slightly hairy, otherwise smooth on both sides, having in general a large spot on the middle somewhat like a horse-shoe, or rather crescent-shaped. Stipules tubular sheathing, short, ribbed, terminated by long hairs, frequently full of a viscid liquid. Spikes terminating or axillary, blunt, on smooth peduncles. Flowers of a bright rose colour. Stamens the length of the calyx. Style divided to the middle into two, often into three parts. Seed shining, either subovate-pointed and slightly convex on one side, or three-sided¹.

Dr. Withering remarks, that the leaves have very minute bristles lying along the edge; that the common peduncles spring from the sheathing stipules at the joints of the stem; that the flowers are three or four together, included in a membranaceous fringed sheath, on short pedicels of different lengths, which are again inclosed in membranaceous sheaths; that the segments of the calyx are concave and unequal; the stamens sometimes five or seven, with two anthers upon one filament.

This species is very nearly allied to the *Lapathifolium*, but the style is divided only half way down, mostly into two parts, and then the germ is a little convex on each side; but sometimes into three parts, and then the germ is always triangular: the peduncles are quite smooth; the stipules are furnished with long ciliae, particularly towards the top of the plant: and it differs much in the form of the seeds. It may be distinguished from *P. Hydropiper* by the spikes, which in this are upright, and of an ovate shape more or less round^b. Common in ditches and marshes in most parts of Europe, flowering from July to September.

Its taste is slightly acid and astringent. Woollen cloth dipped in a solution of alum obtains a yellow colour from this plant. Goats, sheep and horses eat it, cows and swine refuse it^c.

Mr. Miller has mentioned this and the preceding species, together with *P. orientale* and *divaricatum*, under the name of *Persicaria*, in the seventh edition of his Dictionary; he has also noticed the *Bistorta*; and for *Fagopyrum* he refers to *Helxine*, which article is not to be found. In the eighth edition these are all omitted, the author having probably intended to bring them together under *Polygonum*, and having forgot it when he came to that article, as he has done in other instances.

12. Stems several, decumbent and rooting at the base, then becoming nearly upright, from a span to a foot in height, little branched, somewhat thickened above the joints, smooth, reddish. Leaves smooth on their upper surface, with scarcely any appearance

of veins. Stipules sheathing, ciliate. Spikes slender, almost upright or a little drooping, proceeding from each joint. Flowers few, pale, red on the outside, not dotted. Stamens the length of the calyx. Style bifid (or trifid) only at the top. Stigmas blunt. Seed ovate-acute or triangular, chestnut-coloured; nearly of the same size and shape as in *P. Persicaria*^d.

Linneus makes this a variety of *P. Persicaria*. Ray and Hudson consider it justly as a distinct species; and after the accurate researches of Mr. Curtis, it can scarcely be doubted.

In height, this seldom exceeds a foot, whereas the *Persicaria* often occurs a yard high; the stalk roots at bottom and is absolutely procumbent, whilst in *Persicaria* it is always upright; the leaves are much narrower, approaching rather to linear than lanceolate, and on their upper surface have much less appearance of veins; the spikes, instead of being ovate or nearly round and upright, are slender and a little drooping; and the pistil is slightly divided at top only.

It is very abundant in the watery parts of Tothill fields, Westminster, with *Sisymbrium sylvestre*, in September^e. It has been found on Putney-common by Dr. Goodenough; in a gravel-pit on Malvern-chace in Worcestershire, by Dr. Stokes; and on Costesfey-common, near Norwich, by Dr. Smith.

13. Stem herbaceous, rufous. Stipules sheathing, loose, set with strong bristles almost the length of the stipule itself. Spikes long, with the flowers remote, three from each turbinate bracte^f.

It differs from *P. filiforme* in having six stamens and three styles; the leaves elliptic and acuminate; the spikes shorter, wider, often divided or several approximating, and in having the stipules awned^g.

Thunberg has distinguished three varieties:

1. With the stem round, upright, smooth, purple; the branches alternate, erect, like the stem. Leaves petioled, alternate, elliptic, acuminate, entire, ciliate, villose especially on the nerves, which are parallel, and the midrib is thick; they are three inches long, but the upper ones are less. Petioles dilated at the base, embracing, striated, very short. Stipules intrafoliaceous, cylindrical, hirsute, truncate, with upright awns, the length of the stipule. Spikes terminating, solitary or sometimes two together, very seldom three; filiform, erect, imbricate, a finger's length. Bractes as in *P. filiforme*.

2. Has the stem roundish, little villose; branches alternate, striated, erect, villose; leaves petioled, elliptic, acuminate, entire, ciliate, having parallel villose nerves, and two inches long or more. Spikes terminating, cylindric, divided, two or more together, an inch long. Seed dark, shining, smooth.

3. With a round, weak but upright, smooth stem; branches alternate, filiform, striated, from upright spreading, smooth. Leaves alternate, elliptic, acuminate, entire, ciliate, smooth, sprinkled with very frequent minute whitish dots, and an inch in length. Petioles, stipules and bractes as in *P. filiforme*. Spikes terminating, cylindric, solitary or two together, from three lines to an inch in length. Seed dark, smooth and shining.

All these varieties are found in Japan, in ditches and watery places. Thunberg found this species at the Cape of Good Hope, in Ceylon and Java.

Retzius also has three varieties. 1. From China, having the leaves and stipules hispid; the stipules and bractes ciliate. 2. From Malabar, smooth all over, the stipules only toothletted, the bractes quite entire. 3. From the Cape of Good Hope, smooth also all over, stipules and bractes ciliate.

14. Stem herbaceous, perennial, round, two feet high, manifold, nearly erect. Stipules sheathing. Leaves quite entire, smooth, juicy, alternate, bright green. Flowers bright red, in long branching subterminating spikes. Calyx five-parted, converging. Style semitrifid.

Native of China near Canton. Introduced, according to the Kew catalogue, in 1776, by John Blake, Esq.

² Curtis. ^a Curtis and Smith. ^b Curtis. ^c Linn.

^d Curtis and Smith. ^e Curtis. ^f Linn. ^g Thunberg.

It is used in China to dye a beautiful blue or green colour. According to Thunberg, *P. chinense*, *barbatum* and *aviculare* are cultivated in Japan for the same purpose^b.

15. Root composed of many strong fibres, growing in tufts. Stem jointed, eight or ten feet high, the lower part becomes woody, and as thick as an ordinary walking cane, of a fine green and a little hairy. Leaves alternate, often a foot long, and six inches broad in the middle, terminating in acute points, they have one strong midrib, and several transverse veins which run upwards towards the point; their surfaces are a little hairy, the upper of a bright green, and the under paler. Petioles broad, half embracing at their base. Flowers in close terminating spikes, seven or eight inches long, hanging downwards. Stamens five, six or sevenⁱ.

The stipules are deserving of notice, being unusual in their form, and making the stem look as if ruffled^k. Thunberg remarks that the margin of the stipules is entire and revolute.

The calyx is five-cleft and equal. There is a yellow gland at the base of each stamen. Seed subglobose, compressed a little on each side, black, shining. Outer coat crustaceous, hard, somewhat brittle: inner of a rusty red colour, with a brown spot at the base. Albumen farinaceous. Embryo on one side, bowed, inverted, yellowish^l.

There is a dwarf variety of it, and another with white flowers; it has been observed to vary also in point of hairiness^m. Linneus remarks that the East Indian plant is far more hairy than that from the Levant. It flowers from July to October, or till the frosts in autumn come on; soon after this the plant decays and diesⁿ. It was cultivated in 1707, by the Dutchess of Beaufort. The variety with white flowers was introduced in 1781, by Mons. de Wevelinchoven^o.

The seeds were first sent to Europe by Tournefort, who saw it growing in the Prince of Teflis's garden in Georgia, and afterwards in the garden of the monks of the Three Churches near mount Ararat. They cultivate this plant there, not only for the beauty of the flowers, but for its medicinal qualities, which are the same with those attributed to our common species^p.

16. This has the appearance and habit of *Pol. Persicaria*, but all the parts are larger and stiffer. Stem branched, angular. Leaves acuminate with the keel very rugged underneath. Stipules truncate. Peduncles rugged, with stiffish hairs secreting a clammy juice from the top. Spikes subracemose, with pedicelled florets.

Native of Pennsylvania, where it was observed by Kalm^q.

Ray's *Pers. mitis foliis pallidioribus* has been supposed to be the same with this; but that is now ascertained to be the same species with *Pol. lapathifolium* of Linneus.

17. According to Linneus, the Sea Knot-grass is so nearly allied to the common sort as scarcely to be distinguished from it. The flowers are in fours. Stem flatter on one side. All the parts larger and harder. Leaves ovate, coriaceous, evergreen, turning blue in drying. Stem shorter, hard, perennial.

Villars describes it as hard, robust, thick and somewhat woody; the stems reddish; the stipules very large; the leaves thick and in a manner fleshy; it is very distinct from the common sort.

Desfontaines says that the stems are prostrate, branched, knobbed; the leaves glaucous, somewhat fleshy, coriaceous, elliptic, quite entire, with the margin reflexed underneath. Stipules membranaceous, white, sheathing. Flowers axillary, three to five at a joint. Calyx five-parted; segments elliptic, with a white margin, but greenish in the middle. Stamens eight, shorter than the calyx. Styles three.

According to Krock, the calyx (or corolla as he

^b Loureiro.

^m Curtis.

ⁱ Mill. fig.

^o Mill. fig.

^k Curtis.

^q Hort. kew.

^l Linn. spec.

^p Gartner.

^r Mill. fig.

calls it) is bright purple; the seeds three-sided and black. About the solstice, bladders grow on it full of a red juice, which the Poles use to make an elegant red dye; hence Schwenkfeld calls this plant *Pol. coccygerum*.

Native of the sandy coasts of the Mediterranean sea, the Levant and Virginia.

Our Sea Knot-grass, is not this, but a variety only of the next.

18. Root annual, branched, somewhat woody; taking strong hold of the earth, of an astringent taste. Stems many, generally procumbent, divaricating, branched, leafy, round, striated, thicker at the joints, and separating there when pulled. Leaves alternate, elliptic-lanceolate, (or varying from ovate to lanceolate and even linear) attenuated at the base, smooth except at the edge where they are somewhat rugged. Stipules acute, scarious, with few remote nerves, sheathing. Flowers axillary, in clusters, two or three together, peduncled, small but not inelegant, variegated with white green and blood red. Stamens eight shorter than the calyx. Styles three, very short. Seed three-sided, shining, blackish^r.

Dr. Withering remarks, that the peduncles are short, but two of them longer than the third: that the calyx is double; the outer with five lanceolate segments inclosing the three florets, the inner inclosing only the third floret and sometimes the rudiment of a fourth. Desfontaines says, one, two or three flowers proceed from the same sheath.

This is one of the most common plants, especially in a sandy or gravelly soil, on banks, by roads and paths, and in corn fields; it frequently covers much ground, where the natural grass has been destroyed. Where it grows singly in a rich or newly thrown up soil, a single plant will often cover the space of a yard or more, and the leaves are then broad and large; but when it grows very thick together, it is in every respect smaller^s. On our sandy coasts it is found with large oval thick leaves, approaching to *Pol. maritimum*, but not perennial^t. Dr. Smith has satisfactorily distinguished our maritime variety from the true *maritimum* of Linneus and other foreign botanists. The latter has a shrubby perennial stem; wide elliptic glaucous leaves, scarcely rugged at the edge; but it differs particularly in having numerous approximating nerves to the stipules.

This plant has the generic name *Polygonum*, from the abundance of knots on the stem; the trivial name *aviculare* from the gratefulness of its seeds to small birds; the English name *Knot-grass*, from the knottiness of the stem, and because it is eaten by cattle, many such plants having obtained the name of *Grass*, though they bear no similitude to real grasses. Hogs eat it with great avidity, and hence it is known in many counties by the name of *Hogweed*. All other domestic quadrupeds are said to eat it. The seeds are useful for every purpose in which those of Buckwheat are employed; but they are much smaller.

This plant has been considered by old writers as possessing some medical virtue, particularly as an astringent, and was recommended in diarrhoeas, dysenteries, and hæmorrhages; but in the present practice it is justly superseded by more efficacious medicines^u.

Thunberg informs us, that this species, the *chinense* and *barbatum* are cultivated in Japan for dyeing^v.

19. This is an annual plant, native of Philadelphia, whence the seeds were sent by Kalm to Sweden.

20. Root annual, small, fibrous. Stem a foot high, with alternate branches towards the top, subdivided into a flowering panicle. Stipules solitary, sheathing, wider upwards, entire, truncate, not cloven. Leaves linear, smooth. Filiform very narrow spikes terminate the panicle, imbricated with sheathing turbinate truncated bractes: from each sinus arises a solitary, capillary peduncle, jointed at the base, coloured, one-flowered. Calyx flesh-coloured, five-parted, with the

^r Smith, Curtis.

^s Curt. With. Fl. rust.

^t Curtis and Fl. rust.

^u Travels, 4. 90. engl. edit.

bottom looser than in *P. aviculare*. Native of Canada, where it was found by Kalm^x.]

21. Root perennial, creeping, composed of many strong woody fibres. Stems about three feet high, divided into many confused branches, which are generally bent at each joint. Leaves about four inches long, and half an inch broad, smooth, of a light green, and ending in acute points. Flowers white, in loose spikes, branching out from the end of the stems^y.

[This beautiful species, says Villars, rises to the height of two or three feet. Stems branching and solid. Leaves wide, reddish and a little villose, with a sheathing membrane red at their base. Flowers of a whitish red, divided into four, five or six open segments. Stamens from five to eight. Pistils three.—Native of Siberia—Switzerland, Corsica, Dauphiné, Piedmont; if the different authors quoted mean the same plant.—Cultivated in 1759, by Mr. Miller^z.

22. This very much resembles the preceding. It is perennial and a native of Siberia^a. Murray has described it at length in the Gottingen Commentaries.

23. This was found in Barbary by Shaw.

24. Stem four-cornered, smooth, even, grooved, decumbent. Branches alternate, like the stalk, spreading very much. Leaves alternate, subcordate, ovate, acuminate, entire, smooth, an inch and half long. Petioles dilated at the base, sheathing, striated. Stipules bifid, membranaceous, generally longer than the petiole: segments lanceolate, setaceous. Flowers terminating, panicled on pedicels, subtrichotomous. Peduncles and pedicels four-cornered, grooved, smooth (scarcely rugged) erect. Calyx subglobular, five-parted, whitish. Filaments eight, erect, the length of the corolla: Style erect, simple at the base, but quickly trifid, white, of the same length with the stamens. Stigmas three, revolute, white^b.

According to Loureiro, the stem is herbaceous, suberect, three feet high, round, weak: the stipules lanceolate, smooth, sheathing: the leaves red at the edge, and somewhat curling: the flowers in subdivided, spreading racemes.

Linneus says, the stem is flexuose; the peduncles hispid, commonly trifid at the top; the flowers capitate; the stipules wide, quite entire, not ciliate, ovate; the heads of flowers roundish and few.—Native of the East Indies, China and Japan.

It is cultivated in China and Japan for dyeing, and produces a beautiful blue colour, much like that from Indigo. The leaves are dried, then pounded, and made into small cakes: with these, it is said, they dye linnen, silk and cotton. When they boil them for use, they add ashes: the stronger the decoction is made, so much the darker is the blue colour which is obtained, and the contrary^b.

25. Stem decumbent, branched, very short. Branches alternate, four-cornered, the corners sharp, prickly backwards, smooth, almost upright, a foot long. Leaves alternate, but opposite to the branch, entire, smooth, pale underneath, an inch long. Petioles unequal, commonly shorter by half than the leaf, prickly, spreading very much. Stipules bifid, a little inflated, quite entire, very short. Flowers terminating, collected together into a spherical head. Bractes ovate, acute, entire. Stamens seven. Pistils three. Seeds black, with equal, blunt, entire angles^c.

Linneus remarks, that it sometimes climbs up shrubs.

Native of North America; also of Siberia and Japan.—Cultivated by Mr. Miller in 1759^d.

26. Stem decumbent. Branches alternate, angular, smooth, from upright-spreading: angles unequal, several, prickly backwards. Leaves alternate, acuminate, villose and strigose, unequal, about an inch in length. Petioles prickly, one fourth of the length of the leaf. Stipules truncate, hirsute, ciliate. Flowers on the branchlets alternately aggregate. Bractes cili-

ate. Stamens seven, with three capillary styles. Stigmas globular. Seeds smooth and even, with the angles entire^e.

According to Clayton, the stem is scandent^f.

Native of Virginia and Florida; also of Japan.

27. This is a smallish plant scarce more than a span long. The stem is decumbent and flexuose, smooth, thick, round, reddish, and branching at the base: the branches are alternate, variously bent, and axillary: the stipules solitary, sheathing, truncated, and of a pale brown: the leaves linear-lanceolate, hastate, narrowed at the base, shortly footstalked, fleshy, punctated, almost without veins, except the rib, and very smooth: spikes terminal, emerging from the extreme axils, conglomerate, eight or ten-flowered: peduncles cornered, with very short bending pedicels. Corolla five-petalled, greenish-white, petals ovate, concave: stamens eight, filaments subulate. Pistils three. Germ single, red. Styles three. Stigmas clavate^g.

28. This resembles *P. sagittatum* and *arifolium*. Stem angular, with small recurved prickles; as have also the petioles. Stipules not sheathing, but spreading, ovate or roundish, quite entire. Leaves a little sinuate at the base, more in breadth than length, sometimes peltate. Peduncles at the top of the stem, few-flowered, prickly^h.

Stem shrubby, scandent but without tendrils, fifteen feet high, branched, with many inverted prickles on it; as there are also on the petioles and peduncles. Leaves quite entire, smooth except on the ribs and margin, which are prickly. Petioles long, alternate. Flowers whitish or blue, in simple, solitary, short, terminating spikes. Calyx membranaceous, bell-shaped, five-parted; the parts ovate. Filaments eight, very slender, fastened to the middle of the tube. Style trifid. Seed roundish, black, shining.

There is a variety, similar in habit, with a blue flower, which has a calyx and a corolla, both five-cleft, but the latter fleshy and almost closed.

It is used medicinally for resolving tumours, and in a wash for the itch: œconomically frequent at the table; mechanically for softening ivory and bonesⁱ.

Native of the East Indies, Japan and Cochinchina, in hedges.

29. Root annual. Stem herbaceous, two feet high. Leaves quite entire, smooth, few, alternate, on long petioles. Flowers white, on many-flowered, axillary and terminating peduncles; with oblong, curved common involucre. Calyx bell-shaped, five-parted. Stamens eight. Styles three. Seed three-sided, red^k; cordate at the base, pyramidal-mucronate at the top, toothed or repand at the angles, of a dirty ash-colour: outer coat crustaceous; inner membranaceous, with a brown mark at the base: embryo central; cotyledons leafy, transversely flexuose^l.

Native of Tartary and China.—Cultivated in 1759, by Mr. Miller^m.

30. Root annual, fibrous. Stem upright, somewhat flexuose, round, smooth, leafy, succulent, either wholly green or more frequently tinged with red, from a foot to eighteen inches in height, sometimes quite simple, but more often having small branches coming out singly and alternately from the axils. Leaves smooth, succulent, dark green, quite entire, sometimes waving on the edge; the lower ones are on petioles two inches in length, but these become gradually shorter till the upper leaves are sessile. Stipules short, quite entire, awnless. Racemes of flowers axillary and terminating, panicled, upright, shorter than the leaves, on slender peduncles an inch or more in length. The flowers make a handsome appearance, and are either quite white, or tinged with red; with age they become more red. Eight little glands surround the base of the germ. The eight filaments are of the same length with the calyx; four between the glands and the germ, and four between them and the calyx. The seed is naked, being scarcely covered at

^x Linn. spec.

^y Mill. dict. ed. 7.

^z Hort. kew.

^a Linn. suppl.

^b Thunb. jap. & Trav. 4. 91. engl. ed.

^c Thunb. jap.

^d Hort. kew.

^e Thunberg.

^f Linn.

^g Murr. in comm. gott.

^h Linn. spec.

ⁱ Loureiro.

^k Idem.

^l Gärtner.

^m Hort. kew.

the base, it is a three-sided pyramid, with the angles straight not sinuated^a.

Buck-wheat is supposed by some to have come originally from Africa, but it is generally allowed that we derived it from Asia. In China the flour of Buck-wheat is frequently made into the form of cakes^b. So it is also in Japan^c. It is not indigenous of Europe, though it has found its way into most of the European Floras, and occurs on dunghills and about cultivated fields. In England it is certainly not indigenous, nor will it bear the rigour of our winters. It flowers in July and August.

Besides *Buck* and *Buck-wheat* (or *Beech-wheat*, from the similitude of the seed, in form, to Beech-mast) it has the appellations of *Brank*, *Crap*, and *French Wheat*. Gerard has also the name of *Bullmong*^d. In French it is called *Bled noir* or *Sarrazin*.

The flour of Buck-wheat is made into thin cakes, called crumpits, in some parts of England, and it is supposed to be nutritious, not apt to turn acid upon the stomach^e.

The feed is excellent for horses, either whole or broken, mixed with bran, chaff or grains. A bushel goes farther than two bushels of oats, and mixed with at least four times as much bran, will be full feed for any horse a week. Four bushels of the meal, put up at four hundred weight, will fat a hog of sixteen or twenty stone in three weeks: giving him afterwards three bushels of Indian Corn or hog Peas, broken in a mill, dry, with plenty of water. Eight bushels of Buck-wheat meal will go as far as twelve bushels of barley meal^f.

Mortimer recommends, to feed the plant with milch cows just before it blossoms, and it is said to flush them with milk.

Sheep feeding on the green herb are said to become unhealthy. According to the Swedish experiments. Cows, sheep and goats eat it, swine and horses refuse it.

The seeds are excellent food for poultry.

A field of Buck-wheat furnishes a rich repast for Bees late in the season; hence Monf. Duhamel advises to move the hives in the autumn, to a situation where plenty of this plant is sown^g.

31. Root annual, fibrous, of a brown colour. Stem twining, often to the height of six feet; when destitute of support procumbent and about a foot in length, angular, striated, sometimes a little rugged, branched alternately towards the top. Leaves perfectly entire, smooth, petioled, on the lower part of the stem standing singly, on the upper part two or three together, the lowermost often coloured. Dr. Withering remarks, that their angles at the base are sometimes truncate. Stipules small, forming a sheath round the stem. Racemes peduncled, interrupted, having small leaves on them. Dr. Withering, who calls them flowering spikes, observes that they are longer than the leaves. Flowers in bundles, nodding, white, on the outside green and purple, the three outer segments bluntly keeled, and not having the keel dilated. The eight filaments are fixed into the bottom of the calyx, and are very short and tapering: anthers purple, twin. Style very short, not quite so long as the stamens; stigma forming a little head, composed of three lobes. Seed three-sided, very black^h.

Native of most parts of Europe, Siberia, Japan, &c. in corn fields, gardens and hedges: flowering from June to September.

The seeds afford excellent food for small birdsⁱ. They are indeed as good for use as those of the preceding species, are produced in greater quantity, and the plant bears cold better. According to the Swedish experiments, cows and goats eat it; sheep, swine and horses refuse it. Dr. Stokes says, a horse will eat it^j, and if sheep will eat the preceding, and goats eat both this and that, we may conclude that sheep will not refuse this. Very little dependance is to be placed on these observations in many cases.

^a Fl. rust. Smith, Haller, Leers, Ray.

^b Thunb. trav. 4. 85. engl. edit.

^c Withering.

^d Curtis, Smith.

^e Young's ann. 1. 199.

^f Curtis.

^g Staunton emb. 2. 6.

^h Fl. rust.

ⁱ Withering.

^j Withering.

32. Root tuberous, somewhat fleshy, fibrous, white. Stem climbing at bottom, flexuose, even; twining at top, filiform, smooth. Leaves alternate, petioled, subcordate, ovate, acuminate, entire, smooth; the lower ones an inch and half wide, subtruncated at the base, two inches long; the upper ones more cordate and smaller. Flowers panicle-racemed from the axils of the leaves. Panicle compound, spreading very much. Peduncles and pedicels capillary, divaricated. Bractes ovate, acute, entire.

It differs from *P. dumetorum*, which it resembles very much, in having minute blunt flowers, in a branched, racemed, very spreading panicle^k.

Native of Japan, where the root is esteemed as a cordial, and is used for that purpose raw; but it is said to taste best when roasted in the embers^l.

33. Root annual. Leaves cordate, with the lobes of the base rounded. Stem not striated. Panicle of a compound raceme, alternately bifarious. Anthers white^m.

Haller says, the principal difference between this species and *Pol. Convolvulus*, consists in the three membranaceous wide much elevated white wings of the three leaves which inclose the seed. It grows higher. Some of the flowers are in racemes from the axils, others are disposed in rather large many-flowered, spikes, hanging on long peduncles. The stems are striated.

According to Krocker, the stem is longer and more twining than in *P. Convolvulus*, and it is not striated. The lobes at the base of the leaves are more rounded. The flowers are rather panicle than racemed. The segments of the calyx are wider, winged, whitish and membranaceous.

Leers remarks, that this as well as *P. Convolvulus* has one short style, with three globular approximating stigmas; that the stem is very slightly striated; and that the membrane on the three outer segments of the calyx is waved.—Native of Germany, Switzerland, France, and Siberia.

34. Stems round, red, succulent, winding itself round trees and shrubs, seven or eight feet high, with alternate leaves towards the top, on petioles a quarter of an inch long, they are grass green, juicy, smooth, thick, an inch and a quarter long, and one inch over at the base. The flowers come out from the upper axils, very many, in spikes three inches long, on a very short peduncle; they are round, flat, swelled out in the middle, and green, having a thin white membrane round them, like a Parsnep seed: when the seed is ripe these membranes become somewhat larger, and the protuberant part in the middle turns brownⁿ.

Linneus observes, that the base of the petioles in this species, *Pol. dumetorum* and *Convolvulus* is perforated underneath by a pore.

Native of America.

It was cultivated in 1759 by Mr. Miller, is perennial, and flowers in August and September^o.

35. Stem herbaceous, simple, four-cornered, upright, slender, a foot and half high. Stipules embracing. Leaves ovate-lanceolate, quite entire, smooth, alternate, subsessile. Flowers terminating, pale red. Calyx bell-shaped, five-cleft. Seed three-sided, naked. Native of China.

36. Stem herbaceous, one foot high, nearly upright, simple. Stipules blunt, ciliate. Leaves lanceolate, quite entire, smooth, alternate, subsessile; having a sharp pleasant smell, and a hot biting taste like pepper. Flowers small, red, in long stiff spikes. Calyx funnel-form, five-parted. Filaments shorter than the corolla. Styles three, the length of the corolla, with very small globular stigmas. Seed subtriangular, acuminate at each end, within the shrivelled calyx.

Native of Cochinchina, in moist places, and cultivated all over the country, as an excellent sauce both for flesh and fish^p.]

^k Thunb. jap.

^l Linn. spec. & syst.

^m Thunb. trav. 3. 85.

ⁿ Sloane.

^o Loureiro,

^p Hort. kew.

PROPAGATION AND CULTURE.

3. Bistort may be propagated by planting the roots in a moist shady border, either in spring or autumn.

6, 7, 10, 11, 12, are common weeds, not admitted into gardens.

15. Oriental Persicaria rises from scattered seeds much better than when sown: but where they are sown, it should be in autumn, soon after the seeds are ripe: sown in the spring they rarely succeed, or if some plants come up, they seldom grow so strong. In the spring transplant them into the borders of the plantation or flower garden, giving them room. At the beginning of July prune off the side shoots, to make them advance in height, and preserve them within compass: when they are pruned up to five or six feet, they may then be permitted to shoot out side branches. This plant delights in a rich moist soil.

[It is distinguished no less for its superior stature than the brilliancy of its flowers; it will frequently grow to the height of eight or ten feet, and become a rival to the Sun-flower. It is commonly sown in the spring with other annuals; thinning the seedlings, when they appear, so as to stand a foot apart. It requires very little care, and will bear the smoke of London better than many other plants^f.

30. Buck-wheat seems to have been cultivated time out of mind in England. Gerarde, in 1597, informs us, that it is very common about Namptwiche in Cheshire, "where they sow it as well for food for their cattle, pullen (or poultry) and such like, as to serve instead of a dunging. It groweth likewise in Lancashire, about London, as also in Kent and Essex."

It is by no means so common a crop with us as in many parts of the continent: the county of Norfolk grows more of it than any other. One principal use of it is for cleaning foul land, and as a manure, ploughed in when fully grown^g. In a dry summer it is good fodder; and as a crop it will produce an equal quantity with oats, and sell for more money. The farmer may have any crop after it, especially wheat.

Winter Tares may be sowed in September, and mowed off as soon as convenient in the spring; then Buck-wheat may be sowed the second week in May, and ploughed in when in flower, which will be about the second week in July; lastly, sow Wheat, each on one earth. Or seed Turnep may be rolled in, harrowing with a light bush harrow.

Making Turneps succeed Buck-wheat ploughed, is good husbandry on light lands, where there is a difficulty in procuring manure; and upon heavy strong lands, that have been long under the plough, with two crops and a fallow. A heavy crop of Buck-wheat is certain to be procured on strong clay land, well pulverized, in the month of June, provided the summer proves tolerably dry, after the seed is sown.

There is no better way of laying down light lands to grass, than in the month of June to let Buck-wheat with grass seeds follow Swedish Turneps. Twelve pounds of white Clover and eight pounds of yellow Trefoil may be sown on an acre. One bushel is sufficient to sow an acre; but some go as far as two bushels^h.

After it is mown, it must lie several days, till the stalk be withered, before it be housed. It is in no danger of the seeds falling, nor does it suffer much by wet. It yields fifty or sixty bushels upon an acre in good landⁱ. Worlidge says, it was much sown in his time in Surrey.

POLYGONUM. See *Arenaria*, *Atraphaxis*, *Atriplex*, *Bufo*, *Coccoloba*, *Corrigiola*, *Dioscorea*, *Frankenia*, *Gypsophila*, *Herniaria*, *Illecebrum*, *Linum*, *Scleranthus*, *Spergula*, *Tillæa*, *Uvularia*.

Polygonum aquaticum. See *Lytbrum*.

———— bacciferum. See *Ephedra*.

———— fœmina. See *Hippuris*.

———— maritimum. See *Frankenia*.]

^f Curtis.

^g Fl. rust.

^h Young's Ann. 1. 199. p. 507. & n. 180.

ⁱ Worlidge.

POLYMNIA. (From Πολυ and μνιον, alga: an epithet of the sea, πολυμνια θαλασσα. It is also the name of one of the Muses, from πολυς and μνιος.)

Lin. gen. n. 987. Reich. n. 1070. Schreb. n. 1335.

Gartn. t. 174. Juss. 187. Tetragonotheca.

Lin. gen. ed. 6. n. 976. Wedelia. Jacqu. amer. 217.

Class. 19. 4. Syngenesia Polygamia Necessaria.

Nat. order of Compositæ Oppositifoliæ. Corymbiferæ, Juss.

GENERIC CHARACTER.

CAL. Common exterior spreading, larger, four or five-leaved, with ovate leaflets; superior eight or ten-leaved, with boat-shaped, erect leaflets.

COR. Compound radiate. Corollæ hermaphrodite many in the disk: female five or ten in the ray.

Proper of the hermaphrodite funnel-form, five-cleft: of the female ligulate two or three-toothed.

STAM. in the hermaphrodites, filaments five. Anther cylindric, tubular, a little longer than the corolla.

PIST. in the hermaphrodites: Germ very small; style filiform, the length of the stamens; stigma blunt. In the females, Germ ovate, biggish. Style filiform, the length of the tube. Stigmas two, acute.

PER. none. Calyx unchanged.

SEED in the hermaphrodites none; in the females solitary, obovate, gibbous, somewhat angular inwards, naked.

REC. chaffy, convex, imbricate: chaffs ovate, obtuse, the length of the florets, concave.

Obs. In Tetragonotheca and Wedelia the exterior calyx is four-leaved. Wedelia differs from the rest in having the petals of the ray emarginate, and the pappus of the seeds flat and ten-toothed.

ESSENTIAL CHARACTER.

Cal. exterior four or five-leaved: interior ten-leaved, the leaflets concave. Down none. Recept. chaffy.

SPECIES.

1. Polymnia canadensis. Canadian Polymnia.

Lin. spec. 1303. Reich. 3. 922. amoen. 3. 15. t. 1: f. 5. Gartn. fruct. 2. 429.

Leaves alternate hastate-sinuate.

2. Polymnia Uvedalia. Broad-leaved Polymnia.

Lin. spec. 1303. syst. 790. Reich. 3. 922. Fabric. helmst. 2. 145. Lin. hort. cliff. 424. hort. upf. 274. Gron. virg. 133. (Osteospermum) Pluk. phyt. t. 83. f. 3. Mor. hist. 3. 22. f. 6. t. 7: f. 55. (Chrysanthemum.)

Leaves opposite hastate-sinuate.

3. Polymnia Tetragonotheca. Narrow-leaved Polymnia.

Lin. syst. 790. Reich. 3. 922. Abbot, Georg. t. 69.

Tetragonotheca helianthoides. Lin. spec. 1273. Mill. dict.

T. Doronici maximi folio. Dill. elth. 378. t. 283: f. 365.

Leaves opposite spatulate subdentated.

[4. Polymnia abyssinica. Upright Polymnia.

Lin. syst. 790. suppl. 383. Ait. kew. 3. 269.

Leaves opposite sessile oblong-lanceolate subdentated, calyxes five-parted, all the florets seminiferous.

5. Polymnia Wedelia.

Lin. syst. 790. Reich. 3. 922. mant. 118. Jacqu. amer. pict. 106. t. 198.

Wedelia frutescens. Jacqu. amer. 217. t. 130:

Leaves lanceolate, stem shrubby.]

DESCRIPTIONS, &c.

1. This has an abiding root, which sends up many tall stalks, sometimes near ten feet in height. Leaves large, angular, sinuated, of a deeper green than those of the second sort. Flowers of a paler yellow colour and sessile. They appear late in the autumn, and are not followed by seeds in England. It grows naturally in several parts of North America. [Cultivated by Mr. Miller in 1768.]

2. Root perennial, running deep in the ground, sending up in the spring many stalks in proportion to their size; these in moist good ground will rise near ten feet high. Leaves large, angular, sinuated, eight or ten inches over, of a light green. Stems terminated by a cluster of yellow flowers fitting close, having very short foot-stalks; each having five female ligulate
9 H florets

florets in the border, and several hermaphrodite florets in the middle, encompassed by a double calyx, the outer having five spreading leaves, the inner ten erect ones. The flowers appear in october too late to produce seeds here. The stalks decay in winter.

Native of Virginia, whence Mr. Miller received the seeds. [It was cultivated in the Chelsea garden in 1712^k.

Petiver named this plant *Uvedalia* in honour of Robert Uvedale, LL.D. of Trinity College in Cambridge. He lived at Enfield, and cultivated a garden there, which appears to have been rich in exotic productions^l.]

3. Root perennial. Stems about two feet and a half high, branching towards the top. Leaves large, oblong, rough, closely embracing; they are a little sinuated on their edges, and are covered with small hairs. Each of the branches has one large yellow flower at the end, shaped like a Sun-flower; before it expands, covered with the inflated four-cornered calyx. The seeds rarely ripen in England; and the stems perish in autumn.

Native of Carolina. [Dillenius says, that it flowered from Carolina seeds, at the beginning of september 1726, in the Eltham garden. It had the name of *Tetragonotheca*, from its four-cornered calyx^m. Linneus and Aiton make it a native of Virginia; and Linneus (in his species) refers to *Gron. virg.* 128. Dillenius refers only to Ray, *hist.* 3. *app.* 244. n. 7.

4. Root annual (or biennial.) Stem herbaceous, from two to six feet high, round, the thickness of a finger, rugged, pressed close, dotted with oval convex brownish dots, sparingly branched at top. Leaves like those of *Coreopsis cernua*, embracing, acute, rugged on both sides. Peduncle terminating, from the forking of the future plant, erect, solitary, one-flowered, leafless. Common perianth five-leaved, spreading, very large: leaflets cordate, subferrate, gaping at the base. Corolla yellow: florets of the ray wide, three-toothed, blunt, pubescent at the base; those of the disk standing out, pubescent at the base. Anthers testaceous, longer than the corolla. Stigmas standing out, revolute, in the disk as well as the ray. Seeds oblong, naked. Receptacle convex, chaffy. It has the appearance of *Coreopsis cernua*.

Native of Abyssiniaⁿ:—of Africa, where it was found by James Bruce, Esq. Introduced in 1775. It flowers here in april and may^o.

5. This is a shrubby scandent plant, with round smooth woody slender branched brachiate stems. Leaves ovate, acute, slightly ferrate, rugged on both sides, on a short petiole, opposite, on the younger branches. Peduncles one-flowered, solitary, subterminating, new branchlets springing out at their base. Flowers yellow, less than an inch in diameter. The outer chaffs are larger, and seem as if they were the inner leaflets of the imbricate calyx; but on a more accurate inspection it is plain that they are the chaffs of the radical florets, and that each floret has its proper chaff^p.

It is very nearly allied to the third species, although the seed has a plane ten-toothed crown^q.

The outer calyx is four-leaved only. It differs from the other species, in having the petals of the ray emarginate, and a plane ten-toothed pappus to the seeds^r.—Native of Carthage in New Spain.]

PROPAGATION AND CULTURE.

1, 2. These plants are propagated by seeds, procured from the countries where they grow. If they arrive in the spring, and are then sown, the plants seldom come up until the following spring: whereas if they could be obtained in november, and were immediately sown, the plants would appear the following spring.

Sow the seeds in a bed of light ground in the open air; when the plants come up, thin them, and keep them clean till the following autumn; then take the roots up carefully, and transplant them where they are

^k Hort. kew.

ⁿ Hort. elth.

^p Jacquin.

^l Pulteney, biogr. 2. p. 30.

^m Linn. suppl.

^q Linn. mant.

^o Hort. kew.

^r Linn. syst.

to remain; allowing each plant at least three feet. Keep them clean, and dig about them every spring.

3. Sow the seeds as directed for the two preceding, and manage it in the same manner. The roots will abide through the winter in the open ground, in a warm situation. In very severe weather they should be covered with rotten tan or peas haulm. They will live three years, but as they do not increase it will be best to procure seeds from abroad annually.

[POLYMNIA CARNOSA & SPINOSA. See *Didelta*.

POLYPARA. See *Houttuynia*.]

POLYPODIUM. (Πολυποδιον of Theophrastus and Dioscorides: from πολυ and ποδος, many-footed: the roots having many tubercles like those on the feelers of the Polype.)

Lin. gen. n. 1179. Reich. n. 1296. Schreb. n. 1632.

Tournef. t. 316. Juss. 15. Lonchitis. Tourn.

t. 314.

Class. 24. 2. Cryptogamia Filices.

Nat. order of Filices or Ferns.

GENERIC CHARACTER.

Capsules distributed in roundish dots, on the back or lower surface of the frond.

SPECIES.

1. Frond undivided.

[1. Polypodium lanceolatum. Lance-leaved Polypody.

Lin. spec. 1542. Reich. 4. 408. Petiv. fil. 8.

t. 6. f. 2.

Fronde lanceolate quite entire smooth, fructifications solitary, shoots naked.

2. Polypodium lycopodioides.

Lin. spec. 1542. Reich. 4. 408. hort. cliff. 474.

Brown. jam. 97. 6. Plum. fil. 104. t. 119.

(Lingua cervina.) Plum. amer. 29. t. 42. Raii

suppl. 53. 1. Sloan. hist. 1. 73. (Phyllitis.)

Pet. fil. 12. t. 4. f. 15. Pluk. phyt. t. 290. f. 3.

(Filix.)

Fronde lanceolate quite entire smooth, fructifications solitary, shoot scaly creeping.

3. Polypodium angustifolium. Narrow-leaved Polypody.

Swartz prodr. 130.

Fronde linear-lanceolate very long acuminate rigid with a convex margin, fructifications scattered, shoot creeping.

4. Polypodium gramneum. Grassy Polypody.

Swartz prodr. 130.

Fronde acuminate quite entire smooth, fructifications solitary, shoot naked.

5. Polypodium marginellum. Margined Polypody.

Swartz prodr. 130.

Fronde wedge-shaped linear blunt margined smooth, fructifications solitary crowded, shoot very short naked.

6. Polypodium repens. Creeping Polypody.

Swartz prodr. 130. Plum. fil. t. 134. (Lingua

cervina.)

Fronde lanceolate acuminate smooth entire, fructifications scattered, shoot creeping.

7. Polypodium serpens. Rooting Polypody.

Swartz prodr. 131. Plum. fil. t. 124. (Lingua

cervina.)

Fronde lanceolate-linear smooth somewhat waved, fructifications solitary, shoot hirsute rooting.

8. Polypodium acrostichoides.

Forst. prodr. n. 434.

Fronde linear entire smooth, fructifications crowded.

9. Polypodium stellatum. Starry Polypody.

Vahl symb. 3. 104.

P. serpens. Forst. prodr. n. 435.

Fronde lanceolate-linear blunt quite entire hoary underneath, fructifications solitary, shoots creeping hirsute.

10. Polypodium piloselloides.

Lin. spec. 1542. Reich. 4. 409. Brown. jam. 97.

5. Plum. fil. 103. t. 118. (Lingua cervina.)

Pet. fil. 175. t. 10. f. 5. (Filix.)

Fronde lanceolate quite entire rough-haired, the barren ones ovate, fructifications solitary.

11. Polypodium immersum. Immerse fruited Polypody.

Vahl symb. 3. 104.

Fronde oblong-lanceolate or oblong very blunt acute at the base quite entire smooth, fructifications in rows immersed.

12. Polypodium

12. *Polypodium heterophyllum*. Various-leaved Polypody.
Lin. spec. 1543. *Reich.* 4. 409. *Plum. fil.* 105. t. 120. (*Lingua cervina*.) *Pet. fil.* 174. t. 15. f. 4. (*Filix*.)
Fronds crenate smooth, the barren ones roundish sessile, the fertile ones lanceolate, fructifications solitary.
13. *Polypodium crassifolium*. Thick-leaved Polypody.
Lin. spec. 1543. *Reich.* 4. 409. *Brown. jam.* 96. 1. *Pet. fil.* 1. 6. t. 8. (*Phyllitis*.) *Plum. fil.* 107. t. 123.
β. Plum. fil. 122. t. 124.
Fronds lanceolate smooth quite entire, fructifications in rows.
14. *Polypodium phyllitidis*.
Lin. spec. 1543. *Reich.* 4. 410. *Plum. amer.* 26. t. 38. *Raii suppl.* 52. 16. *Pet. fil.* 5. t. 6. f. 10. *Sloan. jam.* 1. 72. (*Phyllitis*.)
Fronds lanceolate smooth quite entire, fructifications scattered.
15. *Polypodium comosum*. Many-cleft Polypody.
Lin. spec. 1543. *Reich.* 4. 410. *Plum. fil.* 115. t. 131. (*Lingua cervina*.) *Pet. fil.* 6. t. 6. f. 11. (*Phyllitis*.)
Fronds lanceolate smooth quite entire, multifid at the top, fructifications scattered.
16. *Polypodium trifurcatum*. Three-cleft Polypody.
Lin. spec. 1543. *Reich.* 4. 410. *Plum. fil.* 120. t. 138. (*Lingua cervina*.) *Pet. fil.* 34. t. 15. f. 3. (*Polypodium*.)
Fronds lanceolate smooth repand-sinuate, three-lobed at top.
17. *Polypodium lineare*. Linear-leaved Polypody.
Lin. syst. 934. *Thunb. jap.* 335.
Fronds linear-lanceolate entire smooth, fructifications solitary.
18. *Polypodium ensatum*. Sword-leaved Polypody.
Thunb. in Linn. trans. 2. 341.
P. phyllitis. Thunb. jap. 335.
Fronde elliptic-ensiform smooth entire, fructifications scattered.
19. *Polypodium Pica*.
Lin. syst. 935. *suppl.* 446.
Fronde simple cordate three-lobed, lobes lanceolate subulate eared at the base, the middle one elongated.
2. Fronde pinnatifid with the lobes cœadunate.
20. *Polypodium phymatodes*.
Lin. syst. 935. *Reich.* 4. 411. *mant.* 306. *Burm. zeyl.* 196. t. 86. *Lour. cochinch.* 673. *Pluk. phyt.* t. 404. f. 5. (*Filix*.)
Fronds simple trifid or five-lobed lanceolate, above the fructifications warted.
21. *Polypodium pendulum*. Pendulous Polypody.
Swartz prodr. 131.
Fronds pinnatifid subsessile smooth pendulous, lobes oblong bluntish.
22. *Polypodium hastatum*. Hastate-leaved Polypody.
Lin. syst. 935. *Thunb. japp.* 335.
Fronde trifid hastate.
23. *Polypodium crispatum*. Curled-leaved Polypody.
Lin. spec. 1544. *Reich.* 4. 411. *Plum. fil.* 85. t. 102. B. *Pet. fil.* 25. t. 13. f. 12.
Fronds pinnatifid smooth, lobes semiorbiculate crenate.
24. *Polypodium incisum*. Gash-leaved Polypody.
Swartz prodr. 131. *Plum. fil.* t. 91.
P. scolopendrioides. Lin. spec. ed. 1.
Fronds lanceolate pinnatifid, lobes rounded, the lower left and united.
25. *Polypodium trichomanoides*.
Swartz prodr. 131.
Fronds pinnatifid somewhat hairy, lobes semiovate obtuse.
26. *Polypodium myosuroides*.
Swartz prodr. 131.
Fronds pinnatifid smooth, lobes united into a lanceolate top fructiferous, the lower ones remote.
27. *Polypodium fulpensum*.
Lin. spec. 1544. *Reich.* 4. 411. *Plum. fil.* 67. t. 87. *Pet. fil.* 24. t. 1. f. 15.
Fronds pinnatifid smooth, lobes semiovate acute.
28. *Polypodium alplenifolium*.
Lin. spec. 1544. *Reich.* 4. 411. *Plum. fil.* 85. t. 102. A. *Pet. fil.* 26. t. 7. f. 16.

8. *Pet. fil.* 35. t. 14. f. 1. *Plum. fil.* 68. t. 88.
Fronds pinnatifid hairy, lobes semiovate acute:]
29. *Polypodium vulgare*. Common Polypody.
Lin. spec. 1544. *Reich.* 4. 412. *hort. cliff.* 475. *fl. lapp. n.* 381. *suœc. n.* 944. *mat. med.* 226. *Woodv. med. bot.* t. 271. *Huds. angl.* 455. *Wither. arr. ed.* 3. 773. *Curt. lond.* 1. 68. *Lightf. scot.* 667. *Relb. cant. n.* 762. *Sibth. oxon. n.* 745. *Abbot, bedf.* 226. n. 735. *Fl. dan. t.* 1060. *Hall. belv. n.* 1696. *Scop. carn. n.* 1266. *Pollich pal. n.* 961. *Allion. pedem. n.* 2398. *Villars dauph.* 3. 840. *Desfont. atlant.* 405. *Weis. crypt.* 303. *Blackw. t.* 215. *Kniph. cent.* 6. n. 72. *Regn. bot. Zorn. ic.* 1. t. 46. *Bolton, fil.* 32. t. 18. *Bulliard, herb.* t. 191. *Baub. pin.* 359. *Tournef. inst.* 540. t. 316. *Fuchs. hist.* 588. *Pauli, dan. t.* 109. *Lob. obs.* 475. 1. ic. 814. 2. *Tabern. ic.* 798. *Mor. hist.* f. 14. t. 2. f. 1. *Plum. fil. t. A. f.* 2. *Park. theat.* 1039. 1.
Polypodium. Trag. 540. *Baub. hist.* 3. 746. *Ger.* 972. & 974. 1. *emac.* 1132. f. 1, 2. *Matth.* 1292. *Raii hist.* 137. *syn.* 117.
P. majus. Dod. pempt. 464.
Filicula f. Polypodium. Camer. epit. 993.
β. Polypodium minus. Baub. pin. 359. *Dod. pempt.* 464.
γ. P. murale pinnulis ferratis. Petiv. bot. hort. 11. t. 1. *Raii syn.* 117. 2. *Huds. β. Wither. var.* 2.
P. majus ferrato folio. Barrel. obs. 12. 64. ic. n. 38. *Tournef. inst.* 540.
δ. P. cambricum. Welsh or jagged Polypody.
Lin. spec. 1546. *Huds. γ. Wither. var.* 4. *Raii hist.* 137. 2. *syn.* 117. 3. *Pluk. phyt.* 30. 1. *Mor. hist. f.* 14. t. 2. f. 8. *Bolton, fil.* 2. 5.
Fronds pinnatifid, pinnas oblong subserrate blunt, root scaly.
- [30. *Polypodium virginianum*. Virginian Polypody.
Lin. spec. 1545. *Reich.* 4. 412. *Pet. fil.* 22. t. 7. f. 9. *Plum. amer.* 25. t. 36. *fil.* 60. t. 77. *Raii suppl.* 56. ult. *Mor. hist.* 3. 563. f. 14. t. 2. f. 3.
Fronds pinnatifid, pinnas oblong subserrate blunt, root smooth.
31. *Polypodium Otites*.
Lin. spec. 1545. *Reich.* 4. 412. *Pet. fil.* 32. t. 1. f. 16. *Plum. fil.* 36. t. 85.
Fronds pinnatifid, lobes lanceolate alternate blunt distant.
32. *Polypodium incanum*. Hoary Polypody.
Swartz. prodr. 131.
Acrostichum polypodioides. Lin. spec. 1525. *Brown. jam.* 105. 2.
Fronds pinnatifid, pinnas lanceolate blunt distant spreading entire; underneath and on the stipe hoary-scale-letted.
33. *Polypodium pustulatum*.
Forst. prodr. n. 436.
Fronds pinnatifid even, pinnas oblong entire acuminate.
34. *Polypodium scandens*. Scandent Polypody.
Forst. prodr. n. 437.
Fronds pinnatifid even, pinnas linear blunt waved distant, runners rooting scandent.
35. *Polypodium pectinatum*.
Lin. spec. 1545. *Reich.* 4. 413. *Forst. ægypt.* 7. 185. *Pet. fil.* 31. t. 7. f. 14. *Plum. amer.* 26. t. 37. *fil.* 64. t. 83.
Fronds pinnate lanceolate, lobes approximating ensiform parallel acute horizontal, root naked.
36. *Polypodium taxifolium*. New-leaved Polypody.
Lin. spec. 1545. *Reich.* 4. 413. *Pet. fil.* 35. t. 14. f. 1. *Plum. fil.* 69. t. 89.
Fronds pinnate, lobes approximating ensiform parallel acute ascending, root rough-haired.
37. *Polypodium struthionis*. Ostrich-feathered Polypody.
Lin. spec. 1545. *Reich.* 4. 413. *hort. cliff.* 475. *Pet. fil.* 30. t. 3. f. 8. *Plum. fil.* 64. t. 82.
Fronds pinnate, lobes approximating ensiform repand horizontal.
38. *Polypodium squamatum*. Scaly Polypody.
Lin. spec. 1546. *syst.* 935. *Reich.* 4. 413. *Plum. fil.* 61. t. 79.
Fronds

- Fronds pinnatifid rugged, pinnae lanceolate distant horizontal quite entire.
39. *Polypodium loriceum*.
Lin. spec. 1546. *Reich.* 4. 413. *Lour. cochinch.* 674. *Pet. fil.* 27. 28. t. 7. f. 10. 12. *Plum. fil.* 60. t. 78.
 Fronds pinnatifid even, pinnae lanceolate distant horizontal repand.
40. *Polypodium alatum*. *Winged Polypody*.
Lin. spec. 1546. *Reich.* 4. 414. *Pet. fil.* 37. t. 7. f. 13. *Plum. fil.* 65. t. 84.
 Fronds pinnatifid even, pinnae oblong distant toothed.
41. *Polypodium ellipticum*. *Elliptic-leaved Polypody*.
Lin. syst. 935. *Thunb. jap.* 335.
 Fronds pinnatifid, pinnae elliptic even entire, shoot creeping.
42. *Polypodium aureum*. *Golden Polypody*.
Lin. spec. 1546. *Reich.* 4. 414. *hort. cliff.* 475. *Plum. amer.* 25. t. 35. *fil.* 59. t. 76. *Raii suppl.* 56. *Pet. fil.* 15. t. 7. f. 8. *Mor. hist.* 3. 563.
 Fronds pinnatifid smooth and even, pinnae oblong distant, the lowest patulous, the terminating one very large, fructifications in rows.
43. *Polypodium quercifolium*. *Oak-leaved Polypody*.
Lin. spec. 1547. *Reich.* 4. 414. *fl. zeyl. n.* 382. *Hill. anat. t.* 10. *Baub. pin.* 359. *Mor. hist.* 3. 564. f. 14. t. 1. f. 15. *Pet. mus.* 794. *Raii suppl.* 57. *super. Clus. exot.* 88. t. 89. *Pisf. mant.* 195. *Rumph. amb.* 6. 78. t. 36. *Rheed. mal.* 12. 23. t. 11.
 Barren fronds sessile shorter blunt sinuate, fruiting fronds alternate-pinnate lanceolate.
 3. Frond trifoliate: peduncle with three leaflets.
44. *Polypodium trifoliatum*. *Three-leaved Polypody*.
Lin. spec. 1547. *Reich.* 4. 415. *hort. cliff.* 475. *Pet. fil.* 18. t. 7. f. 3. *Brown. jam.* 97. 7. *Raii suppl.* 66. 2. (*Lonchitis*.) *Plum. amer.* 22. t. 32. *fil.* 127. t. 148. (*Hemionitis*.) *Sloan. jam.* 1. 85. t. 42. (*Hemionitidi affinis*.) *Pluk. phyt. t.* 291. f. 3. (*Filix f. Hemionitis*.)
 Fronds ternate sinuate-lobed, the middle one larger.
 4. Frond pinnate.
45. *Polypodium Lonchitis*. *Rough Polypody* or *Spleenwort*.
Lin. spec. 1548. *syst.* 936. *Reich.* 4. 415. *hort. cliff.* 475. *Huds. angl.* 455. *Witber. arr. ed.* 3. 773. *Lightf. scot.* 668. *Fl. dan. t.* 497. *Aët. nidros.* 4. t. 5. f. 2, 3. *Gunn. norv. n.* 49. *Hall. belv. n.* 1711. *Scop. carn. n.* 1267. *Villars dauph.* 3. 840. *Gron. virg.* 123. *Bolt. fil.* 19.
Lonchitis aspera. *Baub. pin.* 359. *Raii hist.* 138. — major. *Camer. epit.* 664. *Matth.* 922. *Baub. hist.* 3. 744. *Ger.* 979. *emac.* 1140. 3. *Park. theat.* 1042. 1. *Raii syn.* 118. *Mor. hist.* 3. 566. f. 14. t. 2. f. 1. *Pluk. phyt. t.* 89. f. 6.
 β. *Lonchitis mas f. latifolia aspera minor*. *Barrel. ic.* 1121.
 Fronds pinnate, pinnae crescent-shaped ciliate-ferrate declined, stipes strigose.
46. *Polypodium muricatum*. *Thorny-leaved Polypody*.
Swartz prodr. 131. *Sloan. jam.* 1. 81. t. 36. (*Trichomanes*.)
 Fronds pinnate, pinnae falcate-lanceolate subserrate eared upwards, at bottom and in front spiny, stipe scaly.
47. *Polypodium semicordatum*. *Half-heart-leaved Polypody*.
Swartz prodr. 132. *Plum. fil. t.* 113. (*Lingua cervina*.)
 Frond pinnate, pinnae parallel lanceolate very smooth, obliquely cordate at the base, the lower lobe more gibbous, fructifications in four rows.
48. *Polypodium sagittatum*. *Arrow-leaved Polypody*.
Swartz prodr. 132.
 Frond pinnate, pinnae lanceolate blunt entire, having a toothlet on each side at the base, the lower one mutilated triangular minute.
49. *Polypodium exaltatum*. *Lofty Polypody*.
Lin. spec. 1548. *Reich.* 4. 416. *Brown. jam.* 99. 14. *Plum. amer.* 19. t. 28. *Sloan. jam.* 1. 77. t. 31. (*Lonchitis*.)
- Fronds pinnate, pinnae ensiform entire, gibbous at the lower base inwards, at the upper base upwards.
50. *Polypodium rhizophyllum*. *Rooting-leaved Polypody*.
Swartz prodr. 132.
 Fronds pinnate decumbent, tailed at the tip, the fruiting ones rooting, pinnae ovate-deltoid.
51. *Polypodium auriculatum*. *Eared Polypody*.
Lin. spec. 1548. *Reich.* 4. 416. *fl. zeyl. n.* 383. *Breyn. cent.* 189. t. 44. f. 2. *Raii suppl.* 69. 2. *Burm. zeyl.* 98. t. 44. f. 2. *Pluk. phyt. t.* 30. f. 4. (*Filix*.) *Mor. hist.* 3. 566. (*Lonchitis*.)
 Fronds pinnate, pinnae falcate-lanceolate serrate, truncate at the base, eared upwards.
52. *Polypodium unitum*.
Lin. spec. 1548. *syst.* 936. *Reich.* 4. 416. *Desfont. atlant.* 407. *Pet. mus.* 10. t. 1. f. 55. *Burm. zeyl.* 98. t. 44. f. 1. (*Filix*.)
 Fronds pinnate, pinnae ensiform serrate, serratures semi-ovate ovate-nerved.
53. *Polypodium sopheroides*.
Thunb. in Linn. transf. 2. 341.
 Fronds pinnate, pinnae ensiform gasb-ferrate, serratures semiovalate nerved, the lowest serrature longer above.
54. *Polypodium triangulare*. *Triangular-leaved Polypody*.
Lin. spec. 1549. *Reich.* 4. 417. *Pet. fil.* 76. t. 1. f. 10. *Plum. fil.* 54. t. 72.
 Frond pinnate, pinnae triangular toothed.
55. *Polypodium oblitteratum*.
Swartz prodr. 132.
 Frond pinnate, pinnae alternate broad-lanceolate attenuated crenate, notches at the tip and base obliterated on both sides.
56. *Polypodium crenatum*. *Notch-leaved Polypody*.
Swartz prodr. 132. *Plum. fil. t.* 3. *amer.* 10.
 Frond pinnate, pinnae oblong-lanceolate crenate smooth, fructifications in double rows.
57. *Polypodium cordifolium*. *Heart-leaved Polypody*.
Lin. spec. 1549. *Reich.* 4. 417. *Plum. fil.* 54. t. 72. *Pet. fil.* 75. t. 1. f. 11. (*Trichomanes*.)
 Fronds pinnate, pinnae cordate blunt quite entire repand.
58. *Polypodium simile*.
Lin. spec. 1549. *Reich.* 4. 417. *Lour. cochinch.* 674. *Sloan. jam.* 1. 77. t. 32. (*Lonchitis*.)
 Fronds pinnate, pinnae lanceolate quite entire distant, the upper ones smaller, dots in rows.
59. *Polypodium dissimile*.
Lin. spec. 1549. *Reich.* 4. 417. *Brown. jam.* 100. n. 23. *Pluk. phyt. t.* 288. f. 1. (*Filix*.)
 Fronds pinnate, pinnae lanceolate subpubescent confluent, the lower ones distinct, dots scattered.
60. *Polypodium Serra*. *Saw-leaved Polypody*.
Swartz prodr. 132. *Sloan. jam.* 1. 90. t. 48. *Pluk. phyt. t.* 244. f. 1.
 Frond bipinnatifid, pinnae linear very long attenuated serrate, serratures semiovalate acute striated.
61. *Polypodium tetragonum*. *Square-stalked Polypody*.
Swartz prodr. 132.
 Fronds bipinnatifid, pinnae lanceolate acuminate opposite distant horizontal, segments ovate bluntish, stipe four-cornered.
62. *Polypodium sanctum*.
Swartz. prodr. 133.
Acrostichum sanctum. *Lin. spec.* 1526. *Brown. jam.* 105. n. 5. *Diët. nostr.*
 Fronds subbipinnate, upper pinnae coadunate, lower linear blunt entire, lowest biggish acute crenate.
63. *Polypodium reticulatum*. *Netted-leaved Polypody*.
Lin. spec. 1549. *Reich.* 4. 417. *Plum. amer.* 6. t. 9. *fil. t.* 92.
 Fronds pinnate, pinnae oblong quite entire anastomosing rectangular, dots rectangular approximating.
64. *Polypodium deltoideum*. *Deltoid Polypody*.
Swartz prodr. 133.
 Frond bipinnatifid, lower pinnae abbreviated entire oblong deltoid reflex.
65. *Polypodium cicutarium*.
Lin. spec. 1549. *Reich.* 4. 418. *Brown. jam.* 97. n. 8.
 Fronds ternate, leaflets bipinnate lacinate at the base bluntly gasb-ferrate acuminate, the lowest more gibbous.
66. *Polypodium*

66. *Polypodium fontanum*. *Rock Polypody*.
Lin. spec. 1550. *fyst.* 937. *Reich.* 4. 418. *Gouan illustr.* 80. *Huds. angl.* 456. *Wither. arr. ed.* 3. 777. *Hall. belv. n.* 1706. *Leers herb. born.* n. 790. *Pallas it.* 2. 28. *Villars dauph.* 3. 849. *Allion. pedem. n.* 2413. *Bolt. fil.* 21.
Adiantum album. *Lob. adv.* 361. 2. ic. 810. 1. *Ger.* 980. 2. *Barrel. ic.* 452. f. 1.
Filicula laxatilis omnium minima elegantissima. *Tournef. inst.* 71. *Pluk. phyt. t.* 89. f. 2. 3. *Garid. aix.* 183. *Raii ext.* 126 & 296.
F. fontana. *Tabern. ic.* 792:—minor. *Baub. pin.* 258.
Fronde pinnate lanceolate, leaflets roundish sharply gashed, stipe even.
67. *Polypodium falcatum*. *Sickle-leaved Polypody*.
Lin. fyst. 937. *suppl.* 446. *Thunb. jap.* 336. t. 36.
Fronde pinnate, pinnae cordate falcate acuminate entire, fructifications approximating scattered.
68. *Polypodium marginale*.
Lin. fyst. 937. *Thunb. jap.* 337.
Fronde pinnate, upper pinnae coalescent, lower ensiform eared upwards gashed, stipe villose.
69. *Polypodium evectum*.
Forst. prodr. n. 438.
Fronde pinnate, pinnae opposite oblong, at the top linear-acuminate serrate, fructifications in a continued line along the margin.
70. *Polypodium hirsutulum*.
Forst. prodr. n. 439.
Fronde pinnate, pinnae oblong bluntly serrate, eared upwards at the base.
71. *Polypodium tenellum*.
Forst. prodr. n. 440.
Fronde pinnate, leaflets alternate remote linear acuminate waved.
72. *Polypodium dissectum*.
Forst. prodr. n. 441.
Fronde pinnate, leaflets pinnatifid, pinnules oblong bluntly serrate, the lower ones longer scarcely coalescent.
73. *Polypodium nymphale*.
Forst. prodr. n. 442.
Fronde pinnate pubescent, leaflets linear very long pointed serrate, pinnatifid at the base, segments oblong blunt scarcely falcated forwards.
74. *Polypodium invifum*.
Forst. prodr. n. 443. *Swartz prodr.* 133. *Sloan. jam.* 1. 90. t. 51. (*Filix*.)
Fronde pinnate smooth, leaflets linear very long pointed serrate-pinnate, pinnae lanceolate falcate-acute, connate at the base.
75. *Polypodium pennigerum*.
Forst. prodr. n. 444.
Fronde pinnate smooth, leaflets linear very long pointed subpinnate, pinnae ovate-oblong blunt connate.
5. *Fronde bipinnate or subbipinnate.*
76. *Polypodium Phegopteris*. *Wood Polypody*.
Lin. spec. 1550. *Reich.* 4. 418. *hort. cliff.* 475. *Fl. suec. n.* 945. *lapp. n.* 382. *Weis. crypt.* 306. *Huds. angl.* 456. *Wither. arr. ed.* 3. 775. *Lightf. scot.* 669. *Gunn. norv. n.* 50. *Hall. belv. n.* 1698. *Pollich pal. n.* 962. *Villars dauph.* 3. 850. *Bolton, fil.* 20. *Amm. aest. petr.* 10. t. 21. (*Phyllitis*.) *Petit. epist.* 56. t. 50. (*Filix*.)
Filix minor britannica, pediculo pallidior, alis inferioribus deorsum spectantibus. *Mor. hist.* 3. 575. f. 14. t. 4. n. 17. f. 3. *Raii syn.* 122.
Fronde subbipinnate, lowest leaflets reflex, each pair united at the base by a four-cornered little appendage.
77. *Polypodium retroflexum*.
Lin. spec. 1550. *Reich.* 4. 419. *Plum. fil.* 52. t. 68. *Pet. fil.* 72. t. 1. f. 9. (*Filicula*.)
Fronde subbipinnate, lowest leaflets reflex, pinnae jagged.
78. *Polypodium fragrans*. *Sweet Polypody*.
Lin. mant. 307. *Pallas, it.* 3. 293. *Desfont. atlant.* 408. *Lour. cochinch.* 675? *Amm. ruth.* 251. (*Dryopteris*.)
Fronde bipinnate, pinnae ovate sublobed blunt naked underneath bent back at the edge, fructifications marginal.

79. *Polypodium parasiticum*. *Parasitical Polypody*.
Lin. spec. 1551. *Reich.* 4. 419.
Kari-welli-panna. *Rheed. mal.* 12. p. 35. t. 17.
Fronde semibipinnate lanceolate, lobules rounded quite entire striated.
80. *Polypodium varium*.
Lin. spec. 1551. *Reich.* 4. 420. *Lour. cochinch.* 675.
Fronde lateral bipinnate, lowest leaflet pinnatifid.
81. *Polypodium cristatum*. *Crested Polypody*.
Lin. spec. 1551. *Reich.* 4. 420. *Weig. obs.* 35. n. 24. *Schreb. spicil.* 71. *Weis. crypt.* 317. d. *Huds. angl.* 457. *Wither. arr. ed.* 3. 778. *Lightf. scot.* 670. *Relb. cant. n.* 764. *Sibth. oxon. n.* 746. *Abbot, bedf.* 226. n. 736. *Hall. belv. n.* 1075. *Scop. carn. n.* 1271. *Mull. fridr.* 193. n. 845. t. 2. f. 4. *Bolton, fil.* 23.
Filix mas ramosa pinnulis dentatis. *Ger. emac.* 1129. *Raii hist.* 150. *syn.* 124. *Pluk. phyt. t.* 181. f. 2.
Fronde subbipinnate, leaflets ovate-oblong, pinnae bluntly sharply serrate at the tip.
82. *Polypodium patens*. *Pubescent Polypody*.
Swartz prodr. 133. *Ait. kew.* 3. 464. *Sloan. jam.* 1. 91. t. 52. f. 1. (*Filix*.)
Fronde bipinnatifid somewhat villose underneath, pinnae linear-lanceolate elongated, pinnules oblong acute entire, the lowest longer.
83. *Polypodium Filix mas*. *Male Polypody or Fern*.
Lin. spec. 1551. *fyst.* 937. *Reich.* 4. 421. *hort. cliff.* 475. *fl. suec. n.* 946. *lapp. n.* 385. *mat. med.* 226. *Woodv. med. bot.* 136. t. 49. *Huds. angl.* 458. *Wither. arr. ed.* 3. 775. *Lightf. scot.* 671. *Relb. cant. n.* 765. *Sibth. oxon. n.* 748. *Abbot, bedf.* 226. n. 737. *Gunn. norv. n.* 4. t. 1. f. 4. *Hall. belv. n.* 1701. *Scop. carn. n.* 1270. *Pollich pal. n.* 963. *Villars dauph.* 3. 842. *Allion. pedem. n.* 2404. *D'Affo arag. n.* 1000. *Desfont. atlant.* 405. *Weis. crypt.* 310. *Blackw. t.* 323. *Kniph. cent.* 6. n. 71. *Regn. bot.* *Bulliard herb. t.* 183. *Bolton, fil.* 44. t. 24.
Filix mas. *Fuchs. hist.* 595. *Tabern. ic.* 591. *Matth.* 1290. *Dalech.* 1222. *Trag.* 546. *Dod. pempt.* 462. 1. *Camer. epit.* 991. *Lob. ic.* 812. *Ger.* 969. 1.
F. mas vulgaris. *Park. theat.* 1036. *Raii hist.* 143. *syn.* 120.
F. non ramosa dentata. *Baub. pin.* 358. *Tourn. inst.* 536. t. 310—312. *Mor. hist. f.* 14. t. 3. f. 6.
F. vulgo mas dicta, s. non ramosa. *Baub. hist.* 3. 738.
F. mas non ram. pinnulis latis densis minutim dentatis. *Ger. emac.* 1129. t. 1128. f. 1.
Fronde bipinnate, pinnae obtuse crenulate, stipe chaffy.
84. *Polypodium Filix foemina*. *Female Polypody or Fern*.
Lin. spec. 1551. *fyst.* 937. *Reich.* 4. 421. *fl. lapp. n.* 386. *suec. n.* 947. *Huds. angl.* 458. *Wither. arr. ed.* 3. 778. *Lightf. scot.* 673. *Relb. cant. n.* 766. *Sibth. oxon. n.* 749. *Abbot, bedf. n.* 738. *Gunn. norv. n.* 29. *Hall. belv. n.* 1704. *Pollich pal. n.* 964. *Scop. carn. n.* 1268. *Villars dauph.* 3. 845. *Weis. crypt.* 315. β. *Blackw. t.* 325. *Bolton, fil.* 25.
Filix mas non ramosa pinnulis angustis rarioribus profunde dentatis. *Ger. emac.* 1130. *Raii hist.* 144. *syn.* 121. *Mor. hist.* 3. 579. f. 14. t. 3. f. 8. *Pluk. phyt. t.* 180. f. 4.
F. mollis s. glabra, vulgari mari non ramosa accedens. *Baub. hist.* 3. 738.
F. petraea femina 1. *Tabern.* 793.
Fronde bipinnate, pinnules lanceolate pinnatifid acute.
85. *Polypodium Oreopteris*. *Mountain Polypody*.
Ehrhart, crypt. dec. n. 22. *Dicks. in Linn. transf.* 1. 181. *Teasd. id.* 2. 113. *Sibth. oxon. n.* 747. *Wither. arr. ed.* 3. 775.
P. montanum. *Willd. berol. n.* 883. *Vogler, monog.*
P. Thelypteris. *Huds. angl.* 457. *Lightf. scot.* 674. *Bolt. fil. t.* 24. & t. 22. 2.
Filix mas pinnulis rigidioribus & acutioribus, marginibus lineis feminalibus ex frequentibus tuberculis pulverulentis compositis notatis, Petiveri. *Raii syn. ed.* 2. app. 341. v. ed. 3. 122.

- Fronds subbipinnate, pinnae alternate, pinnules quite entire lanceolate bluntish, fructifications marginal, root scaly.*
86. *Polypodium Thelypteris*. Marsh Polypody.
Lin. syst. 937. *Reich.* 4. 421. *Weis. crypt.* 307. *Hedw. theor.* 6. *Wither. arr. ed.* 3. 776. *Fl. dan.* t. 760. *Hall. herb. n.* 1697. *Schmid. ic.* 11. f. 1, 2. *Desfont. atlant.* 406.
Acrostichum Thelypteris. *Lin. spec.* 1528. *mant.* 505. *fl. suec. n.* 939. *Bolton, fil. t.* 43.
Filix minor palustris repens. *Raii syn.* 122.
F. minor non ramosa. *Baub. hist.* 3. 739. 1. *Raii hist.* 146. *Mapp. alsat.* 106. t. 7.
F. palustris repens pinnulis non dentatis. *Mor. hist.* f. 14. t. 4. f. 17.
Dryopteris. *Lob. ic.* 814. *Ger.* 981. 3. *emac.* 1135. 1.—f. *F. querna repens*. *Park. theat.* 1041. 1.
Frond bipinnate, pinnae pinnatifid quite entire covered with pollen underneath.
87. *Polypodium aculeatum*. Prickly Polypody.
Lin. spec. 1552. *syst.* 937. *Reich.* 4. 422. *Weis. crypt.* 322. *Huds. angl.* 459. *Wither. arr. ed.* 3. 777. *Lightf. scot.* 675. *Relb. cant. n.* 767. *Sibth. oxon. n.* 750. *Abbot, bedf. n.* 740. *Hall. herb. n.* 1712. *Pollich pal. n.* 965. *Scop. carn. n.* 1269. *Villars dauph.* 3. 843. *Mill. illustr.* *Bolton, fil.* 26. 1, 2, 3. *Desfont. atlant.* 406. *Forsk. descr.* 185.
Filix aculeata major. *Baub. pin.* 358. *prodr.* 151.
F. mas non ramosa, pinnulis latis auriculatis spinosis. *Ger. emac.* 1130. *Raii hist.* 143. *syn.* 121. *Pluk. phyt. t.* 179. f. 6. & t. 180. f. 1. *Mor. hist.* 3. 580. f. 14. t. 3. f. 15.
β. P. lobatum. *Huds. angl.* 459. *Sibth. oxon. β.* *Lightf. scot.* 677.
F. lonchitidi affinis. *Baub. hist.* 3. 739. *Raii hist.* 144. *syn.* 121. *Pluk. phyt. t.* 180. f. 3.
Fronds bipinnate, pinnae lanceolate ciliate-toothed, stipe strigose.
88. *Polypodium hirtum*.
Swartz prodr. 133.
Frond at bottom tripinnatifid, towards the top bipinnatifid and finally pinnatifid, segments ovate blunt almost entire, stipe and branches rough-haired.
89. *Polypodium rhœticum*. Stone Polypody.
Lin. spec. 1552. *Reich.* 4. 422. *Huds. angl.* 458. *Wither. arr. ed.* 3. 780. *Hall. herb. n.* 1708. *Pallas, it.* 2. 28. *Scop. carn. n.* 1272. *Gouan. monsp.* 528. *Villars dauph.* 3. 846. (polymorphum A.) *Bolt. fil.* 45. & 2. 6.
Filix montana ramosa minor argute denticulata. *Raii syn.* 124. *Pluk. phyt. t.* 89 f. 4.
F. rhœtica tenuissima denticulata. *Baub. hist.* 3. 740.
Filicula fontana major, f. Adiantum album, filicis folio. *Baub. pin.* 358. *Mor. hist.* f. 14. t. 4. f. 8.
Fronds bipinnate, leaflets and pinnae remote lanceolate, serratures acuminate.
90. *Polypodium elongatum*. Cut-leaved Polypody.
Ait. kew. 3. 465.
Fronds bipinnate smooth, pinnae blunt sharply serrate, the upper ones ovate, the middle oblong, the lower lanceolate pinnatifid sharpish.
91. *Polypodium noveboracense*.
Lin. spec. 1552. *Reich.* 4. 423.
Fronds bipinnate, pinnae oblong quite entire parallel, stipe even.
92. *Polypodium pubescens*.
Lin. spec. 1552. *Reich.* 4. 423. *Brown, jam.* 101. n. 25.
Fronds bipinnate hairy, pinnae lanceolate-ovate somewhat gashed acute, the outmost confluent.
93. *Polypodium marginale*. Marginal-flowering Polypody.
Lin. spec. 1552. *Reich.* 4. 423.
Fronds bipinnate, pinnae sinuate repand at the base, fructifications marginal.
94. *Polypodium bulbiferum*. Bulbiferous Polypody.
Lin. spec. 1553. *Reich.* 4. 423.
Filix baccifera. *Corn. canad.* 5. *Mor. hist.* 3. 579. f. 14. t. 3. f. 10.
Fronds bipinnate, leaflets remote, pinnae oblong obtuse serrate bulbiferous underneath.

95. *Polypodium fragile*. Brittle Polypody.
Lin. spec. 1553. *syst.* 938. *Reich.* 4. 423. *fl. lapp. n.* 384. *suec. n.* 948. *Huds. angl.* 459. *Wither. arr. ed.* 3. 779. *Lightf. scot.* 677. *Fl. dan.* t. 401. *Pallas it.* 3. 293. *Hall. herb. n.* 1707. *Scop. carn. n.* 1273. *Allion. pedem. n.* 2411. *Bolt. fil. t.* 46. *Jungb. ic. f.* 10.
P. polymorphum D. *Villars dauph.* 3. 847.
Cyathea fragilis. *Smith fil. dorsif.* 253.
Filix saxatilis caule tenui fragili. *Raii. hist.* 152. *syn.* 125. *Pluk. phyt. t.* 180. f. 5.
F. pumilis saxat. altera Clusii. *Park. theat.* 1043.
Fronds bipinnate, leaflets remote, pinnae roundish gashed.
96. *Polypodium regium*.
Lin. spec. 1553. *Reich.* 4. 425. *hort. cliff.* 475. *Scop. carn. n.* 1274. *Allion. pedem. n.* 2412.
P. polymorphum C. *Villars dauph.* 3. 847.
Filix saxatilis fumarie pinnulis. *Vaill. par. t.* 20. f. 1. 53. t. 9. f. 1.
Fronds bipinnate, leaflets subopposite, pinnae alternate lacinate.
97. *Polypodium leptophyllum*. Fine-leaved Polypody.
Lin. spec. 1553. *Reich.* 4. 425. *Desfont. atlant.* 408.
Asplenium leptophyllum. *Swartz obs.* 403.
Adiantum filicinum leptophyllum elatius hispanicum. *Barrel. ic. t.* 431.
A. minimum folio vario. *Magn. hort.* 5.
Fronds bipinnate, the barren ones very short, pinnae cuneiform-lobate.
98. *Polypodium Barometz*. Scythian Lamb Polypody.
Lin. spec. 1553. *Reich.* 4. 425. *Lour. cochinch.* 675.
Borameis. Tartar. agnus. *Mentzel. pin. polygl.* 50 & 199. *Matth. in Diosc. epist. nuncup.* p. 8.
Frutex tartareus, Agnus Scythicus. *Baub. pin.* 512. n. 4.
Barometz f. Agnus Scythicus. *De la Croix connub. flor. ed. Clayt.* 171. p. 106. *ic.*
Agnus Scythicus. *Philos. trans. abr.* 2. 646. *Evel. terra. ed. Hunter.* 2. 248. *Bell, itin.* 1. 49.
Fronds bipinnate, pinnae pinnatifid lanceolate serrate, roots woolly.
99. *Polypodium lacerum*.
Lin. syst. 938. *Thunb. jap.* 337.
Fronds bipinnate, pinnules sessile, the outmost confluent falcate serrate, stipe scaly.
100. *Polypodium fetosum*.
Lin. syst. 938. *Thunb. jap.* 337.
Fronds bipinnate, pinnules lanceolate gashed entire, stipe bristly.
101. *Polypodium glaucum*.
Lin. syst. 938. *Thunb. jap.* 338.
Frond bipartite bipinnate glaucous underneath, pinnules gashed entire.
102. *Polypodium dichotomum*.
Lin. syst. 938. *Thunb. jap.* 338. t. 37. *Swartz prodr.* 133. *Forst. prodr. n.* 450. *escul. n.* 49.
Acrostichum furcatum. *Lin. spec.* 1529.
Filix furcata, &c. *Plum. fil. t.* 28.
Dichotomous, fronds pinnate, pinnae linear-lanceolate quite entire horizontal glaucous underneath.
6. *Prickly with scattered spines or arborescent.*
103. *Polypodium arboresum*. Tree Polypody.
Lin. spec. 1554. *Reich.* 4. 426. *Lour. cochinch.* 676. *Brown. jam.* 104. n. 41.
Cyathea arborea. *Smith fil. dorsif.* 253.
Palmifilix postium. *Rumph. amb. l.* 10. c. 46. p. 63. t. 27.
Filix arborescens pinnulis dentatis. *Plum. fil. i. t.* 1. *amer. i. t.* 1, 2. *Pet. fil.* 41. t. 1. f. 1, 2.
Fronds bipinnate serrate, trunk arborescent unarmed.
104. *Polypodium spinosum*.
Lin. spec. 1554. *Reich.* 4. 426. *Sloan. jam.* 1. 95. t. 56. *Plum. amer.* 3. t. 3. *fil.* 3. t. 3. *Pet. fil.* 43. t. 4. f. 1. (*Filix*).
Pteris aculeata. *Swartz prodr.* 129.
Fronds bipinnate serrate, trunk arborescent prickly.
105. *Polypodium horridum*.
Lin. spec. 1554. *Reich.* 4. 426. *Pet. fil.* 50. t. 5. f. 1. *Plum. fil.* 9. t. 5. *amer.* 3. t. 4. *Raii suppl.* 92. 1. (*Filix*).
Cyathea

- Cyathea horrida*. Smith fil. dorsif. 251.
Fronds superdecompound, pinnae semisagittate, connected at the base, serrate at the tip, trunk prickly.
106. *Polypodium pyramidale*.
Lin. spec. 1554. Reich. 4. 426. Pet. fil. 40. t. 4. f. 2. Plum. fil. 42. t. 54. (Filix.)
Fronds superdecompound, pinnae terminating lanceolate very long serrate, stipe prickly at bottom.
107. *Polypodium asperum*.
Lin. spec. 1555. Reich. 4. 427. Pet. fil. 47. t. 4. f. 7. Plum. fil. 4. t. 3. (Filix.)
Fronds superdecompound, pinnae obtuse serrate at the tip, the terminating ones acuminate, trunk arboreous prickly.
108. *Polypodium muricatum*.
Lin. spec. 1555. Reich. 4. 427. Pet. fil. 53. t. 1. f. 6. Plum. fil. 29. t. 19. (Filix.)
Fronds bipinnate, pinnae ovate toothlet-spiny.
109. *Polypodium villosum*.
Lin. spec. 1555. Reich. 4. 427. Pet. fil. 52. t. 4. f. 10. Plum. amer. 15. t. 23. fil. 21. t. 27. Raii suppl. 97. 2. Sloan. jam. 1. 100. n. 98. (Filix.)
Fronds bipinnate hirsute, pinnae oblong obtuse, the terminating ones acuminate.
110. *Polypodium decussatum*.
Lin. spec. 1555. Reich. 4. 427. Pet. fil. 61, 62. t. 2. f. 5, 6. Plum. fil. 19. t. 24. 20. t. 25.
Fronds bipinnate, pinnae horizontal quite entire obtuse, the terminating ones lanceolate.
7. Frond superdecompound.
111. *Polypodium axillare*. Slender Polypody.
Ait. kew. 3. 466.
Frond tripinnate smooth, pinnae oblong, serrate at the tip, adnate, few-flowered.
112. *Polypodium umbrosum*. Madeira Wood Polypody.
Ait. kew. 3. 466.
Frond tripinnate smooth, pinnae lanceolate-linear serrate adnate many-flowered.
113. *Polypodium Dryopteris*. Branched Polypody.
Lin. spec. 1555. syst. 939. Reich. 4. 427. fl. lapp. n. 387. juv. n. 949. Hudf. angl. 460. Wither. arr. ed. 3. 780. Lightf. scot. 678. Sibth. oxon. n. 751. Hall. belv. n. 1699. Pollich pal. n. 966. Pallas, it. 2. 26. Weis. crypt. 324. Scop. carn. n. 1276. Villars dauph. 3. 850. Kniph. cent. 12. Bolton, fil. 28.
Dryopteris Tragi, 538. Ger. 974. 2. emac. 1135. 3. Filix pumila saxatilis prima Clusii, hist. 2. 212. Park. theat. 1043. t. 1044. f. med.
F. sax. ramosa nigris maculis punctata. Baub. pin. 358. Mor. hist. f. 14. t. 4. f. 19.
F. ramosa minor. Baub. hist. 3. 741. 1. Raii hist. 151. syn. 125.
Thelypteris minor pinnulis dentatis. Amm. act. petrop. 10. 301. t. 22. f. 2.
Fronds superdecompound, leaflets torn bipinnate.
114. *Polypodium speluncæ*.
Lin. spec. 1555. Reich. 4. 428. fl. zeyl. n. 384. Forsk. descr. 185. Lour. cochinch. 677. Burm. ind. 234. Pluk. phyt. t. 244. f. 2. (Filix.)
Fronds superdecompound hairy, leaflets lanceolate pinnate, pinnae opposite pinnatifid.
115. *Polypodium capense*. Cape Polypody.
Lin. syst. 939. suppl. 445.
Cyathea capensis. Smith fil. dorsif. 253.
Frond superdecompound, leaves bipinnate, pinnae one-flowered at the base.
116. *Polypodium æmulum*. Dwarf Madeira Polypody.
Ait. kew. 3. 466.
Frond quadripinnatifid smooth, pinnae oblong-linear gasbed, pinnules toothletted at the tip.
117. *Polypodium denticulatum*. Toothletted Polypody.
Swartz prodr. 134.
Frond quadripinnate at bottom, at top tripinnate smooth, pinnules wedge-ovate gasbed toothletted, fructifications solitary.
118. *Polypodium armatum*. Armed Polypody.
Swartz prodr. 134.
Fronds quadripinnate, pinnules lanceolate crenulate smooth above, hirsute at bottom, fructifications

- crowded, branches and branchlets rough, trunk arboreous prickly.
119. *Polypodium glaucum*.
Swartz prodr. 134.
Fronds quadripinnate, branches and branchlets lanceolate, pinnae lanceolate pinnatifid, segments ovate acute glaucous underneath.
120. *Polypodium dissectum*. Cut Polypody.
Swartz prodr. 134.
Lonchitis altissima globuligera minor. Plum. fil. t. 31.
Adiantum nigrum ramosum max. Sloan. jam. 1. 96. t. 57. f. 1, 2.
Frond quadripinnatifid smoothish, pinnules ovate blunt gasb-serrate, fructifications solitary, branches and branchlets pubescent.
121. *Polypodium effusum*. Spreading Polypody.
Swartz prodr. 134. Ait. kew. 3. 467.
Adiantum nigrum ramosum maximum foliis f. pinnulis tenuibus longis acutis spinosis. Sloan. jam. 1. 97. t. 57. f. 4.
Frond quinquepinnatifid smoothish membranaceous, pinnules acute finely serrate, rachis of the branches margined.

Species from Withering.

122. *Polypodium ilvense*.
Wither. arr. ed. 3. 774. Dickf. hort. succ.
Acrostichum ilvense. Linn. & Diet. nostr.
Acr. alpinum. Bolton, fil. 42.
Fronds pinnate, leaflets opposite united blunt hairy underneath very entire at the base.
123. *Polypodium arvenicum*.
Wither. arr. ed. 3. 774. Fl. dan. t. 391. Pluk. phyt. t. 89. f. 5. (Filix.)
Acrostichum ilvense. Hudf. angl. 451.
Filix alpina pedicularis rubra foliis subtus villosis. Lbwyd in Raii syn. 118.
Fronds pinnate, leaflets lanceolate pinnatifid hairy underneath, stipe hairy.
124. *Polypodium dentatum*.
Wither. arr. ed. 3. 776. Dickf. crypt. fasc. 3. t. 7. f. 1. hort. succ.
Fronds pinnate, leaflets opposite pinnatifid, lobes sparingly cut at the sides, finely toothed at the ends, stipe very slender.
125. *Polypodium spinulosum*.
Wither. arr. ed. 3. 778. Fl. dan. t. 707.
Fronds bipinnate, pinnae lanceolate, pinnules linear-ovate with sharp-pointed teeth.
126. *Polypodium trifidum*.
Wither. arr. ed. 3. 779.
Cyathea incisa. Engl. bot. 163.
Fronds bipinnate, pinnae lanceolate blunt, pinnules of the lowermost pinnae mostly trifid, stipe bordered.

Species from Forster.

127. *Polypodium vestitum*.
Forst. prodr. n. 445.
Fronds subbipinnate, pinnae rhomb-ovate acute gasb-serrate, the lowest lobed subpinnate, stipe covered with scariose scales.
128. *Polypodium nudum*.
Forst. prodr. n. 446.
Fronds bipinnate, leaflets pinnate, pinnae rhomboid gasb-crenate, stipe rugged naked.
129. *Polypodium fetosum*.
Forst. prodr. n. 447.
Fronds bipinnate, leaflets subpinnate, pinnae linear gasb-serrate, serratures setaceous, stipe villose.
130. *Polypodium aristatum*.
Forst. prodr. n. 448.
Fronds bipinnate, lower leaflets pinnate, pinnae rhomb-oblong gasbed, segments mucronate-serrate, stipe somewhat villose.
131. *Polypodium adiantiforme*.
Forst. prodr. n. 449.
Fronds subbipinnate, leaflets ovate gasbed, lobes ovate obtuse crenate-serrate, the lowest separate, stipe scaleletted rough.
132. *Polypodium medullare*.
Forst. prodr. n. 452. escul. 74. n. 48.

Fronds

Fronds bipinnate, leaflets pinnate very long-pointed, pinnae oblong subfalcate acute crenate, stipe rough, trunk arboreous hispid.

133. *Polypodium extensum.*

Forst. prodr. n. 453.

Fronds bipinnate, leaflets pinnate acuminate serrate at the tip, pinnae oblong serrate, stipe rough with dots, stem arboreous.

134. *Polypodium dealbatum.*

Forst. prodr. n. 454.

Fronds bipinnate, leaflets pinnate acuminate white underneath, pinnae oblong subfalcate serrate, stipe rough, trunk arboreous.

135. *Polypodium affine.*

Forst. prodr. n. 455.

Fronds bipinnate, leaflets pinnate acuminate, pinnae linear-oblong crenate, stipe smooth.

136. *Polypodium lunulatum.*

Forst. prodr. n. 456.

Fronds bipinnate, leaflets pinnate serrate at the tip setaceous, pinnae linear-oblong falcate serrulate at the tip, stipe rough.

137. *Polypodium latifolium.*

Forst. prodr. n. 457.

Fronds subbipinnate, leaflets ovate acuminate pinnatifid and lobed, segments repand crenate, stipe very smooth shining.

DESCRIPTIONS, &c.

The investigation of the species in this extensive genus is attended with difficulties, from their general resemblance in habit, the difference of their appearance at different ages, and the defect of their specific characters. Nor have authors always been accurate in the terms used in describing the fronds.

To remedy this in some degree, the plants should not be gathered for examination, until they are in a state of full fructification: and the attention should be more particularly directed to the lower parts of the fronds, pinnae, &c. for there the characters are most constant and observable, the extreme parts generally running together so as to baffle every attempt at description.

Add to this, that the far greater part of the species are of American growth, little known in Europe but from dried specimens, not always collected with judgment enough to show satisfactorily the true characters of the fronds and fructification. In Britain we have at most eighteen species; and very few more in all Europe.

We should be scarcely justified, says Dr. Smith, in separating *Polypodium vulgare* from the other species, because it has no perceptible involucre. There might be more reason perhaps, considering the immensity of the genus, for distinguishing those in which the involucre is a part of a circle or reniform, from such as have a perfectly umbilicated and circular involucre. But the limits are so difficult to define and describe, that it seems much safest, until we get more information, to preserve the genus as it is generally understood.

Dr. Smith, however, has removed several of the *Polypodiums* into his new genus *Cyathea*: and probably more of them will migrate into the same genus, when they are more accurately examined.

Linnaeus calls those fructifications *solitary*, which are disposed in one longitudinal row only on each side; *seriales* or in rows, which are digested transversely, in a simple row, between each of the transverse nerves; *scattered*, which are digested in two or more rows between the transverse nerves.

1. Native of South America.

2. Stems many, very long slender and compressed, fixing themselves to trees like Ivy, and putting out many branches, some very long, others short, covered all over with little narrow acute ferruginous scales, interspersed with abundance of small filaments. Fronds alternate, four inches long, and seven or eight lines wide towards the lower part; they are gradually narrowed towards the tip, which is blunt, and the edges are waved; they are membranous, and the upper sur-

^a Withering.

^b Essay, 231.

face is smooth and of a bright green; the fructifications are hoary and in one row on each side of the midrib.

Native of the West Indies, Jamaica, Martinico, Domingo.

3, 4, 5, 6. Natives of Jamaica.

7. Native of Hispaniola.

8. Native of the Society Islands.

9. Shoots slender, with ferruginous close-pressed hairs on them. Stipes scattered, two or three inches long, convex on one side, flattish on the other, hoary with villose close-pressed hairs not to be distinguished without a magnifier. Fronds four inches long, attenuated at the base and acute, flat, hoary with minute stellate villose hairs underneath, but smooth above. Fructifications in a single row along the edge, confluent, ferruginous, villose. It is the *P. serpens* of Forster, but quite distinct from that of Swartz. — Native of New Zealand.

10. Root creeping, mossy. Fronds rough with stiffish strigæ. Fructifications bearded with fulvous wool.

Browne says, it creeps along the ground, and casts its small oval leaves on both sides, in an alternate order; these seldom exceed an inch and quarter in length, and lie commonly close upon the ground or rocks.

Native of South America: of Jamaica, according to Browne, but rare in that island.

11. Stipes several, aggregate, not more than an inch in length, flattish above, keeled underneath, smooth, even. Fronds three or four inches long, an inch wide, sometimes widening in the middle to two inches, a little attenuated at the base, very blunt at the tip, thickish, scarcely veined. Fructifications large in proportion to the frond, disposed longitudinally in a double row, and immersed in the substance of the leaf. Found by Koenig in the East Indies.

12. Native of South America.

13. Native of South America. Swartz refers the first species of Browne to this: but he says the leaves are thin and delicate, which ill applies to the name of *crassifolium*.

14. Root the thickness of a finger, five or six inches long, black on the outside, having many fibres. Fronds six or seven, from two to three feet in length, acute at the end, narrow at the base, widening gradually, smooth, bright green on the upper surface; waved at the edge.

Native of South America, and the island of Jamaica, on the trunks of old trees, like our common Polypody.

15, 16. Natives of South America: and suspected to be both very nearly allied to the preceding.

17. Root tomentose, fibrose, not creeping. Fronds several, aggregate, erect, elliptic or attenuated at bottom and thence linear-lanceolate, acute very seldom bifid, entire with the margin rolled back, smooth, a span long. Dots of the fructification in a single row. — Native of Japan, flowering there in October.

18. Frond acuminate, erect, from a span to a foot in length. Points of fructification scattered, solitary, next the midrib at the tip, two or more between the nerves in the middle, orbicular. — Native of Japan.

19. Stipe very smooth, black. The frond resembles a flying bird and is three-lobed: lobes elongated, quite entire; the middle one twice as long as those on the sides, eared on both sides at the base; the lateral ones have only one ear at the base. The fructifications are in scattered dots. Found in the island of Madagascar by Sonnerat.

20. Frond simple trifid or quinquefid; the lobes lanceolate, quite entire, the middle one larger. The dots of fructification are rather large, scattered, remote. The upper surface above the dots gibbous and elevated.

According to Loureiro, the root is horizontal, fibrose and creeping. Fronds half a foot long, simple,

^a Plumier.

^x Swartz.

^y Forster.

^z Vahl.

^a Forster.

^b Linn. spec.

^c Vahl.

^d Plumier.

^e Linn. spec.

^f Thunb. jap.

^g Thunb. in Linn. trans.

^h Linn. suppl.

ⁱ Linn. mant.

petioled, three-cleft or five-cleft; the segments quite entire, ensiform, acute or obtuse. Fructifications scattered, remote: without any perceptible involucre, as in the common sort, according to Dr. Smith.—Native of the East Indies and CochinChina.

21. Native of Jamaica^k.

22. Root scaly with a brown villus on it. Stipe filiform, grooved, ascending, smooth, a hand high. The lateral lobes of the frond smaller, the middle one twice the length of the two others, all lanceolate, acute; entire, smooth. Fructifications in a single row on each side equidistant from the midrib. It differs from *P. trifurcatum* in having the base of the frond hastate-trifid, and not three-forked at the tip.—Native of Japan; flowering from february to june^l.

23. Native of South America.

24. Native of Jamaica. This is the *P. scolopendroides* of Linneus's first edition of his *Species Plantarum*, but not of his second edition and *Systema Vegetabilium*. This therefore ought also to have been inserted here under that name. The lower lobes in that are remote, whereas in this of Swartz they are united.

25, 26. Natives of Jamaica^m.

27, 28. Natives of South America. Supposed to be nearly alliedⁿ.

29. Root creeps obliquely under the surface, sending forth many fibres from little tubercles, it is about the thickness of the little finger or more slender, covered with brown mossy scales, pale yellow on the outside, greenish within. Stipes smooth, grooved on the inner side. Fronds from half a foot to a foot in length: the pinnas are slightly serrate at the edge, and paler underneath. Fructifications in two rows, one on each side of the midrib of the pinna or lobe, and parallel to it, in large yellowish brown round dots, pedicelled, of a roundish shape, with the surface granulated from the protuberance of the seeds, furnished with a short elastic spring, and opening into two valves. Adanson and Gleditsch, following Tournefort's figure, speak of this fern as destitute of the spring, which seems common to all the ferns. Malpighi long since delineated it rudely, and Gleichen has since done it elegantly. The lower pinnas are frequently barren. In this species, the assemblages of capsules are not covered with an involucre, or if there be any, it soon falls off^o.

It is very common in woods and shady lanes on the old stumps of trees, and on rocks and walls: in fructification from june to october.

The root of Polypody was employed by the ancients as a purgative; and being thought useful in expelling bile and pituitous humours, was recommended in maniacal melancholical disorders: but to act as a cathartic the root must be exhibited in its recent state, and in a large dose. As a demulcent or pectoral, its sensible qualities seem to promise more advantage: joined with liquorice its good effects have been experienced in coughs and asthmatic affections. It is rarely used in this country^p.

Several varieties of Common Polypody are noticed. The smaller is scarcely deserving of regard. Ray has one with the pinnas doubly serrate, found on the walls of Windsor Castle, and since by Dr. Stokes, in Worcestershire. Bolton has figured another (2. 5. b.) with the pinnas deeply scalloped. It was observed in a wood near Bingley in Yorkshire, by Mr. Alexander. Dr. Withering has a third, which he names *acutum*; the pinnas being very long, distantly serrate, and tapering to an acute point. A specimen of it was sent him by J. W. Griffith, Esq; from rocks in North Wales. But the most remarkable variety is that which has been long noticed under the name of Welsh Polypody, and is considered as a distinct species by Linneus and others. In this the pinnas are pinnatifid, and the lobes serrate. It is certainly, says Mr. Lightfoot, no other than a variety of the common sort, as I have had opportunities of determining, by observing its different gradations. In this state it is analagous to a

double flower among the more perfect plants, and therefore never produces fructifications. The same is observable in a variety of common Hart's tongue or *Asplenium Scolopendrium*^q.

30. This very much resembles the preceding, but is smaller and smooth underneath.—Native of Virginia and other parts of America.

31. Native of America^r.

32. Native of Jamaica, in low cool and shady places: it rises in tufts; and seldom exceeds ten or twelve inches in length^s.

33, 34. Natives of the Society islands.

35. Native of Jamaica and Egypt.

36, 37, 38, 39, 40. Natives of South America^t.

41. Root or shoot creeping, wholly covered with brown tomentose radicles. Stipes angular, twisted; smooth, erect, a span high. Pinnae acuminate, smooth, remote, in four pairs with the end-lobe very large.—Native of Japan^u.

42. Root as thick as the thumb, and sometimes a foot long, round, much branched, knobbed and fleshy, green within, but without covered with very small golden scales, with holes in the middle of the knots, occasioned by fallen leaves. Fronds about a foot long; cut into seven or eight very deep segments, an inch wide, and three or four inches long, remote and acuminate; underneath is a double row of golden dots along the nerves of the segments^x.

Native of Jamaica and Martinico, on the trunks of large trees.—Cultivated here before 1742, by Robert James Lord Petre. It flowers in march^y.

43. Some of the leaves are entire, and wide, resembling those of the oak, others are lacinated, with the segments not reaching to the midrib, long, acute: the lacinate leaves are much longer than the others^z.

The fruiting frond is so like that of *P. aureum*, that it might be taken for the same; but the other leaves are shorter by half, wider, only sinuated, like those of the oak^a.—Native of the East Indies.

34. This fern rises commonly to the height of twenty-four or thirty inches; its leaves are very large in proportion, and appear as if they had been torn at the margin^b. The involucre is umbilicated, according to Dr. Smith.

Native of the West Indies: Introduced in 1769, by Mr. George Houstoun. It flowers here most part of the year^c.

45. Fronds in circles round the crown of the root, which is rough with the remains of decayed stipes, keeled from the pinnas being bent upwards on each side the leaf-stalks. Pinnae so closely placed as to be imbricate, the lower edge covering the upper edge of the next beneath; serratures frequently but irregularly terminating in short spine-like teeth, furrowed underneath with veins, the margin of the upper half of the base of each pinna parallel to the rachis or general stalk. Stipe furrowed above. Fructifications disposed in two parallel lines on each pinna, with five or six dots forming two lines^d.

Dr. Withering observes, that the plant is about four inches long, and one inch broad, generally curved; and that the larger serratures of the pinnas end in semitransparent thorns.

According to Lightfoot, the fronds vary from three to eight inches in length, and are stiff and rigid: the pinnas are supported on very short but visible foot-stalks, their upper edge slightly curved in a concave arch, the lower edge in a convex one, edged with serrated spinules. The pinnas are truncated at the base, their upper angle is elevated, but the lower one is as it were rescinded, and destitute of spinules. The fructifications grow upon ten or twelve pairs of the uppermost pinnas, but the lowermost, which are about as many more, are barren. The scale or involucre, which covers each dot, is peltate. The capsules are globular, supported each on a foot-stalk, and containing each a single seed, according to Gleditsch.

^q Fl. scot. p. 668 & 661.

^r Linn. spec.

^s Browne.

^t Linn. spec.

^u Thunberg.

^x Plumier.

^y Hort. kew.

^z Ray.

^a Linn. zeyl.

^b Browne.

^c Hort. kew.

^d Woodward in Withering.

^k Swartz.

^l Thunberg.

^m Swartz.

ⁿ Linn. spec.

^o Curtis.

^p Woodville.

Dr. Stokes remarks, that cultivation does not change the appearance of this fern.

Native of Britain, Norway, Switzerland, Dauphiné, Carniola, monte Baldo, and Virginia. The Virginian plant, according to Linneus, has the pinnae more elongated and less incurved, with the serratures less ciliate-spiny. In Wales, on the highest mountains of Caernarvonshire and on Glydar near Llanberris: and in Scotland, at the foot of the rocks among the Highland mountains.

46. This has many long filaments and fibres for its roots, of a dark brown colour, having, towards the top, where the root is round and solid, ferruginous hairs. Fronds from six inches to a foot and half in length: pinnae set alternately as thick as they can stand from the very root, each of an irregular figure like a trapezium, having very small prickles at the corners, and a scarcely discernible midrib, on each side of which is a row of seeds in small ferruginous spots.—Native of Jamaica^e.

47, 48. Natives of Jamaica^f.

49. This fern seldom rises above two feet and a half or three feet in height; the stipe is very simple, and the pinnae pointed and entire; they are connected by very short foot-stalks; and project backwards on each side of them^g: they are about an inch in length, and half as broad. Fructifications in two rows of ferruginous spots, one on each side the midrib^h.

Native of Jamaica, and the continent of South America.

50. Native of Jamaicaⁱ.

51. Native of the East Indies. Linneus informs us, that the whole plant, in his specimen, is smooth^k. According to Burman, the lower part of the stipe is very hirsute, being covered with spinules or small scales, which diminish upwards, till it becomes quite smooth towards the top. Pinnae in the lower part commonly opposite, in the upper alternate, simple: the margin is scarce observably serrate, but each serrature is terminated by a very slender prickle or bristle. Fructifications dispersed in dots on the upper pinnae.

52. Stipe even, upright. Frond flat: pinnae lanceolate, acute, gradually decreasing upwards, semipinnate. Lobes regular, ovate, subacute, crowded, slightly bowed on one side, decreasing from the base of the pinnae towards the top, then confluent and becoming a narrow acute serrate appendix. Nerves transverse, oblique, parallel. Fructifications in distinct approximating spots, in a single row under the surface of each lobe, becoming rufous when ripe^l.

Native of the East Indies, and of Barbary near la Calle.

53. Frond a foot long or more, smooth: pinnae lanceolate, acute; serratures ovate, parallel-nerved, mucronate, frequently subfalcated by the revolute margins: the terminating pinna simple, gash-serrate. Fructifications near the margins of the incisures. Thunberg at first took it for the *unitum*, which it very much resembles, but it differs from that in having the pinnule or serrature at the base of the pinnae longer on the upper side. Native of Japan^m.

54. Native of South Americaⁿ.

55, 56. Natives of Jamaica^o.

57. Native of America^p.

58. Plant three feet high, upright, from an oblong thick horizontal simple root^q. According to Sloane, five feet high. Stipe a foot and half long, roundish, dark brown or blackish. Pinnae about two inches long, and three quarters of an inch broad at the base, roundish and blunt at the end, not at all laciniated. On each side of the midrib many ferruginous round spots of fructifications.—Native of America and China.

59. Native of Jamaica, and other parts of the West Indies.

60, 61. Natives of Jamaica^r.

62. Native of Jamaica. See *Acrestichum sanctum*.

63. Native of America^s.

^e Sloane. ^f Swartz. ^g Browne. ^h Sloane.
ⁱ Swartz. ^k Fl. zeyl. ^l Desfontaines.
^m Thunb. in Linn. trans. ⁿ Linn. spec. ^o Swartz.
^p Linn. spec. ^q Loureiro. ^r Swartz. ^s Linn. spec.

64. Native of Jamaica^t.

65. These little plants rise three or four together from a tufted fibrous root, and seldom exceed eight or ten inches in height: their foliage is divided very deep; and each lobe is again deeply crenated in the margin^u.—Native of Virginia and Jamaica.

66. This has the habit of *P. fragile*, but the leaflets are closer together, and not so deeply lobed. Fructifications in larger dots, proceeding not from a roundish scale; but from an oblong, linear, white valve or chink^v. The plant is three or four inches high.

According to Gouan, it is easily known by its habit. The lower pinnae have the leaflets in threes or fours, subcuneiform palmate-toothed: but the middle ones consist of five or seven longer acuter and narrower leaflets; finally the end ones are still narrower and confluent.

Dr. Smith has removed this species into the genus of *Cyathea*. The frond is bipinnate and pinnatifid, its segments obovate and notched; the stalk winged; the flowers scattered; and the calyx torn^w.

Native of England, Germany, Switzerland, the South of France, Piedmont, Siberia, upon moist shady rocks. Above Hammerham church, and near Wyburne in Westmoreland: also in Buckinghamshire.

67. Stipe scaly especially at the base, angular, striated, cinereous, erect, a span high: the scales are loose and ferruginous. Pinnae alternate, petioled, wide at the base, very long pointed, somewhat waved about the edge; the upper surface deep green and even, the lower paler, netted, smooth; they are an inch or an inch and half in length; and the terminating pinna is three-parted^x.

It resembles *P. lonchitis*, but the frond is larger, the leaflets on petioles though very short ones, more pointed, and very bluntly serrate. The fructifications also are not in two rows, but scattered over the whole lower surface of the leaflets or pinnae, yet distinct^y.

Native of Japan, where it was found by Thunberg.

68. Stipes round, tomentose. Fronds pinnate below, pinnatifid above: pinnae ensiform, gradually shorter, gash-pinnatifid, eared upwards at the base: incisures entire, with two fructifications on each side at the margin.—Native of Japan^z. The involucre is nearly reniform^{aa}.

69. Native of the Society Isles.

70, 71, 72. Natives of the islands in the South Sea.

73, 74, 75. Natives of New Zealand^{ab}.

76. Plant sometimes nineteen, and stipe twelve inches high. The lowermost pair of leaflets not confluent, as all the rest are, and placed an inch and half from the pair above it; in a vigorous plant bent almost back to back, in consequence of which, when dried and gummed on paper, they form an acute angle with the stalk, and might lead such as had not seen the plant growing, to suppose they were in the same plane with the rest. Lobes semielliptical^{ac}. The whole plant is hairy^{ad}. The fructifications are disposed in small pale-brown dots, in two rows, near the edges of the pinnules^{ae}.

Native of many parts of Europe and of Virginia, in the clefts of rocks, moist and shady places and woods. With us in Devonshire, Yorkshire, Westmoreland, as Barrowfield wood near Kendal, and by the fall of Lodore near Derwent water; and in the lowlands of Scotland, as about Langholm and Pantonbridge, in Eskdale, &c.

77. Native of America.

78. Stature of *P. fragilis*. When fresh-dried extremely fragrant. Stock dark purple, smooth and even, with pale red chaffs towards the base. Frond smooth and even. Pinnae opposite, sessile, ovate, obtuse, smooth on both sides, pinnatifid; the margin thin, bent back, and at first covering the fructifications, as in *Pteris*. The fructifications, though marginal only, have the character of this genus, being

^t Swartz. ^u Browne. ^x Linn. spec.
^v Essay, 253. ^z Thunberg. ^{aa} Linn. suppl.
^w Thunberg. ^{ab} Smith, Essay, 233. ^{ad} Forster.
^y Woodward in With. ^{ae} Withering. ^{ae} Lightfoot.
covered

covered with their proper scale or involucre, which is reniform; in other respects it approaches very near to *Pteris*^b.

Desfontaines describes it as a dwarf plant, with fibrose, brown, twisted roots often pubescent; numerous, brown, filiform, erect, villose chaffy or naked stipes; frond ovate-oblong, flat; pinnules opposite, small, linear ovate, decreasing gradually, blunt, entire, lobed or even pinnate; the fructifications in a spherical granule are concealed under the folded margin of the pinnule as in *Pteris*, covered with pale membranes.

According to Loureiro, it is a foot high; the fronds radical, erect, subbipinnate, lanceolate, hairy; the leaflets crowded; the segments blunt, deeply ferrate. Stipes chaffy, channelled, brown, scaly at bottom. Fructifications in rows. This can hardly be the same with the fern of Linneus's mantissa and Desfontaines.

Native of the South of France, and found by Koenig on the walls of Fuschal in the East Indies, according to Linneus in his mantissa. Desfontaines observed it in the fissures of rocks on mount Atlas: Loureiro, if his plant be the same, in Cochinchina.

The fern which Hudson has under this name is supposed to be only a dwarf variety of *P. Thelypteris*; but Dr. Withering recommends farther attention to it from botanists who live near Keswick, where Hudson found it in moist clefts of rocks.

79. Stipe even. Leaflets lanceolate, pinnatifid to the middle. Fructifications scattered.

Native of the East Indies, on trees¹. Osbeck found it in Java.

80. Stipe rough-haired. Frond pinnate, with the lateral leaflets pinnatifid at the base; all the pinnae sessile, sharply and very finely ferrate; pinnules at the base turned downwards next the stipe, longer and semipinnatifid, by which mark this fern is very easily known. Thus the frond, which is simply pinnate at the tip, is bipinnate at the sides, with the pinnule at the base elongated, pinnatifid. Found in China by Osbeck^k.

81. This fern varies from six to eighteen inches or more in height; in a moist soil it is three or four feet high, and is tripinnate, on dry rocks and banks about a foot high, the first pair of pinnae the largest, the only pair triply divided. The stipe and nerves covered with brown filmy scales. Outline of the frond nearly triangular. The ferratures end in short awns. The terminating pinnae are confluent. Fructifications in numerous small dots, in two rows, covered at first with a scaly involucre. Linneus says, that the lower pinnae are barren; but when the frond comes to maturity, the whole is generally fertile¹.

Native of the North of Europe, in moist woods and shady places in a gravelly soil; in chinks of moist rocks, on old walls, and in marshy places at the foot of decaying oaks.

82. Not much more than a foot high, the twigs three inches long, and half an inch broad; the pinnules are a quarter of an inch long, and joined together almost to the end, with ferruginous dots on the back, and of a yellowish green colour on the upper side.

Native of Jamaica on the banks of Rio Cobre, below St. Jago de la Vega^m. Introduced in 1784, by Mr. Lindsayⁿ.

83. Common Male Fern, as it is absurdly called, is from a foot and half to four feet in height. The leaves grow in large circular tufts: they are first alternately pinnate, the pinnae increasing in size from the base towards the middle, and afterwards gradually decreasing upwards towards the summit of the leaf. These pinnae are again pinnatifid, or subdivided almost to the nerve into linear obtuse parallel lobes, crenate on the edges. The stipes are covered with brown filmy scales. Fructifications kidney-shaped, from three to eight on each lobe, in two rows near the base and distant from the edges; none at the end: they are covered with a permanent scaly shield or involucre, of

a nearly reniform shape. Capsules a pale brown, surrounded with a saffron-coloured elastic ring^o.

Native of most parts of Europe, Barbary, &c. in woods, heaths, and stony places.

It seems to have the same qualities with the common Brake or *Pteris aqualina*. Both are burnt for their ashes, which are sold to the soap and glass-makers. The Bishop of Drontheim relates, that the young curled leaves, at their first appearance, are boiled and eaten like Asparagus; and that the poorer Norwegians cut off those succulent laminae, like the nails of the finger at the crown of the root, which are the bases of the future stalks, and brew them into beer, adding a third part of malt: in times of great scarcity they mix it with their bread. He adds, that cut green and dried in the open air, it affords not only an excellent bitter, but infused in hot water, becomes no contemptible fodder to goats, sheep, &c. which will readily eat, and sometimes grow fat upon it^p.

The root of this Fern has lately been greatly celebrated for its effects upon the *Tænia* or Tape-worm. This vermifuge power of fern-root seems to have been known to Theophrastus, Dioscorides, Galen and Pliny; and was recommended by Hoffman and others among the moderns. Its use however was very generally neglected, till Madame Noufer, a Surgeon's widow in Switzerland, employed a secret remedy as a specific in the cure of the Tape-worm. The principal physicians at Paris having been deputed to make a complete trial of its efficacy, it was purchased by the King of France, and afterwards published by his order.

After the patient has been prepared by an emollient clyster, and a supper of panada with butter and salt, he is directed to take in the morning, while in bed, a dose of two or three drams of the powdered root (if an infant one dram.) The powder must be washed down with a draught of water, and two hours after a strong cathartic, of calomel and scammony, is to be given, proportioned to the strength of the patient. If this does not operate in due time, it is to be followed by a dose of purging salts; and if the worm be not expelled in a few hours, the process is to be repeated at proper intervals. For the success of this, or a similar mode of treatment in this country, see Dr. Simmons's account of the *Tænia*: but whether the Fern-root or the strong cathartic is the principal agent in the destruction of the worm, may admit of a question; it appears however from some experiments made in Germany, that the *Tænia* has in several instances been expelled by the repeated exhibition of the root, without the assistance of any purgative¹.

Dr. Withering informs us, that he has frequently used it, and seldom without the desired effect. But he does not say whether he exhibited the fern-root, with or without cathartics.

84. Fronds a cubit high; the stalk generally waved and smooth, but sometimes scaly. The first division of the pinnae is distinct and distant, thirty or more in the series; the nerves smooth, fine and slender: the second division, or the pinnules upon these nerves, are also distinct, very fine, delicate and numerous, being upwards of thirty pairs upon each nerve, of a linear-lanceolate form and semipinnate, the lobes having generally two or three acute ferratures at the extremity, often ending in a short awn. These lobes are tender and pellucid, commonly nine or ten pairs, varying much in figure, being sometimes acute and falcated, which is their most usual appearance, at other times truncated, and more deeply and acutely serrate^r.

The lower pair of leaflets on each pinna, that is the pair next to the principal or primary leaf-stalk, stands close to it, and parallel with it, pointing upwards and downwards. The breadth of the leaflets varies considerably in different plants, but when they are narrow and the wings distant, the whole has a remarkably light and elegant appearance. There is one cluster of capsules on each lobe of the leaflet, appearing at first in distinct round dots, each covered with a scale, which is deciduous. In a ripening

^b Linn. mant.

ⁱ Linn. spec.

^k Id. ib.

¹ Lightfoot, Withering.

^m Sloane.

ⁿ Hort. kew.

^o Lightfoot.

^p Idem.

^q Woodville.

^r Lightfoot.

state the whole of the leaflet seems covered by them; whilst in *P. Filix mas* the upper end is always bare^a.

Dr. Smith remarks, that the involucre is crescent-shaped, and seems inclined to refer this species to his genus *Darea*.

Native of the northern, and some of the more southern parts of Europe, in moist and shady marshy places, moist rocky woods, about rivulets and on heaths. By no means so common with us as the preceding.

85. Stem smooth with two furrows, ten or fifteen inches high. Pinnas alternate; segments linear-lanceolate, blunt, either entire or finely serrate: the two or three lower pairs of wings gradually shorter, and the lowest pair often pointing downwards^t.

Some of the most remarkable particulars in which this species differs from *P. Thelypteris*, with which it has been confounded, as well as with *P. Filix mas*, are these. First, *P. Thelypteris* has a small creeping root. *P. Oreopteris* has a large scaly root, wrapped and tied together with small strong fibres which cannot be separated without difficulty. Secondly, when *P. Thelypteris* grows old, the under side of the leaf is totally covered with the confluent fructifications, and the edges of the pinnules are reflexed or contracted. In *P. Oreopteris* the fructifications are always on the margins, both in a young and old state, and never run into one another; the lobes are oval and plane. Thirdly, this plant is four times as large as *P. Thelypteris*, and the latter always grows in boggy places; whereas *P. Oreopteris* grows in dry woods, on moors and hills, very rarely near water^u.

Mr. Dickson found it both in England and Scotland, most plentifully in the latter. Mr. Teasdale, in woods at Castle Howard and Hornby. He mentions, that this fern has a very agreeable scent; and suggests, that perhaps *P. fragrans* of Hudson may be a variety of it. Mr. Robson, in moist woods near Darlington, never on dry hills in that neighbourhood. Miss Read, in a wood at Old Foot's well near Bromsgrove. Dr. Sibthorp, on the north side of Shotover hill. According to Mr. Griffith, it is more frequent in mountainous situations than any other species.

86. This has the habit of *P. Filix mas*. The stipe is smooth; the barren leaves wider and more blunt. Old leaflets covered with capsules^x.

The pinnas are deeply divided, but the divisions do not reach to the midrib: the lobes, when in seed are much contracted, and narrower than before the capsules are fully formed; but this is very general through the whole tribe^y.

Native of the northern parts of Europe in bogs. Near Bungay in Suffolk. In St. Faith's Newton bogs near Norwich. At the foot of Snowdon near Llanberris.

87. Leaves generally near a cubit high, of a firm and rigid texture. Stipe remarkably scaly, the base especially is covered with numerous broad fuscous membranes: the rib and nerves have a slight filmy down of the same colour. The primary pinnas are longest near the middle of the rib, and thence decrease gradually towards the top and base, from thirty to forty pairs in number. These are again pinnated with about twenty pairs of irregularly oval, (or rhomboidal) acute, nerved, auriculated pinnules, (or having a projecting angle on the upper edge near the midrib) edged with sharp prickly teeth. The first or lowest of these pinnules, on the upper side, at the base of the nerve, is larger than any of the rest. The extreme pinnules are confluent. The fructifications are as usual in a double row, and are covered with peltate scales. Ten or more of the lowest pairs are generally barren^z.

Native of most parts of Europe, of Barbary, Egypt, &c. in woods and shady places.

β. The young leaves put on a different appearance from the full grown ones. They vary from six inches to a foot in height, and are only simply pinnate; the pinnas of a lanceolate and falcate form, semipinnate,

and edged with prickly serratures. The auricles at the base of the pinnas are conjoined at the top of the leaf, but often separate at the bottom of it. In this state, if there are any fructifications, they are only to be found upon six or eight of the uppermost pairs of pinnas. It grows in shady places^a.

88. Native of Jamaica^b.

89. Seven or eight inches high. Stipe red, smooth, slender, convex on one side, bare for two or three inches from the base. Pinnas acute. Leaflets linear-lanceolate. Mr. Bolton has well observed, that the pinnas are distinct all the way up, not becoming confluent at the top, and that the leaflets on the upper side the secondary midrib are larger than those on the lower, by which it may be distinguished from *P. fragile*. The regular serratures on the sides of the lobes also afford a good distinction, the lobes in *P. fragile* being only serrate, towards the end, and that very irregularly^c.

Native of England, France, Germany, Switzerland, Carniola, Siberia. With us in Derbyshire, Westmoreland, Wales and Scotland.

90. Native of Madeira and the Azores. Found there by Mr. Francis Masson. Introduced in 1779^d.

91. Habit and structure of *P. Filix mas*, but the pinnas more approximating, quite entire, and having a great abundance of very small floriferous dots; the stipe also is smooth and even. Found in Canada by Kalm^e.

92. This seldom rises above eight or ten inches, and spreads into a branched foliage above the middle; these are simple, and furnished with oval alternate and jagged leaves: both the foliage and branches of the plant are adorned with a fine down.—Native of Jamaica, but not common there^f.

93. This has the habit of *P. Filix mas*, but the pinnas are oblong, not crenate, but bluntly serrate towards the base; it is plainly distinguished by the pinnas having at each margin underneath two or three larger distinct dots, instead of many in the disk, as in *Filix mas*^g.

According to Dr. Smith, the involucre is nearly reniform, as in that species.

Native of Canada; introduced in 1772, by Samuel Martin, M. D.^h

94. Root of many capillary brown fibres. It is a slender plant, with narrow pinnules like those of *P. Filix Femina*, but smaller, and of a yellowish green. Among the fructifications are round globules, first green, then black, of a sweetish taste, like the root of the common Polypody, which according to Cornutus when they are ripe fall to the ground, and strike root; accordingly Linneus calls them bulbs. Bobart rather conceives these globules, bulbs or tubers, to be the work of insects, because it is unusual to find two sorts of seeds on the same plant: but there are several plants which increase both by seeds and bulbsⁱ. Native of Canada.

95. From four to seven inches high, or according to Lightfoot, from two to ten or twelve inches, but its most common stature about half a foot. Stipe red (at least near the base, where it is bare for about two inches) smooth, slender, brittle. Pinnas nearly opposite, from ten to fifteen pairs, the lowermost very remote, shorter than the middle ones, all placed nearly at right angles with the rib. The pinnules in the second division six or eight pairs, each semipinnate, their lobes obtusely oval, toothed on the edges, and about four or five pairs on each pinnule, with an odd one at the end. Leaflets more than twice as long as they are broad. Fructifications white at first, large for the size of the lobes, brown and confluent when ripe, covering the under side of the leaf, as in *Acrostichum*.

Haller and Weis are of opinion, that *P. Reticum* of Linneus is no other than a variety of this. In habit it approaches near to it, but it is not distinctly bipinnate like that plant, nor are the lobes of the leaflets regularly serrate at the edges, as in that^k.

^a Withering, Lightf. ^t Withering.
^b Dickson in Linn. trans. ^x Linn. ^y Withering.
^z Lightfoot.

^a Lightfoot. ^b Swartz. ^c Withering. ^d Hort. kew.
^e Linn. spec. ^f Browne. ^g Linn. spec.
^h Hort. kew. ⁱ Cornutus and Morison.
^k Lightf. Wither.

According to Dr. Smith, who makes our *P. fragile* a *Cyathea*, the frond is bipinnate and pinnatifid, its segments obovate and notched, the stalk winged, the flowers scattered, and the calyx torn.

Native of Europe on rocks. In England, Peak's hole, and on walls about Buxton in Derbyshire, near Hyde in Gloucestershire, in the road from Bourn Heath to Worms ash near Bromsgrove. In Wales and in Scotland.

Dr. Withering has three varieties, but they have been all gathered from the same root. Villars unites the *fragile*, *regium*, *rhæticum*, and another which he names *laciniatum*, under the name of *polymorphum*.

96. Linneus remarks, that the globules of fructifications in this are larger than in the species allied to it.

According to Villars, it is about six inches high, the leaves are jagged in obtuse segments, wider, rounded, little cut.

Scopoli describes the stipes as a span high, slender, red, smooth. Branches on each side to sixteen; the first branches the length of the last joint of the thumb, and at the same distance; to these adhere alternate pinules, to seven on each side, four or five lines in length, divided into oblong segments, three-cleft or four-cleft, simple, bluntish, a line long. At the origin of each segment is placed a yellowish globule of seeds.

Haller and Weis refer Vaillant's plant to *P. fragile*.

Native of France, Carniola and Piedmont.

97. This is a smooth, delicate plant, almost diaphanous. The barren leaves are much shorter than the fertile ones, and pinnate. Stipe capillary. Pinules fan-shaped, gash-lobed; segments blunt, unequal. Fruiting leaves erect, on an even, brown, filiform stipe. Leaf bipinnate; leaflets often lobed-pinnatifid; lobes small, obovate, blunt, sometimes toothed at the tip, unequal. Granules very small, aggregate scattered over the back of the frond¹.

Linneus, who doubted whether this fern is a *Polypodium*, says that it is a middle species between this genus, *Acrostichum* and *Osmunda*, Magnol and Barrelier make it an *Adiantum*, and Swartz affirms it to be a genuine *Asplenium*; with bipinnate and tripinnatifid fronds, remote pinnae, cuneiform gashed lobes, and solitary fructifications.

Native of Spain, Portugal, Provence, and Barbary, near Algiers, in the fissures of rocks.

98. Root decumbent, thick, clothed with a very soft close wool of a deep yellow colour. Stipes from a foot and half in height, green, even, obscurely angular. Leaflets oblong, the lowest opposite, the rest alternate, with patulous axils: pinnae acute, with acute lobes ferrate at the tip. The fronds are smooth^m.

Root oblong, horizontal, above a foot long, thick, roundish, fleshy, many-formed, appearing above ground, to which it is fastened by a few thick fibres: it is entirely covered with very close, slender rufous hairs. Fronds six feet high, radical, erect, few, unarmed: leaflets smooth, sessile, opposite or alternate. Loureiro could not find any fructifications, though he searched diligently for them in the month of May, which probably was not the proper season: Linneus's specimens had no fructifications, we must yet therefore remain uncertain, whether this species be a *Polypodium*, though there is little doubt of it.

Many authors have writ upon the Barometz or Scythian Lamb, and most of them fabulously. Some, among whom is Kircher, have given a figure of it much resembling a lamb, as the fruit of some plant on the top of the stalk. It is well known however to be the root, which from the variety of its form is easily made by art to take the form of a lamb, which the Tartars call *Boramet*, or rather that of a rufous dog, which the common names in China and CochinChina imply, namely *Cau-tick* and *Ken-tse*. The root rises above the ground in an oblong form, covered all over with hairs; towards one end it frequently becomes narrower and then thicker, so as to give somewhat of the shape of a head and neck, and it has sometimes two pendulous hairy excrescences resembling ears; at the other end a short shoot extends out into a tail; four

fronds are chosen in a suitable position, and are cut off to a proper length, to represent the legs, and thus a vegetable lamb or dog is produced, which at a due distance it may be easy to mistake for a real animal. It is scarcely necessary to contradict the fables that have been related of this singular root of a fern; such as that no grass will grow near it, as if the Scythian Lamb had fed it bare. Loureiro, who had an opportunity of examining it in a living state, in its native place of growth, affirms that the root when fresh cut yields a tenacious juice, very like the blood of animals in colour and substance, but that all the other wonderful stories that are told about it are fabulous. He says that the root is astringent, and will stop bleeding; and that it is of service in the gonorrhœa and fluor albusⁿ.

In the account of the Tartarian Lamb in our Philosophical Transactions, it is said that the down of the root is commonly used for spitting of blood, about six grains going to a dose, and three doses pretended to cure such a hæmorrhage: and that in China this down is used for stopping of blood in fresh wounds as cobwebs are with us; that they have it in so great esteem there, that few houses are without it. This down is of a dark yellowish snuff-colour, shining like silk, some of it a quarter of an inch long. The account says, that the root seemed to have been shaped by art, the climbing parts being made to resemble the body, and the extant foot-stalks the legs; that it was more than a foot long, as big as one's wrist, having several protuberances, and towards the end some stalks three or four inches long, exactly like foot-stalks of fern both within and without.

Bell, in his journey to Ispahan, informs us that he walked many a weary mile accompanied by Tartars, in search of this wonderful plant, but from his imperfect description it does not appear that he saw the true plant.

Darwin thus characterises the Tartarian Lamb, adopting with poetic licence the fable related concerning it:

"Cradled in snow and fann'd by arctic air
"Shines, gentle Barometz! thy golden hair;
"Rooted in earth each cloven hoof descends,
"And round and round her flexile neck she bends;
"Crops the grey coral moss, and hoary thyme,
"Or laps with rosy tongue the melting rime;
"Eyes with mute tenderness her distant dam,
"Or seems to bleat, a *Vegetable Lamb*°."

Dr. de la Croix has also celebrated this Fern in the following Latin verses.

"Surgit humo Borames. Præcelso in stipite fructus
"Stat quadrupes. Olli vellus. Duo cornua fronte
"Lanea, nec defunt oculi, rudis accoia credit
"Esse animal, dormire die, vigilare per umbram,
"Et circum exesis pasci radicibus herbis:
"Carnibus ambrosiæ sapor est, succique rubentes,
"Posthabeat quibus alma suum Burgundia nectar;
"Atque loco si ferre pedem Natura dedisset,
"Balatu si posset opem implorare, voracis
"Ora lupi contra, credas in stirpe sedere
"Agnum equitum, gregibusque agnorum albescere colles."

The false figure in the Philosophical Transactions will serve to explain in some measure the above lines.

Sir Richard Clayton has given this figure, together with those of Dr. Hunter, and Dr. De La Croix, in the frontispiece to his elegant edition of the latter's *Connubia Florum*.

This singular fern is a native of Tartary, China and CochinChina.

99. Root creeping, scaly; scales close, membranaceous, brown, smooth. Stipe grooved, with remote torn scales, erect, two feet high. Fronds smooth: pinnae alternate: lower pinnules nearly distinct, upper united, lowest subauriculate, very finely ferrate, not ciliate, gradually shorter. Fructifications at the tip of the frond.—Native of Japan, flowering from May to November.

100. Stipe round, rufescent, wholly covered with dark long loose hairs. Lowest pinnae bipinnate, upper

ⁿ Fl. cochinch. 675, 676.

^o Loves of the plants, 2. p. 24. l. 249—256.

¹ Desfontaines.

^m Linn. spec.

pinnate. Fructifications in the middle of the leaf in a single row.—Native of Japan.

101. Stipe half round, smooth, a span high and more, bifid at the top with the rudiment of a frond at the division. Frond smooth: pinnae ensiform, pinnatifid; segments lanceolate, blunt, entire with a reflex margin. Fructifications in a single row, at the margins of the segments, minute.—Native of Japan, flowering in June.

102. Shoot creeping, flexuose. Stipe round, smooth, flexuose-erect, commonly dichotomous, sometimes but rarely trichotomous. Frond dichotomous-subpedate, bipinnate, smooth above, glaucous beneath. Pinnules united, acute. Fructifications small in a single row^p.

Native of Jamaica, Japan, and in the dry mountains of New Zealand and the Society Isles.

The ashes of this with powdered alum are exhibited in Aphthas and excoriations of the mouth in Japan^q.

The New Zealanders suck out the sweetish farinaceous part of the root, having first roasted it, and beat it well with a stone or club^r.

103. This fern rises by a considerable hard simple and woody trunk to the height of twenty or twenty-five feet; it is, like the other ferns and palms, furnished only with ribs, which fall off gradually as it rises, while the new shoots spring up from the top: it resembles the Palm tribe also both in the form and structure of its trunk, being very hard immediately under the bark, but loose soft and fibrous in the middle. It holds for many years, bears all the inclemency of the weather with ease, and is frequently used for posts, where the smaller palms are not at hand^s.

Loureiro says that the trunk is sometimes armed with spinules: that the fronds are eight feet long, on roundish unarmed stipes: that the leaflets are lanceolate, ferrate, smooth, bright green; and the fructifications in orbicular, rufous, scattered dots. In Cochinchina the trunk is used for rafters in building, and is accounted excellent for that purpose.

Dr. Smith removes it into his genus *Cyathea*, and describes it as having an arborescent scaly trunk, a bipinnate frond, sessile ferrate pinnules with many flowers at their base, and an entire calyx.

Native of South America, Jamaica, Amboina, Cochinchina on the south next Cambodia.

104. Trunk twenty feet high, as big as the human leg, undivided, covered with the ends of the fallen petioles, which are dark brown, as big as the finger, two or three inches long, thick set with short and sharp prickles. At the top of the trunk five or six fronds stand round, about six feet long, having a purple stipe, very thick set with short sharp prickles on its back. At about a foot from the trunk, each frond divides into opposite branches, placed near the bottom, at about six inches distance from each other. The branches are a foot long in the middle. The twigs come out alternately, being an inch and half long, and about two thirds of an inch broad, in the middle; they are made up of pinnules one third of an inch long, and half as broad, blunt, indented, dark green above, pale green below, very thin, and so close set that there is no space between them^t.

Native of South America and the Islands. According to Swartz it is a *Pteris*.

105. The lateral nerves of the fronds are branched again. The seminal dots are scattered near the margin^u.

Cyathea borrida of Smith; with the trunk thorny, the fronds bipinnate and pinnatifid, the segments acuminate, ferrate at the tip, flowering near the margin, and furnished with interramifying veins at their base.—Native of the West Indies.

106, 107, 108. Natives of America.

109. Stalks many, about two feet high, each as big as a finger, very hairy, and at about a foot from the ground divided into branches, the lowermost whereof are about nine inches long, almost opposite. Twigs more than an inch long, alternate, made up of broad,

short, mostly entire, but sometimes notched pinnules, roundish at the end, often united for some space by their edges, pale green; covered, as well as the stalks branches and midribs with a whitish strong short hair^x.

Native of the West Indies—Jamaica, Martinico, Dominica.

110. Native of the East Indies.

111, 112. Natives of the island of Madeira. Found there by Mr. Francis Masson. Introduced in 1779^y.

113. Plant from five to eight inches or a foot high. Stipe slender, smooth, brittle, naked above half way up. The outline of the frond approaches near to an equilateral triangle. Pinnae about twelve or fifteen pairs, opposite; their subdivisions nearly the same, smooth, of a pale green colour. Pinnules subdivided almost to the nerve; lobes linear, obtuse; the lower ones crenate, the upper ones often entire, and running together. The pinnae do not grow exactly perpendicular, but decline towards the horizon. Fructifications in two rows of round dots upon each lobe; these, when ripe, cover the whole lower side of the leaf^z.

According to Scopoli, Tragus was the discoverer, Clusius the illustrator of this species.

Native of many parts of Europe, on rocks and in dry stony places. With us chiefly in the northern counties, Scotland and Wales. Cornbury quarry in Oxfordshire; in woods N. E. of the road up Frocester hill, Gloucestershire; in Yorkshire about North Bierly; among the rocks at the fall of Lodore on the side of Derwent-water, Cumberland. Barrowfield-wood near Kendal, and other rocky woods. In Scotland, at Langholm and Broomholm in Eskdale, about Dunkeld, in Stormount, &c. In Wales, near Tintern-abbey in Monmouthshire.

Bolton figures a variety with larger leaves: the largest lobes divided half way down to the midrib: the stalk taller, firmer, white, opaque. He found it in White-scars, near Ingleton, Yorkshire, and in the Peak of Derbyshire.

114. A foot and half high and unarmed. Fronds radical, suberect: pinnae deeply toothed^a.—Native of both Indies, Cochinchina and Egypt.

115. Leaflets lanceolate, alternately pinnate. Pinnae oblong, ferrate, sharpish, approximating at the base. Fructifications solitary at the base of the pinna^b.

Dr. Smith has removed it to his genus *Cyathea*, and describes it as having a tripinnate frond; the leaflets sessile, acute, ferrate, bearing a solitary flower at their base; and the calyx torn. Gathered at the Cape of Good Hope by Dr. Sparrman.

116. Found in the Island of Madeira by Masson. Introduced in 1779^c.

117, 118, 119. Natives of Jamaica^d.

120. This rises four or five feet high, having a smooth, reddish brown, shining stalk, the size of a finger, divided into alternate branches. Pinnules thick, blunt, variously sinuated or deeply cut, especially on their upper sides, and indented about their round ends, of a dark green colour and shining on the upper side. Fructifications in ferruginous spots, especially near the greater sinuations by the edges.—Native of Jamaica.

121. This rises three feet high, having a reddish smooth stalk, divided at one foot and a half from the ground into several branches, having their twigs, and they their pinnules, after the manner of *Adiantum nigrum*, only they are longer, thinner and sharper at the point, having there a very little prickle, as well as others much smaller along their margin, where are no incisures or very small ones. It is sometimes of a pale green colour, with almost pellucid thin leaves.—Native of Jamaica^e.

Introduced in 1769, by Mr. George Houstoun^f.

122. Leaflets six or seven on each side the stem: the lower ones opposite, the upper alternate; thick and opaque, generally cloven into five or seven segments, rounded at the ends. See *Acrostichum ilvense*.

^p Thunberg. ^q Idem. ^r Forster, escul. ^s Browne.
^t Sloane. ^u Linn. spec.

^x Sloane. ^y Hort. kew. ^z Lightfoot. ^a Loureiro.
^b Linn. suppl. ^c Hort. kew. ^d Swartz. ^e Sloane.
^f Hort. kew.

On Ben Lawers in Scotland, and Clogwyn y Garnedd in Wales.

123. From three to five inches high. Leaflets from seven to fifteen pairs, cloven on each side into five or six segments, spear-shaped, hairy underneath. It is a very rare plant even on Snowdon, where it was found by Mr. Lhwyd. Dr. Richardson also found it almost at the top of Clogwyn y Garnedd.

This seems sufficiently distinct from *P. ilvense* found on the Scottish alps by Mr. Dickson. Mr. Griffith thinks that Bolton's fern figured in t. 9. is only a very small and stiff plant of *P. fragile*, gathered in a high exposed situation, and that it is not the plant found by Lhwyd^g.

124. This nearly resembles *P. fragile* in size and habit. Root small, fibrous, bundled, a little woolly. Stipes several, slender, pale brown, shining, somewhat scaly at the base. Fronds bipinnate, lanceolate: leaflets remote, lanceolate, mostly alternate: pinnae ovate, obtuse, gashed, unequally toothed; teeth rather distant, obtuse, pale brown. Fructifications towards the edge, near the incisions^h.

Such is the account given by Mr. Dickson of this new species, which he first discovered in clefts of rocks in the highlands of Scotland; but though his description and specific character mention its being bipinnate, neither his own figure, nor the specimens in his fasciculi of dried plants, authorise us to say that they are so. They are only simply pinnate, and the pinnae divided into lobes, nor have they any proper midrib. *P. dentatum* of Forsk. in Gmel. syst. is a different plantⁱ.

125. This has been taken for *P. cristatum*, but it is very different from that: of a more delicate and transparent texture; the leaf-stalk but little if at all scaly, the opposite leaflets on the wings not unequal in size, and the midrib serpentine. It agrees with it in the disposition of the fructifications, and in the serratures ending in short awns.

Found on bogs on Birmingham heath; and Holloways in Devonshire^k.

126. Three or four inches high. Stem brown green, slender, bare for an inch or more at the base, edged with a narrow border on each side. Pinnae nearly triangular. Leaflets three-cleft, the middle segment sometimes notched^l.

The chief difference between this and *P. fragile*, which it much resembles in habit, consists in the divisions of the leaves being obtuse in this, and perfectly destitute of the bristly point observable in the other. There is also some difference in their habit and appearance, and the fructification of *P. fragile* is blacker. Dr. Smith has been inclined to believe it the *P. regium* of Linneus, but the original specimen of that in the Clifortian herbarium has a triangular, not lanceolate frond. Neither is ours *P. alpinum* of Jacquin, the divisions of which are linear, or nearly so.

Dr. Smith has removed this and *fragile*, into his genus *Cyathea*, in which the young capsules are enveloped in a globular membrane, which goes underneath them, and bursts either at the top in an even and lacerated manner, or at the side, as in this species and some others^m.

In some specimens the fronds are broader and more dilated than in the figure given in English Botany.

Found by J. Wynne Griffith, Esq; of Garn near Denbigh, on Cwm Idwel; and by Mr. T. F. Forster, jun. on a wall near Walthamstow in Essex.

127 to 137. Natives of the islands in the great South Sea: 132 and 134, in New Zealand. N. 132. *P. medullare* is thus described by Forster. Trunk a fathom in height, spongy, full of pith, on the outside hispid and black from the fall of the stipes, crowned at the top with very large fronds spreading out almost horizontally. Frond a fathom and more in length; the stipe rough all over with small callous red tubercles or dots. Leaflets crowded, pinnate, the lower ones two inches long, narrow, very long pointed. All the pinnules sessile, oblong-crescent-shaped, acute; the

lowest separate, crenate; the upper ones gradually shorter, connected, so that the apex of the leaf is plainly ferrate, with deep sharp teeth. Fructifications globular, biggish, on the disk in a single row.

It is frequent in the woods of New Zealand, where it is called *Mamagu*. The inhabitants eat the pith of the root and lower part of the trunk roasted. It has a taste like that of the Turnep, but better, and approaches to the Sago. The pith abounds in a glutinous red juice, such as was noticed in *P. Barometz*ⁿ.

Allioni and Villars have several species not noticed above:

1. *Polypodium Pontederæ*.
Allion. pedem. n. 2405. Hall. helv. n. 1702.
Filicula alpina fol. rotundioribus crenatis. Pented. compend. 19. Seguiet suppl. 54. t. 1. f. 2.
Pinnae few, semipinnate very short acutely serrate.
2. *Polypodium mollè*.
Allion. pedem. n. 2406. Villars dauph. 3. 845.
Hall. helv. n. 1703.
Filix mollis f. glabra, vulgari non ramosæ accedens. Baub. hist. 3. 738.
Fronds subbipinnate, pinnae lanceolate bluntish, crenulate at the tip.
3. *Polypodium alpinum*.
Allion. pedem. n. 2409. Hall. helv. n. 1709.
Filicula alpina crispa. Baub. pin. 358. Seguiet suppl. 55. t. 1. f. 3.
Fronds bipinnate, very loosely divided, lobes blunt toothed.
4. *Polypodium montanum*.
Allion. pedem. n. 2410. Hall. helv. n. 1710.
Cyathea montana. Smith fil. dorsif. 254.
Filix rhœtica tenuissime divisa. Baub. hist. 3. 740.
Frond trifid bipinnate pinnatifid, segments slightly crescent-shaped toothed at the tip, rachis winged, fructifications scattered.
5. *Polypodium pteroides*.
Villars dauph. 3. 841.
Filix pyrenaica neque ramosa neque dentata. Tournef. herb.
Fronds bipinnate, wings bowed upwards, leaflets blunt dotted underneath at the edge, with nine simple veins running along them above.
6. *Polypodium carthusianum*.
Villars dauph. 3. 842.
Fronds alternately bipinnate remote, leaflets acutely serrate, teeth often awned and bifid.
7. *Polypodium aristatum*.
Villars dauph. 3. 844. Hall. helv. n. 1705.
Fronds subtripinnate, pinnules serrate on both sides.
8. *Polypodium myrrhidifolium*.
Villars dauph. 3. 851. t. 53.
Fronds triangularly quadripinnate, leaflets gash-ferrate confluent at the tip.

DESCRIPTIONS, &c.

1. Native of Switzerland and Italy.
2. Height from eight inches to a foot. Stem weak and thin. Leaves almost transparent, bipinnate with two or three divisions at the extremity of each leaflet. The dots of fructification are placed before the last division of the leaflets, and are round, not oblong, as in *P. Filix femina*, which this resembles. The plant is also thinner, less compounded, and only half the size.
3. Native of Switzerland and Italy. Jacquin has a fern with the same name^p.
4. Native of the European Alps. The calyx of this is torn. It belongs to the genus *Cyathea*, with several of the other species^q.
5. Height about two feet: it has only one sort of bipinnate leaves, with raised pinnae, the blunt leaflets of which have the fructifications very near the margin; and marked with nine pairs of simple nerves above.—Native of Dauphiné and Savoy but not common.
6. This is perhaps only a variety of *P. fragrans*, but it is less cut, higher, glaucous underneath, the leaves are alternate and less remote.—Native of Dauphiné.

^g Withering. ^h Dickson. ⁱ Withering. ^k Idem.
^l Idem. ^m Engl. bot.

ⁿ Forst. escul. ^o Villars. ^p Collect. 2. 171.
^q Smith, Essays.

7. This fern resembles *P. Lunchitis* in the darkness of its green colour, and in the little spines at the end of the leaflets and serratures; but the leaf of this is triangular, wider, black at its base, and loaded with a great quantity of scales.—Native of Dauphiné and Switzerland.

8. This species has the most decomposed leaves of any; in the triangular outline and divisions it resembles much *P. lusitanicum* of Linneus, but the extremities of the leaflets are much finer, and the plant thinner and lower. The fine cut of the leaves, like *Myrrhis odorata*, makes it easily known. Dauphiné, near the Grande Chartreuse*.

Villars gives Allioni's *P. montanum* as a synonym, and n. 3. p. 124. of Ray's synopsis, which Hudson refers to *P. rheticum*.]

PROPAGATION AND CULTURE.

The common Polypody, and all the other sorts which are hardy enough to bear the open air, being perennial plants may be propagated by parting their roots in the spring before they shoot, and should be planted in a poor moist soil under the shade of a wall, for if they are exposed to the sun, they will not thrive. Many of them grow out of the joints of walls and old buildings, and the fissures of rocks, but are commonly found exposed to the north. [They are well adapted therefore to ornament ruins and rock-work.

POLYPODIUM. See *Acrostichum*, *Meniscium*, *Onoclea*, *Ophioglossum*, *Trichomanes*.

POLYPODY. See *Polypodium*.

POLYPORUS. See *Boletus*.

POLYPREMUM. (From πολυς much, and πρεμνος, a trunk.)

Lin. gen. n. 137. Reich. n. 143. Schreb. n. 178.

Gartn. t. 62. Juss. 122.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Caryophyllei*? *Scrophulariæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth four-leaved, permanent: leaflets lanceolate, keeled, coloured within.

COR. one-petalled, wheel-shaped: limb four-cleft, lobes obcordate, the length of the calyx.

STAM. Filaments four, very short, in the throat of the corolla. Anthers roundish.

PIST. Germ obcordate. Style short, permanent. Stigma truncate.

PER. Capsule ovate, compressed at the tip, emarginate, two-celled, two-valved; the partition contrary.

SEEDS numerous; fastened to an oblong, ascending receptacle, connected with the partition below.

ESSENTIAL CHARACTER.

Cal. four-leaved. Cor. four-cleft, wheel-shaped: with obcordate lobes. Caps. compressed, emarginate, two-celled.

SPECIES.

1. *Polypremum procumbens*.

Lin. spec. 161. Reich. 1. 315. Willd. 623. Aët. ups. 1741. p. 78. Lamarck encycl. t. 71. Gartn. fruct. 1. 294.

Linum carolinianum. Pet. gaz. 9. t. 5. f. 6.

DESCRIPTION, &c.

1. Root annual. Stem procumbent. Leaves linear-subulate in whorls. Peduncles one-flowered, solitary, in the whorls of leaves.—Native of Carolina and Virginia†.

POLYSPORON. See *Chenopodium*.

POLYTRICHUM. (From πολυ, much, and τριχος, hair.)

Lin. gen. Schreb. n. 1660. Hedw. fund. 2. 90.

Curt. lond. 2. 68. n. 102. Menzies in Linn.

transf. 4. t. 6, 7. Schmid. ic. t. 51. Catharinea.

Ehrh. beytr. 1. 178.

Class. 24. 3. Cryptogamia Musci.

Nat. order of *Musci* or *Mosses*.

GENERIC CHARACTER.

Caps. oblong, sometimes quadrangular, placed on a quadrangular apophysis. Peristome double: outer with thirty-two short teeth, united at the base, incurved; inner a flat membrane, transverse, glued to the apexes of the teeth of the inner one. Calyptra hairy.—Male

* Villars.

† Willdenow.

flowers discoid, or a circular bud, on a different plant, terminating.

ESSENTIAL CHARACTER.

Caps. lidded, on a very small apophysis or receptacle.

Caps. villose.

SPECIES.

There are only five species of this Moss in the fourteenth edition of *Systema Vegetabilium*. Dr. Withering in his third edition of the *Arrangement of British Plants* has six species, besides several varieties. Dillenius, Hedwig and others, have figured them. *Polytrichum commune*. Great Golden Maidenhair or Goldilocks, is figured by Micheli, Gerarde, Parkinson, &c. &c. It is found abundantly in woods and on moors in boggy places. When the Laplanders sleep all night in the woods, they make themselves beds of this Moss; the bears collect it for the same purpose; squirrels and birds also use it in making their nests. Other species are figured by Vaillant, and in *Flora danica*. Mr. Curtis has detailed the characters very satisfactorily in his plate of *P. subrotundum*; and Hedwig, stirp. 1. 13, 14, 15.

Mr. Archibald Menzies has new-modelled this genus, distinguished and described the species, and added several new ones. His essential character is this:

Caps. operculate or lidded, roundish oblong or quadrangular.

Perist. toothed: teeth incurved (thirty-two to sixty-four) glued together at the tips by a transverse membrane.

Calyp. or Veil double: inner smooth membranaceous small; outer floccose with the tips united.

Male disk-form, on a distinct plant.

Obs. Linneus's character from the apophysis is excluded, being found only in *P. commune*, and a few others.

Mr. Menzies has given nineteen species, several of them are inhabitants of North America, and ten are natives of Britain. The ingenious author has characterized and described them in the most satisfactory manner; and has figured eleven with the utmost accuracy. For the others he refers to the figures of Dillenius, Vaillant, Hedwig, &c.

The following extract from this very valuable monograph, is as much as is consistent with the plant of this work, in the class Cryptogamia.

SPECIES.

* Stemless.

1. *Polytrichum tenue*. Dill. musc. t. 55. f. 12.

Mnium polytrichoides γ. Lin. spec. 1577.

Nova Scotia.

2. *P. subrotundum*. Dill. t. 55. f. 6. Vaill. par. t. 26.

f. 15. Hudf. angl. 1. 400.

P. pumilum. Swartz, aët. stockh. 1795. p. 275.

England, &c.

3. *P. nanum*. Dill. t. 55. f. 6. G—L? Hedw. crypt.

1. 35. t. 13.

England, &c.

** With a simple stem.

4. *P. aloides*. Dill. t. 55. f. 7. Vaill. t. 29. f. 11.

Hedw. 1. 37. t. 14.

P. nanum. Lightf. scot. 701. Hudf. 2. 470.

Mnium polytrichoides β. Linn. spec. 1577.

England, &c.

5. *P. convolutum*. Linn. fil. musc. t. 1. f. 3. Swartz

prodr. 139.

West Indies.

6. *P. magellanicum*. Linn. suppl. 449. Menzies t. 6.

f. 1.

Straits of Magellan and New Zealand.

7. *P. attenuatum*. Menzies, t. 6. f. 2.

On the west coast of North America.

8. *P. gracile*. Menzies, t. 6. f. 3.

Found on the Highlands of Scotland by Mr.

Dickson, and in Sweden by Swartz.

9. *P. commune*. Dill. t. 54. f. 1. &c.

Europe.

10. *P. piliferum*. Schreb. spicil. 74. n. 1031. Dill.

t. 54. f. 3.

P. commune γ. Linn. spec. 1573.

England, &c.

• Withering.

11. *P. juniperinum*. Menzies, t. 6. f. 4. Willd. berol. 305.

On the west coast of North America.

*** With a branched stem.

12. *P. strictum*. Menzies, t. 7. f. 1. Vaill. t. 23. f. 6. Britain and other parts of Europe, North-west coast of America.

13. *P. contortum*. Menzies, t. 7. f. 2. North-west coast of North America.

14. *P. rubellum*. Menzies, t. 7. f. 3. Britain.

15. *P. dentatum*. Menzies, t. 7. f. 4. North-west coast of North America.

16. *P. urnigerum*. Linn. spec. 1573. Dill. t. 55. f. 5. England, &c.

17. *P. septentrionale*. Menzies, t. 7. f. 5. Swartz act. Stockh. 1795. p. 270.

- P. ramosum*. Gunn. norv. 814. Fl. dan. t. 297. Norway.

18. *P. alpinum*. Linn. spec. 1573. Dill. t. 55. f. 4. Northern parts of Europe.

19. *P. sylvaticum*. Menzies, t. 7. f. 6. In fir woods on the north-west coast of North America.

POLYTRICHUM. See *Asplenium*, *Bryum*, *Mnium*.

POMA. See *Pyrus*.

POMAX. See *Opercularia*.

POMEGRANATE. See *Punica*.

POMETIA. (So named by Forster, in memory of Pomet, a Frenchman, author of *Histoire des Drogues*.)

Lin. gen. Schreb. n. 1436. Forst. gen. t. 55.

Aporetica. Forst. gen. t. 66. Juss. 247.

Class. 21. 6. Monoecia Hexandria.

GENERIC CHARACTER.

* Male Flowers.

CAL. Perianth one-leaved, wheel-shaped, six-cleft, very short: segments rounded.

COR. Petals six, orbicular, erect, a little longer than the calyx. Nectary, a raised rim, with six little swellings.

STAM. Filaments six, awl-shaped, erect, three times as long as the corolla, placed on the margin of the nectary. Anthers parabolical, bifid at the base.

PIST. Rudiment in the centre of the flowers.

* Female Flowers, in the same raceme with the Males.

CAL. and COR. as in the Males.

PIST. Germ obcordate, twin, two-celled. Style filiform, four times as long as the corolla. Stigma simple, compressed.

PER. Berry globular, fleshy, superior.

SEED single, ovate, in the centre of the berry.

OBS. Sometimes rudiments of stamens are observed in the female flowers. One cell of the germ is entirely obliterated in the ripe fruit.

ESSENTIAL CHARACTER.

Cal. one leaved, six-cleft. Pet. six.

MALE. Stamens six.

FEM. Berry globular, with one seed in the centre.

SPECIES.

1. *Pometia pinnata*.

Forst. prodr. n. 392.

Palorum arbor alba latifolia. Rumph. amb. 3-t. 65.

Leaves pinnate, raceme superdecompound terminating.

2. *Pometia ternata*.

Forst. prodr. n. 393.

Leaves ternate, racemes almost simple axillary.

DESCRIPTIONS, &c.

1. Native of the islands of Tanna and Namoka, in the South Seas*. Jussieu doubts whether it may not be of the same genus with Commerçon's *Euphoria*, which comprehends the celebrated fruits of the Chinese, *Lit-chi* and *Lon-gan*†.

2. The parts of fructification are not six, as in the preceding; but two, and multiples of that number. The calyx is four-leaved; the corolla four-petalled, with a four-cleft nectary; eight stamens; germs and styles two, the former one-celled, valveless, inclosing one seed.—Native of New Caledonia‡.

Forster named this *Aporetica*, signifying doubtful or ambiguous, the characters being so small, that it is

* Forster.

† Gen. 248.

‡ Forster.

difficult to determine the genus. The flowers are male and hermaphrodite.

POMIFERA. See *Anacardium* and *Genipa*.

POMMEREULLIA. (So named by the younger Linneus, in memory of the very illustrious lady Du Gage de Pommereull who laboured at the investigation of Grasses with indefatigable industry.)

Lin. gen. Schreb. n. 96. Linn. fil. nov. gen. gram. 31. suppl. 12.

Class. 3. 1. Triandria Monogynia.

Nat. order of Gramina, Gramineæ or Grasses.

GENERIC CHARACTER.

CAL. Glume turbinate, three or four-flowered, two-valved. Valves equal, wedge-shaped, divaricate at the base: claw incurved, linear, gradually widening, four-cleft: segments dilated in a ring and involving the florets, unequal; the side ones larger, lanceolate, acute; the inner or middle ones shorter by half, awl-shaped, awned. Awn dorsal, inserted between the smaller segments, solitary, straight, upright, longer than the valves.

COR. Glume two-valved: valves unequal: the outer very like the calycine glumes, awned; the inner very short, quite simple or undivided, ovate, flat, awnless.

STAM. Filaments three, very short. Anthers linear, the length of the valves.

PIST. Germ linear. Style simple. Stigmas two; villose at the side.

PER. none. Corolla unchanged, contains the seed till it is ripe, then gapes and lets it drop.

SEED single, oblong, flat on the inner side, on the outer convex, pellucid, very smooth.

OBS. The flower resembles the figure of the *Dianthus*, with a narrow tube, and a spreading subulate border; for the florets in the centre of the flower converge to a point.

ESSENTIAL CHARACTER.

Cal. turbinate, two-valved; three or four-flowered: valves four-cleft awned at the back. Cor. two-valved, awned.

SPECIES:

1. *Pommereullia Cornucopiae*.

Lin. spec. ed. Willd. 314. suppl. 105.

DESCRIPTION, &c.

1. This is a small and very singular Grass. Root creeping, fibrous, white. Leaves equitant imbricate in two rows, compressed, scarcely a finger's length; even. Culms branched, scarcely longer than the leaves. Spike subracemed, white, defended at the base with a leaf somewhat in form of a spathe. The whole flower or aggregate of florets resembles in some measure a double Pink, or rather a shuttle-cock. The seed is rufous.

Native of the East Indies, where it was found by Koenig†.

Willdenow observes, that in his specimen the flowers are all directed one way (secundi:)

POMPION. See *Cucurbita*.

POMUM. See *Pyrus*.

POMUM AMORIS. See *Solanum*.

PONÆA. (So named by Schreber, in memory of John Pona, apothecary at Verona; author of *Il monte Baldo descritto*, Ven. 1617. 4to. and other works.)

Lin. gen. Schreb. n. 682.

Toulicia Aubl. guian. t. 140. Juss. 248:

Class. 8. 3. Octandria Trigynia.

Nat. order of Sapindi, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, five-parted: segments roundish, concave, spreading.

COR. Petals four, lanceolate, acute, with a few piliferous glands at the tip, longer than the calyx, fastened to a gland surrounding the germ.

STAM. Filaments eight, capillary, inserted into the gland surrounding the germ: alternate (opposite to the petals), larger, the length of the corolla. Anthers ovate.

PIST. Germ pedicelled? long, three-sided, placed on a depressed gland. Styles three, short. Stigmas acute.

† Linn. suppl.

PER. Capsule three-celled, three-winged, each wing two-valved.

SEEDS solitary, ovate.

ESSENTIAL CHARACTER.

Cal. five-parted, spreading. Pet. four, with pilliferous glands at the tip. Germ three-sided. Caps. three-winged, three-celled, with one seed in each cell.

SPECIES.

1. *Pontederia guianensis*.

Lin. syst. ed. Gmel. 640.

Toulicia guianensis. Aubl. guian. 359. t. 140.

DESCRIPTION, &c.

1. This is a tree, with a middle-sized trunk of twenty or thirty feet high; and branched at the top into three divisions, each of which is garnished throughout its whole length with leaves growing pretty near each other: they are of a pinnated appearance, and the leaflets are placed in nearly opposite rows: they are divided by a midrib, and are entire, smooth, green, firm, oval, and waved at the edges: the largest are eight inches long, and about three inches wide: the rib on which they grow is about two feet long; and is somewhat swelled at its origin; at first cylindric, and then triangular; the number of leaflets is eight on each side. The flowers, which are very small, and of a whitish colour, are produced at the extremities of the branches on large spreading panicles: they are sessile, and are placed on the panicle in little approximated heaps. This tree is a native of Guiana, growing near the borders of rivers, and flowering in the month of november².

POND-WEED. See *Potamogeton*.

PONNA. See *Calophyllum*.

PONNAM-POU MARAVARA. See *Epidendrum*.

PONNAM-TONGERA. See *Cassia*.

PONTALETSCHE. See *Lawsonia*.]

PONTEDERIA. (So named in memory of Julius Pontederia Professor of Botany at Padua. Author of *Tabulæ Botanicae*, 1718; and *Anthologia*, 1720.)

Lin. gen. n. 399. Reich. n. 431. Schreb. n. 545.

Juss. 55. *Michelia Houst. reliqu.* 8.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Eufatæ*. *Narcissi*, Juss.

GENERIC CHARACTER.

CAL. Spathe common oblong, opening on the side.

COR. one-petalled, two-parted, tubular. Upper lip straight, three-parted, outwardly equal. Lower lip reflex, three-parted: segments equal.

STAM. Filaments six, inserted into the corolla, three of them awl-shaped, longer, inserted into the mouth of the tube; the three others into the base of it. Anthers erect, oblong.

PIST. Germ oblong, superior. Style simple, declined. Stigma thickish.

PER. Capsule fleshy, conical, with the tip wide and bent in, three-celled, triangular, three-grooved.

SEEDS roundish, very many.

OBS. *P. vaginalis* has six petals, a club-shaped style, and a superior germ. *P. hastata* has also a superior germ, and a six-parted regular corolla.

ESSENTIAL CHARACTER.

Cor. one-petalled, six-cleft, two-lipped. Stam. three inserted into the top, three into the tube of the corolla. Caps. three-celled.

SPECIES.

[1. *Pontederia ovata*. Ovate-leaved *Pontederia*.

Lin. spec. 412. Reich. 2. 13.

Narukilo. Rheed. mal. 11. 67. t. 34. Raii suppl. 573.

Leaves ovate, flowers in heads.

2. *Pontederia rotundifolia*. Round-leaved *Pontederia*.

Lin. syst. 315. suppl. 192.

Leaves orbicular-cordate.

3. *Pontederia azurea*. Blue-flowered *Pontederia*.

Swartz, prodr. 57. descr. 609. Brown. jam. 195. n. 1.

Leaves roundish-elliptic, thickened at the base and petioles, flowers in spikes.

² Aublet guian.

4. *Pontederia vaginalis*.

Lin. syst. 315. Reich. 2. 13. mant. 222. Thunb. jap. 130. Burm. ind. 80. Pluk. phyt. t. 215. f. 4.

Olus palustre. Rumph. amb. 6. 178. t. 75. f. 1.

Leaves cordate, raceme drooping.

5. *Pontederia limosa*. Blue and yellow *Pontederia*.

Swartz, prodr. 57. descr. 611. Sloan. jam. 1. t. 149. f. 1. (Nymphææ affinis.)

Leaves cordate-ovate, scapes lateral one-flowered, flowers triandrous.]

6. *Pontederia cordata*. Heart-leaved *Pontederia*.

Lin. spec. 412. syst. 316. Reich. 2. 13. Loeft. it. 54. hort. cliff. 133. Gron. virg. 37. Cold. noveb. 69. Lour. cochinch. 198. Pet. gaz. t. 1.

f. 12. (Gladiolus.) Mor. hist. 3. 618. f. 15.

t. 4. f. 8. (Sagittæ similis.) Pluk. mant. t. 349. f. ult.

Leaves cordate, flowers in spikes.

7. *Pontederia hastata*. Hastate-leaved *Pontederia*.

Lin. spec. 412. syst. 316. Reich. 2. 14. suppl. 192.

f. zeyl. n. 129. Lour. cochinch. 199. Burm.

zeyl. 208. (Sagittaria.) Pluk. phyt. t. 220. f. 8.

Mor. hist. 3. 618. f. 15. t. 4. f. 7. (Sagittæ

similis.)

Leaves hastate, flowers umbelled.

DESCRIPTIONS, &c.

[These are aquatic herbaceous perennial plants, with fibrous roots, mostly natives of the East Indies. Both root and stem-leaves sheathing, frequently sagittate. Flowers in spikes or umbels terminating, or put forth from the cloven sheath of the leaves, each having a spathe. Some of the species have a superior or half-superior germ, and are more nearly allied to the *Junci*^a.

1. Native of shady moist places in Malabar and Cochinchina. But it belongs to the class *Monandria*, and is very nearly allied to *Thalia*, if it be not a species of that genus^b.

2. Root-leaves petioled, orbicular-cordate or reniform, obtuse, veinless. Stem-leaf single, from the sheath of whose petiole issues a half round petiole, the length of a finger. Spathe one-leaved, ovate, permanent, terminating. Spadix hispid. Spike peduncled, ovate with the flowers on pedicels, very short, almost imbricate in a head. Corolla six-cleft, unequal, having the size and appearance of the neuter florets of *Centaurea Cyanus*, or Blue-bottle. Stamens six. Germ superior, three-sided. Style simple.—Native of Surinam^c.

3. This is a stemless aquatic plant. Root jointed, with long capillary whitish fibres at the joints. Leaves petioled, radical, half a foot long, roundish with the base drawn out into a thickened petiole and an acuminate tip, entire, the margin waved, striated, veinless, nerveless, smooth. Petioles thickened, suberous, longer than the leaves, round, smooth, sheathing at the base, producing the scape in the middle from a lateral sheath. Scape short, terminated by a loose, spreading, many-flowered spike. Flowers alternate, approximating; under which one common ovate-cordate, blunt, open spathe. Corolla salver-shaped, six-cleft, after flowering sexpartite, almost regular, blue; three of the segments exterior, dotted, somewhat rough-haired; the middle one superior, wider, ovate. Filaments six. Anthers incumbent, hastate at the base. Germ three-sided. Style longer than the stamens. Stigma thickened. It bears some similitude to *P. cordata*, but the cordate leaves in that species distinguish it very clearly^d.

Native of Jamaica, in most of the Lagoons and rivers about the Ferry. Browne calls it round-leaved Water-Plantain or *Pontederia*; and says that the leaves are roundish thick and smooth; the flowers moderately large; the stalk about an inch in diameter; that it grows luxuriantly, and throws up its flower-spike a good way beyond the surface of the water.

4. Leaves radical, cordate, acuminate, nerved, even, on very long petioles widening a little above the

^a Jussieu gen.

^b Swartz obs.

^c Linn. suppl.

^d Swartz, descr.

middle or sheathing with a lateral cleft. Raceme lateral, simple, shorter than the leaf, from the sheath of the petiole, erect, but bent back when the flowering is over. Flowers four or five, alternate, on short pedicels. Petals six. Stamens six. Style club-shaped. Germ certainly superior.—Native of the East Indies in watery places^e.

Thunberg, who found it about Nagasaki in Japan, describes the root as fibrous, in bundles, rust-coloured: the leaves radical, scarcely cordate, acute, entire, smooth: petioles loose at bottom, sheathing, weak, erect, a foot long, floriferous. Stem or scape none. Flowers from the sheath of the petioles above the middle, racemed, pedicelled, directed the same way, drooping. Peduncle scarcely a finger's length. Pedicels one-flowered, a quarter of an inch in length. He found a specimen in Java with subcordate leaves, in other respects much resembling the above.

5. This is only two or three inches in height. Roots long, jointed, with whitish, capillary, aggregate fibres at the joints. Leaves radical, emarginate at the base but scarcely cordate, entire, smooth, nerveless, an inch in length. Petioles sheathing at the base, longer than the leaves, fistular, round, smooth; from which issues, in a cleft or lateral sheath, a scape which is an inch long, round, naked, one-flowered. Spathe lanceolate, one-valved, one-flowered. Corolla blue: tube narrow, cylindrical, inclosed within the spathe: border equal, six-parted: segments lanceolate; the three upper ones all of the same blue colour; the three inner ones having a yellow spot at the base near the throat. Filaments three, inserted into the throat of the tube, short. Anthers sagittate, erect, blue, above the tube. Germ oblong, cylindrical. Style erect, the length of the tube and the stamens. Stigmas six, linear, villose. Capsule elongated, round, acuminate, within the spathe, three-celled, three-valved, three-grooved. Seeds very many, small, roundish, brown. This species is very distinct from the rest, by its one-flowered scape and spathe.

Native of Jamaica and Hispaniola on the muddy banks of rivers^f.]

6. This grows naturally in marshy places in Virginia, and most parts of North America, and Dr. Houstoun found it growing plentifully at La Vera Cruz. This has a perennial root, from which arise two or three herbaceous thick stalks a foot high, each having one heart-shaped leaf about five inches long, and two and a half broad, of a pretty thick consistence. The base is deeply indented, and the two ears are rounded; the foot-stalk of the leaf closely embraces the stalk like a spatha or sheath, for near three inches in length; above this is another sheath which incloses the spike of flowers; this opens on one side, and the stalk rises near two inches above it, where the spike of flowers begins. The spikes are about three inches long; the flowers are blue, sit very close together, and have the appearance of lip flowers. These appear in June, but are not succeeded by seeds in England.

[Loureiro found it in the marshes of CochinChina. According to him, the plant is almost stemless: the leaves cordate-sagittate, long, smooth, on awl-shaped petioles, two feet in length; scape naked, four feet long, spikes long, upright, terminating: corolla blue, spreading very much, six-parted; the three inner segments ovate, the three outer oblong, all of equal length.]

7. This grows naturally about Madras in watery places. It rises with a single stalk eight or nine inches high, having one arrow-pointed leaf, whose base embraces the stalk like a sheath, and from the open side of the sheath come out the flowers, which are at first inclosed in another smaller sheath: these grow in a small kind of umbel; they are composed of six acute-pointed petals which spread open. Each flower stands upon a slender foot-stalk about an inch long; the foot stalk of the leaf rises a considerable height above the flowers, so that they appear to come out from the middle of the stalk.

^e Linn. mant.

^f Swartz, descr.

Loureiro found this also in CochinChina, on the banks of the river that flows through the metropolis. He describes it as almost stemless, like the preceding; the leaves subhastate, smooth, on thick, diffused petioles, two feet long; scape none; flowers blue, in a sessile umbel, bursting out near the top of the petiole which is dilated into a membrane. Partial peduncles long. Corolla superior, six-parted, unequal. Filaments six, placed upon the corolla. Capsule ovate, three-celled, many-seeded.

The sixth species was cultivated by Mr. Miller in 1759^g.

PROPAGATION AND CULTURE.

6. As this plant grows naturally in moist boggy places, it is very difficult to be preserved in England; nor does the plant arise from seeds here, for I have sowed the seeds in various situations, and managed them differently, but could never get up any of the plants; but I had three or four of the plants sent me, inclosed in large clods of earth from New England, which I planted in pots, covering them with Moss, and constantly supplied them with water. With this management two of them flowered, but the following winter destroyed them, as they were not put under shelter; so that to preserve them, they should be placed under a hot-bed frame in winter, where they may be exposed to the open air at all times when the weather is mild.

7. This sort is much more difficult to preserve in England, because it is a native of hot countries, and grows always in places flowed with water. A plant of it was formerly brought over to Charles Dubois, Esq; at Mitcham, but it was not long-lived here.

[POPULAR TREE. See *Populus*.

POPPY. See *Papaver*.

——, Horned. See *Chelidonium*.

——, Prickly. See *Argemone*.

——, Spatling. See *Cucubalus*.

POPPYA. See *Momordica*.]

POPULAGO. See *Caltha*.

POPULUS. (Derivation uncertain. Some derive it from *πολυς*, on account of the multitude of its leaves: Martinius, from *πιπάλω*, to tremble.)

Lin. gen. n. 1123. Reich. n. 1228. Schreb. n. 1531.

Gertn. t. 90. Tournef. t. 365. Juss. 409.

Class. 22. 7. Dioecia Octandria.

Nat. order of *Amentaceæ*.

GENERIC CHARACTER.

* Male.

CAL. Ament oblong, loosely imbricate, cylindrical, composed of one-flowered, oblong, flat scales, torn at the edge.

COR. Petals none.

Nectary one-leaved, turbinate below, tubular, ending at top obliquely in an ovate border.

STAM. Filaments eight, extremely short. Anthers four-cornered, large.

* Female.

CAL. and Scales as in the male.

COR. Petals none. Nectary as in the male.

PIST. Germ ovate-acuminate. Style scarcely manifest. Stigma four-cleft.

PER. Capsule ovate, two-celled, two-valved: valves reflex.

SEEDS numerous, ovate, flying with a capillary pappus.

ESSENTIAL CHARACTER.

Cal. of the ament a flat scale torn at the edge. Cor. turbinate, oblique, entire.

FEM. Stigma four-cleft. Caps. two-celled. Seeds many, pappose.

SPECIES.

1. *Populus alba*. White Poplar.

Lin. spec. 1463. Reich. 4. 262. hort. cliff. 460.

fl. suec. n. 910. Hudf. angl. 433. Wither. arr.

ed. 3. 375. Lightf. scot. 616. Relb. cant. n. 727.

Sibth. oxon. n. 374. Hall. kelv. n. 1634. Neck.

gallob. 400. Leers, herb. n. 763. Pollich pal.

n. 928. Villars dauph. 3. 790. Pallas, ross. 66.

Gmel. sib. 1. 151. Du Roi herb. 2. 148.

Desfont. atlant. 368. Duham. arb. 168. t. 36.

^g Hort. kew.

POP

- Hunt. Evel. ed. 1. 208. ed. 2. 201. Blackw. t. 548.
- P. alba. Dod. pempt. 835. Camer. epit. 65. Matth. 136. Lob. obs. 609. 1. ic. 2. 193. 1. Tabern. ic. 977. Ger. 1301. 1. emac. 1486. 1. Park. theat. 1410. 1. Baub. hist. 1. 160. 1. Raii hist. 1418. syn. 446.
- P. alba majoribus foliis. Baub. pin. 429. Tournef. inst. 592.
- α. P. alba canescens. Common White Poplar. Ait. kew. 3. 405.
- P. alba. Mill. dict. n. 1. Leaves angular-toothed, tomentose and ash-coloured underneath.
- β. P. alba nivea. Great White Poplar, or Abele. Ait. kew. 3. 405.
- P. major. Mill. dict. n. 4. Leaves sublobed-toothed, tomentose and snow-white underneath, lobes acute patulous.
- Leaves roundish tooth-angular, tomentose underneath.
2. Populus tremula. Trembling Poplar Tree or Asp. Lin. spec. 1464. syst. 889. Reich. n. 262. hort. cliff. 460. fl. suec. n. 909. Hudf. angl. 434. Wither. arr. ed. 3. 375. Lightf. scot. 616. Relb. cant. n. 728. Sibth. oxon. n. 375. Hall. helv. n. 1633. Neck. gallob. 401. Leers, herb. n. 764. Pollich pal. n. 929. Villars dauph. 3. 791. Gmel. fib. 1. 151. Pallas ross. 65. Du Roi barbk. 2. 148. Dubam. arb. 2. 182. n. 7. Blackw. t. 248. Kniph. cent. 6. n. 73. Baub. pin. 429.
- P. lybica. Dod. pempt. 836. 2. Matth. 138. Camer. epit. 67. Lob. obs. 610. 1. ic. 2. 194. 2. Trag. 1083. Lonic. 1. 26. 2. Cord. hist. c. 110. Dalech. 87. Tabern. ic. 978. Baub. hist. 1. 163. Raii hist. 1419. syn. 446. Ger. 1302. 3. emac. 1487. 3. Park. theat. 1411. 4. Leaves roundish tooth-angular smooth on both sides.
3. Populus nigra. Black Poplar Tree. Lin. spec. 1464. syst. 889. Reich. 4. 263. hort. cliff. 460. fl. suec. n. 911. mat. med. 215. Gartn. fruct. 2. 56. Hudf. angl. 434. Wither. arr. ed. 3. 376. Lightf. scot. 618. Relb. cant. n. 729. Sibth. oxon. n. 376. Hall. helv. n. 1632. Neck. gallob. 401. Scop. carn. n. 1223. Leers herb. n. 765. Pollich pal. n. 930. Du Roi barbk. 2. 139. Villars dauph. 3. 791. Allion. pedem. n. 1977. Gmel. fib. 1. 151. Pallas ross. 66. Gron. virg. 194. Blackw. t. 248. 1. Mill. illustr.
- P. nigra. Baub. pin. 429. Dod. pempt. 836. 1. Matth. 137. Lob. obs. 609. 2. ic. 2. 194. 1. Lonic. 1. 26. 1. Camer. epit. 66. Trag. 1080. Dalech. 86. Ger. 1301. 2. emac. 1486. 2. Park. theat. 1410. 3. Baub. hist. 1. 155. Raii hist. 1417. syn. 446. Leaves smooth on both sides acuminate serrate deltoid, the longitudinal diameter longer.
- [4. Populus dilatata. Lombardy or Po Poplar Tree. Ait. kew. 3. 406. Leaves smooth on both sides acuminate serrate deltoid, the transverse diameter longer.]
5. Populus balsamifera. Common Tacamahaca Poplar Tree. Lin. spec. 1464. syst. 889. Reich. 4. 263. mat. med. 215. hort. cliff. 460. Du Roi barbk. 2. 143. Pallas ross. 67. t. 41. Gmel. fib. 1. 152. t. 33. Dubam. arb. 2. 178. t. 38. f. 6. Mill. fig. 174. t. 261. Trew, Ebr. t. 46.
- P. Tacamahacca. Mill. dict. n. 6. Leaves ovate serrate whitish underneath, stipules resinous.
- [6. Populus candicans. Heart-leaved Tacamahaca Poplar Tree. Ait. kew. 3. 406. Leaves cordate acuminate whitish underneath.]
7. Populus lœvigata. Smooth Poplar Tree. Ait. kew. 3. 406. Leaves cordate three-nerved smooth glandular at the base unequally serrate, petioles compressed, branches round.
8. Populus monilifera. Canadian Poplar Tree. Ait. kew. 3. 406. Abbot, Georg. t. 71.

POP

- Leaves subcordate smooth glandular at the base, serratures cartilaginous hooked somewhat hairy, nerves patulous, petioles compressed, branches round.
9. Populus græca. Athenian Poplar Tree. Ait. kew. 3. 407. Leaves cordate smooth glandular at the base remotely crenate, petioles compressed, branches round.
10. Populus heterophylla. Various-leaved Poplar Tree. Lin. spec. 1464. syst. 889. Reich. 4. 264. Du Roi barbk. 2. 150. Gron. virg. 194. 157. Leaves cordate, the primary ones pubescent and without any glands at the base, petioles roundish, branches round.]
11. Populus angulata. Carolina Poplar Tree. Ait. kew. 3. 407. Dubam. arb. 2. 178. t. 39. f. 9. Catesb. car. 1. t. 34. P. balsamifera. Mill. dict. n. 5. Leaves cordate smooth, branches angular winged.

DESCRIPTIONS, &c.

[1. The White Poplar grows very tall, with a straight trunk; covered with a smooth whitish bark. Leaves smooth, blackish green above, but having a thick white cotton underneath; they are about three inches long, on petioles an inch in length, flattened and grooved on each side: in young trees the leaves are roundish, but in adult ones angular, divided into three, five or seven lobes; they are without glands, either at the base or on the serratures. The flowers are exactly similar to those of *P. tremula*.^a

Native of Europe, from Sweden to Italy, also of Siberia and Barbary: in woods, hedges, and near rivers and brooks.

Monf. Desfontaines remarks that the leaves are larger than in the European tree; that the flowers are monoecous, the stamens from eight to thirty, the anthers twin, stigmas four, capsule oblong, one-celled, two-valved: his calyx is the nectary of Linneus. In all the species, except in *P. balsamifera*, the petioles are compressed on both sides.

Leers distinguishes this from the Black Poplar, thus—Flowering-buds ovate, brown, shining; inner scales torn, scariose. Aments thicker, longer, from an ovate base cylindric. Scales of the calyx semimultifid; with simple villose segments. Stamens eight. Flowering-buds of *P. nigra* ovate-oblong, acuminate; with entire viscid scales. Aments cylindric. Scales of the calyx three or four-parted, with pinnate-multifid naked segments. Stamens sixteen.—Frustrification in *P. tremula* the same as in *P. alba*.]

β. The leaves of the Abele tree are large, and divided into three, four, or five lobes, which are indented on their edges; they are of a very dark colour on their upper side, and very white and downy on their under, standing upon foot-stalks which are about an inch long. The young branches of this tree have a purple bark, and are covered with a white down, but the bark of the stem and older branches is gray. In the beginning of april the male flowers or katkins appear, which are cylindrical, scaly, and three inches long, and about a week after come out the female flowers on katkins, which have no stamina like those of the male. Soon after these come out, the male katkins fall off, and in five or six weeks after, the female flowers will have ripe seeds inclosed in a hairy covering, when the katkins will drop, and the seeds will be wafted by the winds to a great distance.

The leaves of the common White Poplar are rounder, and not much above half the size of those of the Abele; the shoots of the Abele are paler, the katkins are larger, and the down of the seeds is whiter and longer.

[Mortimer says justly, that the Abele is a sort of White Poplar, only much finer, bears a larger leaf, and makes a much stronger shoot, being a much quicker grower. He adds that the best sort comes from Holland and Flanders. Hence in some places it is called Dutch Beech.

Samuel Hartlib, in his Compleat Husbandman, 1659, says, that some years ago there were ten thou-

^a Linneus, Ray, Lightf. Withering.

land Abeles at once sent over into England from Flanders, and transplanted into many counties. This timber is incomparable, says he, for all sorts of wooden vessels, especially trays; and butcher's trays cannot well be made without it, being so exceeding light and tough.

The finest Abeles I ever saw were in Buckinghamshire, at Hartwell near Aylesbury, the seat of the late excellent Sir William Lee; Bart. They are remarkably tall, with the cleanest bole imaginable.

A specimen of their advance, says Evelyn, we have had of an Abele Tree at Sion, which being lopped in february 1651, did by the end of october, 1652, produce branches as big as a man's wrist, and seventeen feet in length. As they thus increase in bulk, their value advances likewise, which after the first seven years is annually worth twelve pence more. The Dutch therefore look upon a plantation of these trees as an ample portion for a daughter, and none of the least effects of their good husbandry; which may well be allowed, if the calculation hold of Sir Richard Weston, who began his plantation not long since about Richmond; that thirty pounds being laid out in these plants, would render at the least ten thousand pounds in eighteen years; every tree affording thirty plants, and every of them thirty more, after each seven years improving twelve pence in growth, till they arrive to their *acme*.

An Abele Tree planted at Seething in the year 1760, in stands without roots (truncheons) ten or eleven feet long, on a bank about thirteen feet broad, with water on each side, at about five feet from the ground measure five feet to five feet nine inches in circumference, and are tall flourishing trees¹.

The wood of White Poplar, says Mr. Evelyn, is sought of the sculptor; and they saw both this and the Black into boards, which continue a long time where they lie dry. In sword and buckler days they made shields of this material. They serve also for wheel-barrows, and the sides of waggons and carts, and may be considered as an useful substitute to the Ash².

The bark of the White Poplar has been recommended in the cure of intermittent fevers. It should be gathered in summer, when the tree is full of sap, and dried by a gentle heat. A dram of it powdered is given every four hours between the fits: and in obstinate cases one fifth part of Peruvian bark is mixed with it³.

Truncheons of the White Poplar and Abele, nine feet long, and the size of a common hop-pole, planted in 1775, on the gravelly bank of a stream, some yards from the current, in twelve years were from twenty-four to twenty-eight inches in girth, five feet from the ground, and in height were equal to many oaks taken down for timber⁴.

A White Poplar in St. John's College walks Cambridge, blown down in a hurricane on friday morning, november the sixth, 1795, was forty-two feet in length, girted twenty-nine inches and a half, and including the three arms contained three hundred and twenty-eight feet.

It is of quick growth and bears cropping, but is unfavourable to pasturage. The wood is soft white and stringy, and makes good wainscotting, being little subject to swell or shrink. Floors, laths, packing cases and turner's ware are made of it⁵. I have seen beautiful floors laid with planks of the Abele.

2. The Trembling Poplar or Asp, as it is called from the German *Espe*, which is the general name for all Poplars, has a green smooth bark. The leaves at first breaking out are hairy above and cottony underneath, but when full grown are smooth; they are slightly heart-shaped, smaller and more approaching to circular than in the preceding, with a few angular teeth on the edges⁶. Linneus says that they are rolled inwards at the edge, and that they have two glands running one into the other on the inner side above the

base. He also observes from Gouan, that the leaf-stalks are flattened towards the end, whence the perpetual trembling of the leaves with every breath of wind. But the petioles being flat in the White and Black Poplars as well as in this, Dr. Stokes accounts better for the phenomenon, from the plane of the long leaf-stalks being at right angles to that of the leaves, which allows them a much freer motion than could have taken place had their planes been parallel. This trembling of the leaves has been so generally noticed as to have become proverbial among us; and Mr. Lightfoot informs us that the Highlanders of Scotland account for it, from a superstitious notion that our Saviour's cross was made of this tree, and that therefore the leaves can never rest.

Of the Aspen, says Evelyn, our woodmen make hoops, fire-wood, coals, &c. and the bark of young trees, in some countries, serves for candle or torch-wood. He thrusts down a more searching foot, and and takes it ill to have his head cut off, as the same author quaintly expresses it. Villars also says that it will not bear lopping, like the Black Poplar.

This tree is of speedy growth, and will grow in any situation or soil, but worst in clay. It impoverishes the land: its leaves destroy the grass, and the numerous shoots of the roots spread so near the surface, that they will not permit any thing else to grow. The wood is extremely light, white, smooth, woolly, soft, durable in the air. The bark is the favourite food of beavers⁷. Pannels or pack-saddles, canns, milk-pails, clogs, pattens, &c. are made of the wood⁸.

The leaves and leaf-stalks sometimes are set with red glandular substances, about the size of a pea, which are the nests of *Tipula juniperina*.

Native of Europe, from Sweden to Italy; in moist woods and in boggy ground.

3. The Black Poplar has a naked lofty trunk, covered with an ash-coloured bark, and a regular handsome head⁹.] Leaves slightly notched on their edges, smooth on both sides, and of a light green colour. [They have no glands at the base, but the serratures are glandular on the inner side¹⁰. The petioles are yellowish¹¹. According to Linneus, the stamens are as many again as in *P. tremula*: Leers says they are sixteen in number.] Mr. Miller observes that the katkins of this sort are shorter than those of the two former. [Capsule compressed a little at the top and somewhat acuminate, the rest turgidly lenticular, one-celled; valves concave spreading horizontally. Seeds oblong roundish, whitish; waving with hairs at top four times as long as the seed.

This is a tree of quick growth, and on the banks of rivers, and in moist situations it grows up to a great height, throwing out numberless suckers from the roots. It loves a moist black soil, and bears cropping well. The bark, being light like cork, serves to support the nets of fishermen. The wood is not apt to splinter: it is light and soft, and sometimes used by turners¹². It is incomparable, says Mr. Evelyn, for all sorts of white wooden vessels, as trays, bowls, and other turner's ware; and is of especial use for the bellows-maker, because it is almost of the nature of cork, and for ship-pumps, though not very solid, yet very close and yet light; so as it may be used for the soles, as well as wooden heels of shoes, &c. Vitruvius reckons it among the building timbers. Likewise to make carts, because it is exceeding light; for vine, and hop-props, and divers vimineous works¹³.

It makes useful rafters, poles and rails, and in a proper soil, makes a very quick return for such purposes¹⁴. It is excellent for flooring boards, and is much used for the purposes of deal in some of the midland counties. The boards are so slow in taking fire, that the flames are said to have been stopped at that part of a building on fire, where this timber had been used. It smokes a long time before it bursts into a flame¹⁵: and of course is a bad wood for fuel. One

¹ Bath memoirs, 5. 445.

² Bath memoirs and Philos. Transf.

³ Withering.

⁴ Kent's hints.

⁵ Bath memoirs.

⁶ Lightfoot.

⁷ Withering.

⁸ Withering.

⁹ Kent, hints 180.

¹⁰ Lightfoot.

¹¹ Lightf. Withering.

¹² Young's annals, v. 121. p. 64.

¹³ Idem.

¹⁴ Linn.

¹⁵ Silva, b. 1. c. 14.

of the best uses to which the wood of this and other Poplars can be applied is for packing-cases^a.

The loppings in January are for the fire, where fuel is dear, but they burn untowardly, and rather moulder away, than maintain any solid heat. Of the twigs, with the leaves on, are made brooms. The catkins attract the bees, as do also the leaves, which are more tenacious of mildews than most forest trees, the oak excepted^b. The red substance like berries, upon the leaf-stalks, as large as a cherry, bulging on one side and gaping on the other, are occasioned by an insect called *Aphis burfaria*. Many species of insects are supported by this and the other Poplars^c.

The leaves are gathered in some parts of Europe, during the month of October and dried, to be given as fodder to the sheep in winter^d.

The Black Poplar is trimmed in Italy for the vines to run on. They poll or head the trees every second year, sparing the middle straight and most thriving shoot, and at the third year cut that off also.

The shade of this tree is esteemed very wholesome in summer, but it does not become walks or avenues by reason of the suckers, and that it fouls the ground at the fall of the leaf. It should be planted in woods, and to flank places at distance, for its increase, and the glittering brightness of the foliage^e.

Mr. Evelyn mentions divers stately trees on the banks of the Po, as he passed down that river towards Ferrara; but probably these were the Po or Lombardy Poplar, which was not then distinguished from the common sort; though it is remarkable that he should not observe the difference in the manner of growth.

The Poplar will flourish on almost any soils, and the large thick leaves full of rich sweet juice fall in such abundance, as soon to create a soil, fit for meadow or pasture. Thus tracts of waste land, not dry, might in a few years be rendered fertile.

In Kamtchatka, the inhabitants are sometimes reduced to the necessity of converting the inner bark into bread.

Scheffer made paper from the cotton down of the seeds.

The buds both of this and the White Poplar, smell very pleasantly early in the spring, and being pressed between the fingers yield a balsamic resinous substance, which extracted by spirits of wine smells like storax. A dram of this tincture in broth is administered in internal ulcers and excoriations, and is said to have removed obstinate fluxes proceeding from an excoriation of the intestines. These buds give name to the *Unguentum Populneum*, which is frequently ordered to assuage hæmorrhoidal pains^f.

In the celebrated district of Wase in Flanders, the whole of which is distributed into small inclosures not more than an acre and half in extent, great quantities of White and Black Poplars are planted in the hedge-rows, sixteen or eighteen feet asunder; they are not suffered to grow to any great size, but are cut down every twenty or four and twenty years, and replaced by young plants of the same sort: the largest trees are always cut down, to prevent the land from being too much shaded. Fifty trees are allowed to an acre, and they are generally sold for seven or eight florins apiece, for making wooden shoes, of which they not only send a prodigious quantity into other provinces, but likewise supply all Holland with them^g.

The Black Poplar is a native of Europe, from Sweden to Italy; near rivers and in moist woods.

Pliny mentions distinctly these three sorts of Poplar. "Populi tria genera, alba, nigra, et quæ Lybica appellatur;" the white, the black, and the Lybian or trembling Poplar. The white is called in Greek *Λευκη*, and the black *Αιγυια*. It is well known that this tree was accounted sacred to Hercules—"Populus Alcidae gratissima." The hero crowned his head with it, from the banks of Acheron, when he returned from the infernal regions: hence Virgil calls it, "Herculeæ arbos umbrosa corona." It was with the

^a Marshall, midland 2. 387. ^b Evelyn. ^c Withering.
^d Mem. d'Agriculture, Paris 1786. ^e Evelyn.
^f Allioni. ^g Young's annals, 15. 434.

white species that he used thus to adorn himself; for Theocritus, in his second Idyllium, calls it *Λευκη*—

—“Λευκὸν Ἡρακλεὸν ἱερὸν ἐνός.”

In the invitation of Galatea, in Virgil's ninth eclogue, the shepherd among other recommendations, mentions that a White Poplar shades the mouth of the cave:—

—“hic candida Populus antro
Imminet, & lentæ texunt umbracula vites.”

4. The Lombardy, Turin or Po Poplar differs from the common Black sort chiefly in its close conical manner of growth, like the Cypresses. The leaves are greater in breadth than length, whereas in the Black Poplar the longitudinal diameter is the greatest.

This has been esteemed by some as no more than a variety of that; and indeed it can scarcely be considered as a distinct species.

It is recommended for the quickness of its growth. A correspondent in the Gentleman's Magazine (vol. 57. p. 886.) mentions a tree of this sort, not planted much more than ten years, forty feet high at least, and four feet or more in girth, which has gained for the last three years from three to four inches each year in thickness, and has made shoots near four feet long. As it does not flame readily when burnt, he thinks it might be useful for beams and floors of houses; but he has been informed that it decays near the ground in a few years, that the wood is not durable, and that the young shoots are apt to die in hard weather.

Mr. Boutcher observes, that it grows even faster than the common sorts, is propagated with equal ease by cuttings, is as hardy and will succeed in the same kinds of land.

A correspondent in Young's annals asserts that the Italian Poplar is fit to cut for building uses in twelve years, and that at eight years growth they are forty feet high. For rafters, small beams, studs, boards, &c. he says they have stood sixteen years without the least decay, having been brushed over with oil tar and brickdust, laid on hot.

Dr. Anderson, who recommends it to be tried for live fences, says that he has lately met with some facts, that seem to show that the Lombardy Poplar is not such an exceeding quick grower, or so valuable a tree in other respects, as we were made to believe when it was first introduced into Great Britain^h.

The quickness of growth depends upon the soil and situation in which it is planted. Mr. Young, in his Irish tour mentions some which grew to the height of thirty-five feet in five years, and many at two years old of twelve feet. I have measured one of my own trees, which has been planted about twenty-five years, and find that it measures six feet five inches round, a foot above the ground, and six feet, at the height of five feet; it is sixty-three feet five inches high, and has not increased so much in height as in girth, for some years past.

For timber it seems to be inferior to the common Black Poplar, but it may answer tolerably well for floors and other purposes where it is not exposed to the weather, and may prove a useful substitute for deal.

Mr. Songa, his Imperial Majesty's Consul here suggests, that though the Po or Pine-Poplar, as he calls it, seems regarded in this country only for its beauty and quick growth, yet in a trading country like ours it may be of some consequence in packing all sorts of dry goods. The great quantity therefore planted of late years in the neighbourhood of London may in a short time turn to good account for that purpose.

The trunk of a Po Poplar about two feet in diameter, and thirty feet in length, which size it will attain in twenty years or less, is sold in Lombardy to the dealers for twelve or fifteen shillings. They cut it at the water saw mills, green, into thin boards of one quarter or one third of an inch, for packers of bales of woollens, boards to put in the middle of silk pieces or other manufactures, and for many other uses where a thin board is wanted. Boards of half an inch, and

^h Essays, 1. 100.

planks from one to two or three inches, are also cut out for different uses; but of about three quarters to an inch mostly, for boxes and cases to pack merchandise in.

The lightness of the wood saves much expense in the carriage: and nails do not split the Poplar plank, as it frequently happens with boxes and cases made of other wood. The Poplar gives way to the nail, and closes upon it afterwards. If cases fall or are thrown carelessly on the ground, which too often happens, this wood gives way a little, and returns to its former position without splitting; which oak and other heavy woods will not do.

In Lombardy, all the vessels in which the grapes are carried home in carts from the vineyards, are of Poplar plank about two inches thick, and in them the grapes are squeezed. Such vessels last thirty or forty years, and by their lightness are manageable, however large and long. A four-wheeled cart is in general covered with one of them, and it contains about fifteen hundred weight of grapes, each hundred being a hundred pound of thirty ounces¹.

The peculiar use of the Lombardy Poplar in this country has hitherto been for ornamental plantations and covering unsightly buildings. To the latter purpose its upright close conical mode of growing, with its feathering very readily down to the very ground, particularly adapts it.

Mr. Gilpin has thought some of the Poplars picturesque. They are at least stately trees, but their thin quivering foliage is neither adapted to catch masses of light, like the Elm, nor has it the hanging lightness of the Ash. Its chief use in landscape is to mix as a variety, in contrast with other trees.

The conic form of the Lombardy Poplar, as a deciduous tree is peculiar. Among evergreens we find the same character in the Cypress; and both trees in many situations have a good effect. The Cypress often, among the ruins of ancient (and the buildings of modern) Rome, breaks the regularity of a wall, or a pediment: and the Poplar on the banks of the Po, no doubt has the same effect among the deciduous brethren, by forming the apex of a clump.

One beauty the Italian Poplar possesses which is almost peculiar to it; and that is the waving line it forms, when agitated by wind. Most trees in this circumstance are partially agitated. One side is at rest, while the other is in motion. But the Italian Poplar waves in one simple sweep from the top to the bottom, like an ostrich-feather on a lady's head. All the branches coincide in the motion: and the least blast makes an impression upon it, when other trees are at rest. Although this tree sometimes has a good effect, when standing single; it generally has a better, when two or three are planted in a clump².

The Lombardy Poplar is said to have been first introduced into this country, in Essex, by the Earl of Rochford, about the year 1758, and in that county it goes by his name³. In France it has been cultivated since the year 1749^m.

5. By the growth of this tree in Europe it seems not to be of a very large size. Bark smooth, like that of the Black Poplar; the young branches have much the same appearance, but their annual shoots are seldom more than a foot in length. The leaves resemble those of the Pear tree; are about four inches long, and an inch and half broad in the middle, drawing towards a point at each end; their upper side is of a deep green, and their under side is hoary; they stand upon long footstalks, and are placed without order upon the branches. The male flowers come out from the side of the branches in long katkins, in april and may, and fall off soon after; their stamens are numerous, irregular in height, and crowned with headed anthers of a purple colour. The hermaphrodite flowers are produced at the end of the shoots upon long slender peduncles in very loose katkins, having a leafy involucre under each, which is oval and entire;

and from the bosom of that arises the peduncle, which is very short. Upon the top is placed the petal or calyx (or nectary, according to Linneus,) shaped like a wide cup, having a large style in the centre, and two stamens on one side, terminated by pyramidal purple anthers. These flowers appear in july, and are succeeded by oval capsules terminating in a point, and inclosing downy seeds. The scaly covers of the buds abound with a tenacious balsam in the spring, becoming liquid by heat. It is of a yellowish colour and a fragrant scent.

This tree is a native of Canada, and some other parts of North America, whence the balsam was brought to Europe. It comes over in shells, and is smooth, of an even texture, and in colour like strained Galbanum, but lighter.

From Canada it was brought to the island of Jersey, and was propagated there. Six of the plants were sent from thence to Caroline Queen consort of King George II, in the year 1731, by the title of *Arbre de la Reine*. One of these was given by the Queen to Sir Hans Sloane, and was planted in the botanic garden at Chelsea. This produced male katkins several years, but produced none of the female or hermaphrodite flowers until the year 1760 or thereabouts. It does not appear that this tree has been long in France; for Monf. Duhamel mentions it to have been lately planted there, and that it had supported the winter of 1754, which had killed many other treesⁿ.

Mr. Miller's figure and description agrees with the American Tacamahaca as it appears in our gardens. The former represents the male aments. Pallas's figure gives the female aments; it has much wider leaves; but he adds a leaf of a Daurian variety with a longer ovate leaf, more like ours; and of an Altaic variety, with a lanceolate leaf.

The trunk of the tree, in Siberia is straightish, not tall, covered with an ash-coloured bark; the wood reddish, closer and a little harder than in the common Poplars. The branchlets in the Altaic tree are more slender, and rod-like; in the Daurian thick, short, knobbed and wrinkled, with a yellow skin sometimes of a very deep colour. Leaves in the rod-like variety ovate-acuminate, in the Altaic commonly lanceolate; in the common Daurian ovate and thicker, so as to be in a manner coriaceous; in both very sharp, serrate, quite smooth, shining as if varnished, deep green above, pale underneath. Aments terminating, thick, the female ones ripening in june; containing ovate thick rugged capsules, subcalyced with the receptacle, scarcely peduncled.

The buds of this tree, from autumn to the leafing season are covered with abundance of a glutinous yellow balsam, which often collects into drops, and is pressed from the tree for medical use. It dissolves in spirits of wine; and the inhabitants of Siberia prepare a medicated wine from the buds, which is diuretic, and esteemed by them serviceable in the scurvy. The Grouse and other birds of that family feeding on these buds during winter, acquire a flavour which is much esteemed in that country.

This tree occurs first, in Siberia, in the upper region of the river Irtis, by the Uba, Ulba, and other streams of the Altaic chain. It is more abundant in eastern Siberia, especially in the channels of the Jenisea and Daurian rivers. On gravelly banks it grows to a considerable size, but with a short trunk; in subalpine situations it is taller; in the moist plains of Dauria it is shrubby, because the grass is fired there, and the twigs of the former year being thus destroyed, it cannot rise into a trunk^o.

6. This also is native of Canada, and is resinous like the preceding; but the leaves are different, being hollowed next the petiole and drawn out at the point. It flowers earlier, namely in march. Introduced about 1772, by John Hope, M. D.^p

7. Native of North America. Cultivated in 1769, by Hugh Duke of Northumberland. It flowers in march and april.

¹ Young's annals, 4. p. 7.

² Forest Scenery. 1. 53.

³ Gent. mag. 57. 886. and Hort. kew.

^m Memoirs d'Agriculture.

ⁿ Miller's figures.

^o Pallas, ross.

^p Hort. kew.

8. Native of Canada; introduced about 1772 by John Hope, M. D. It flowers in may^a.

It appears by Mr. Abbot's fine work on the Province of Georgia, edited by Dr. Smith; that this species is not confined to Canada.

9. This resembles the next species in growth and foliage.—Native of the islands of the Archipelago. Cultivated in 1779, by Hugh Duke of Northumberland. It flowers in march and april.

10. A large tree; branches numerous, veined and angular; leaves broad and slightly serrate: flowers in loose aments, making little show.—Native of Virginia and New York. Cultivated in 1765 by John Fothergill, M. D. It flowers in april and may^c.]

11. Shoots very strong and generally cornered, covered with a light green bark like some sorts of Willow. The leaves upon young trees, and also upon the lower shoots are very large; but those upon older trees are smaller: as the trees advance their bark becomes of a lighter colour, approaching to gray. The aments are like those of the Black Poplar; and the anthers are purple. It grows naturally in Carolina, where it becomes a very large tree. [I have seen some of a very considerable size in England.—It was cultivated by Mr. Miller in 1759; and flowers in march^b.]

PROPAGATION AND CULTURE.

These trees may be propagated either by layers or cuttings, which will readily take root, as also from suckers, which the white Poplars send up from their roots in great plenty; but these are less valuable than those propagated by cuttings, being more liable to send up suckers. The best time for transplanting these suckers is in october, when their leaves begin to decay. These may be placed in a nursery for two or three years to get strength, before they are planted out where they are designed to remain; but if you intend to propagate them from cuttings, it is better to defer the doing of that until february, at which time you may plant truncheons of two or three feet long, thrusting them about a foot and a half into the ground. These will readily take root, and if the soil be moist in which they are planted, they will arrive to a considerable bulk in a few years.

The Black Poplar is not so apt to take root from large truncheons, therefore it is the better method to plant cuttings about a foot and a half in length, thrusting them a foot deep into the ground; these will take root very freely, and may be afterward transplanted where they are to remain. This sort will grow upon almost any soil, but will thrive best in moist places.

I have planted cuttings of this tree, which in four years have been bigger in the trunk than a man's thigh, and near twenty feet in height, and this upon a very indifferent soil; but in a very moist soil, it is common for these trees to shoot eight or ten feet in a season; so that where a person hath a mind to make a shelter in a few years, there is scarce any tree so proper for that purpose as this; but they should not be planted too near the pleasure-garden, because the katkins and down which fall from these trees, will make a prodigious litter in the spring.

The white sorts, as also the Aspen-tree, likewise cause a great litter in the spring, when their katkins and down fall off; and their roots being very apt to produce a large quantity of suckers, especially those trees that came from suckers, they are unfit to be planted near a house or garden; but when they are interspersed with other trees in large plantations, they afford an agreeable variety, their leaves being very white on their under sides, which, when blown with the wind, are turned to light.

A considerable advantage may be made by planting these trees upon moist boggy soils, where few other trees will thrive. Many such places there are in England, which do not at present bring in much money to their owners; whereas, if they were planted with these trees, they would, in a very few years, over-purchase the ground, clear of all expence; but there are many persons, who think nothing except Corn

worth cultivating in England; or if they plant timber, it must be Oak, Ash, or Elm; and if their land be not proper for either of these, it is deemed little worth; whereas if the nature of the soil was examined, and proper sorts of plants adapted to it, there might be very great advantage made of several large tracts of land, which at this time lie neglected.

The wood of these trees, especially of the Abele, is very good to lay for floors, where it will last many years; and for its exceeding whiteness, is by many persons preferred to Oak; but being of a soft texture, is very subject to take the impression of nails, &c. which renders it less proper for this purpose: it is also very proper for wainscoting of rooms, being less subject to swell or shrink, than most other sorts of wood; but for turnery ware, there is no wood equal to this for its exceeding whiteness, so that trays, bowls, and many other utensils, are made of it; and the bellows-makers prefer it for their use, as do also the shoemakers, not only for heels, but also for the soles of shoes; it is also very good to make light carts, and the poles are very proper to support Vines, Hops, &c. and the lopping will afford good fuel, which in many countries is much wanted.

[Spring is the best season for planting the cuttings; though they will grow if planted in any of the winter months. They should all be vigorous shoots of the last year, or at least not older than two years; a foot and half in length. Plant them ten inches or a foot in the ground, in rows two feet and a half or a yard asunder, and a foot or eighteen inches from each other. Look over the plants in summer, to nip off all side shoots. In two years they may be planted out, if they are for small woods or spinneys, in boggy or watery grounds. If they are for standards, they may remain in the nursery another year; and when planted out, they will be worth in twenty or thirty years as many shillings each.

To form a coppice of these trees, if the land be not so boggy but that it may be ploughed, a crop of oats or other grain may be got off it the year preceding the planting, and in the autumn it should be ploughed again. Let two year old plants from the nursery be planted one yard asunder. Hoe down the weeds the first year: afterwards they will require no farther trouble till the time of cutting, which may be in seven years; and every four or five years after, they may be cut for poles, firewood, &c. By these means boggy or marshy land will often produce more than the best pasture. If the ground will not admit of ploughing and sowing, the plants must be set in holes at the same distance.

For timber trees they may also be planted a yard asunder, and when the heads begin to interfere, every other tree may be taken away, or the weakest and least thriving: and thus you may continue to thin them as often as they are too close.

After they are finally planted out, never strip them up or take off any side branches^d.]

5. The Tacamahacca sends up a great number of suckers from the roots, by which it multiplies in plenty, and every cutting which is planted will take root; so that when a plant is once obtained, there may soon be plenty of the plants raised.

[The cuttings should be planted the middle of february, in rich mellow earth, shaded from the mid-day sun, and watered in dry weather. The succeeding february remove them; smooth the extremities of their roots, cut off the strong side branches, and plant them in rows three feet distant, and eighteen inches asunder in the row: here let them continue two or three years, when they may be transplanted to the places where they are intended to remain.

It will grow on almost any soil; and when there are void spaces in plantations, occasioned by the death of other trees, this will sooner and better supply their places than most others^e.]

11. The Carolina Poplar may also be propagated by cuttings or layers; the latter is generally practised by the nursery gardeners, being the surest method;

^a Hort. kew.

^b Idem.

^c Idem.

^d Hunter in Evelyn's Silva.

^e Boucher.

and those plants are not so full of moisture as those raised by cuttings, so are less liable to be cut down by the frost when young: as they are very apt to be, to a considerable length. As the trees grow older, the shoots are more woody, and not so liable to this disaster. They should however be planted in a sheltered situation, for their leaves being very large, the wind has great power over them; and the branches, being tender, are frequently broken or split down by the winds in summer, where they are much exposed.

[POPULUS. See *Coccoloba*.

PORANA.

Lin. gen. Reich. n. 230. Schreb. n. 286. Juss. 420. Burman.

Class. 5. 1. Pentandria Monogynia.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved: *leaflets* lanceolate, blunt, commonly shorter than the corolla, spreading, permanent: in the fruit larger.

COR. one-petalled, bell-shaped, half-five-cleft, erect, acute.

STAM. *Filaments* five, capillary, spreading, commonly shorter than the corolla. *Anthems* incumbent, oval.

PIST. *Germ* superior, subglobular. *Style* femibifid, longer than the corolla, bristle-shaped, permanent. *Stigmas* capitate.

PER. two-valved.

SEED.

ESSENTIAL CHARACTER.

Cal. five-cleft: in the fruit larger. Cor. bell-shaped. *Style* femibifid, longer, permanent. *Stigmas* globular. *Per.* two-valved.

SPECIES.

1. *Porana volubilis*.

Lin. syst. 200. Reich. 1. 433. mant. 560. Burm. ind. 31. t. 21. f. 1.

DESCRIPTION, &c.

Leaves distant, ovate, ferrate, scarcely sharp, plaited. Flowers panicled: are not some of them male and apetalous?—Native of the East Indies.

It is a smooth twining shrub, with alternate leaves. Compare it with the *Borraginæ* and *Ebretia*.*

PORAQUEIBA. See *Barreria*.

PORELLA. (So named from the number of pores on the capsule.)

Lin. gen. n. 1186. Reich. n. 1303. Schreb. n. 1616. Dill. musc. 459.

Class. 24. 1. Cryptogamia Miscellanæ: sed Muscis (ord. 3.) restituenda.

Capf. oblong, opening with many lateral pores. *Calyptre* none.

OBSERVATION.

Dillenius, who established this genus, was misled by an imperfect specimen; and Linneus adopted it from him, without having seen the plant. Mr. Dickson, with his usual sagacity and accuracy, has ascertained it to be a *Jungermannia*, and has named it *J. Porella*. He has both described and figured it. It is a native of Pennsylvania^z.

POROPHYLLUM. See *Cacalia*.

POROSTEMA. (From *πoros* a pore, and *στέμα*, a stamen; each stamen of the flower proceeding from a pore.)

Lin. gen. Schreb. n. 1226. Nectandria. Roland. Ocotea. Aubl. t. 310. Juss. 80.

Class. 18. 4. Polyadelphia Polyandria.

Nat. order of *Lauri*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, coloured, permanent, six-parted: *segments* ovate, obtuse; the three inner less.

COR. none.

Nectary of nine scales, oblong, truncate; six outer, inserted at bottom into the segments of the calyx, and incumbent on them: three inner fastened to the receptacle, obverse to the former: each having four pores; the outer ones on the inner side, the inner ones on the outer side.

Glands six, roundish, fleshy, growing to the bottom of the calyx, between the inner and outer scales of the nectary. *Aublet*.

* *Lin. mant.* ^z *Juss. gen.* ^z *Lin. transf. 3. 238.*

STAM. *Filaments* thirty-six, fastened to the scales of the nectary, each proceeding from each pore. *Anthems* roundish, compressed, peltate.

PIST. *Germ* ovate, angular, immersed in the receptacle. *Style* short. *Stigma* obtuse, concave.

PER. *Drupe* turbinate, fastened to the calyx. *Rolander. Capsule* roundish, four or six-celled, covered with the calyx. *Aublet*.

SEEDS two. *Roland*.—very many, extremely small. *Aubl*.

ESSENTIAL CHARACTER.

Calyx six-parted, unequal. *Corolla* none. *Filaments* nine, with four anthers on each. *Capsule* covered, four or six-celled, many-seeded.

SPECIES.

1. *Porostema guianensis*.

O. guianensis. Aubl. Guian. 2. p. 780. t. 310.

DESCRIPTION, &c.

1. A tree which rises thirty feet high; branching at top: the branches cornered, straight, and horizontal; leaves alternate, ovate-lanceolate, perfectly entire; smooth above and green, beneath silky and hoary; seated on a short footstalk which is swelled at its base, and is stretched and prominent as far as the axil of the leaf. The flowers are whitish, small, paniculated, terminal, and axillary, and exhale a very pleasant odour. It flowers in Guiana in april, where it is found in woods^a.

PORRUM. See *Allium*.

PORTESIA OVATA *Cavanilles*. See *Trichilia pallida*.

PORTLANDIA. (So named by Dr. Patrick Browne after the Dutchess of Portland, who was a great lover of Botany, and well acquainted with English plants.)

Lin. gen. n. 227. Reich. n. 243. Schreb. n. 299. Brown. jam. t. 11. Jacqu. amer. Gärtn. t. 31. Juss. 202.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Rubiaceæ*, Juss.—*Contortis accedit*, Swartz.

GENERIC CHARACTER.

CAL. *Perianth* five-leaved, superior: *leaflets* oblong-lanceolate, permanent.

COR. one-petalled: *tube* long, funnel-form-ventricose: *border* shorter than the tube, five-parted, acute.

STAM. *Filaments* five, awl-shaped, declined, almost the length of the corolla, from the bottom of the tube. *Anthems* linear, erect, the length of the corolla.

PIST. *Germ* five-cornered, roundish, inferior. *Style* simple, the length of the stamens. *Stigma* oblong, obtuse.

PER. *Capsule* obovate, five-streaked, five-cornered, retuse, two-celled, two-valved, opening at the top; *partition* contrary.

SEEDS very many, roundish, compressed, imbricate.

OBS. *P. tetrandra* and *hexandra* have four and six stamens.

ESSENTIAL CHARACTER.

Cor. club-funnel-shaped. *Anthems* longitudinal. *Capf.* five-cornered, obtuse, two-celled, two-valved, many-seeded, crowned with a five-leaved calyx.

SPECIES.

1. *Portlandia tetrandra*.

Lin. syst. 213. ed. Willd. 935. suppl. 143. Forst. prodr. n. 86.

Flowers tetrandrous, leaves oblong blunt (obovate, F.) *stipules* wide.

2. *Portlandia coccinea*.

Swartz prodr. 42. descr. 384. Lin. spec. ed. Willd. 936.

Flowers pentandrous, leaves ovate coriaceous.

3. *Portlandia grandiflora*.

Lin. spec. 244. syst. 213. Reich. 1. 475. Willd. 935. Gärtn. 1. 133. Jacqu. amer. 62. t. 44. pict. 35. t. 64. Swartz, descr. 385. obs. 69. Brown. jam. 164. t. 11. f. 1. Smith, ic. rar. 1. t. 6.

Flowers pentandrous—leaves lanceolate-elliptic, Sw.—*calycine leaflets* ovate, Sm.

^a *Aublet*.

4. *Portlandia hexandra*.*Lin. syst.* 213. *Reich.* 1. 475. *Willd.* 936. *mant.*45. *Jacqu. amer.* 63. t. 182. f. 20. *piet.* 35. t. 65. *Swartz, descr.* 385. *obs.* 70.*Coutarea speciosa.* *Aubl. guian.* 1. 314. t. 122.*Silacoides lauri folio flore carneo.* *Barrere, æquin.* 67.*Flowers hexandrous, tube subincurved, peduncles ternate, leaves ovate; calycine leaflets lanceolate.* Sm.

DESCRIPTIONS, &c.

1. Leaves at the tops of the branches, approximating, elliptic, petioled, quite entire, very smooth. Stipules dilated, with a point. Flowers axillary, solitary, peduncled. Germ inferior, four-cornered, terminated by four, awl-shaped, short calycine teeth. Corolla longer, club-shaped, four-cornered, white, with a four-cleft border. Anthers long, linear, not exceeding the border.—Native of Savage-island in the South Seas^b.

2. This is a shrub two or three feet in height, erect, branched. Branches and branchlets round, smooth. Leaves opposite, ovate or suboval, scarcely acuminate, quite entire, nerved, smooth, shining, underneath veined, paler, somewhat wrinkled, with a convex margin, three inches long, two inches wide. Petioles short, thick, from round flattened a little, smooth. Stipules interposed between the leaves, broad-ovate, acuminate, pressed to the stem. Flowers axillary, solitary, scarlet, on peduncles a little longer than the petioles, angular, smooth, coloured. Calycine leaflets acute, coloured. Corolla club-funnel-form, three inches long; tube five-cornered, at top ventricose; border five-cleft, segments ovate-acute, erect. Filaments the length of the tube, erect, equal. Anthers longitudinal, very long, spiral, yellow. Germ oblong, five-cornered, smooth. Capsule roundish, crowned with the calycine leaflets, smooth, coloured.

It differs from the *grandiflora* in having the leaves nearly roundish or oval, coriaceous, veined underneath; the corollas smaller by half, and of a full scarlet colour; the capsules roundish.

Native of Jamaica, in the western parts, on precipices of the mountains, but not common. It flowers there in June and July^c.

3. Stem shrubby, upright, branched, knotty, with a smooth bark cracking longitudinally. Branches opposite, spreading, round, scarcely divided, leafy, covered with smooth green bark. Buds gummy. Leaves opposite, spreading, somewhat lengthened at the point, equal at the base, entire, very smooth, paler beneath, marked with alternate veins projecting on both sides. Footstalks very short, thick, round below but flattish above. Stipules between the leaves, connate, triangular, pointed, very smooth, pale, closely pressed to the branch. Flowers axillary, mostly solitary, between the stipules, peduncled, a little nodding, very large, white, beautiful, most fragrant at night, in the bud yellowish tipped with red. Peduncles shortish, round, smooth. Bractes none. Calycine leaflets ovate, pointed, a little curved backwards, keeled at the base, reddish towards the top. Tube of the corolla with five sharp downy angles, inflated at the top: limb in five nearly equal somewhat triangular segments, margins spreading, at length revolute. Filaments on the germ, scarcely so long as the tube, downy at the base. Anthers very long, vertical, straight. Germ smooth. Style a little longer than the stamens, declined, spiral, angular. Stigma at length trifid; segments revolute^d. Capsule subturbinat, crowned with the leaflets of the calyx spreading very much, coriaceous, unequally five-cornered, ribbed at the corners; partition thin. Seeds elliptical, thickish, flat on both sides, having raised dots scattered over them, rufescent, horizontal, with an umbilicus, before they are fully ripe, fleshy, white, of a sharp-pointed pyramidal form, fastened to the partition^e.

Mr. Salisbury suspects that the plant described above agrees in its generic characters with *Catebæa*. This cannot be denied with respect to the flower: but

^b Linn. suppl. ^c Swartz, descr. ^d Smith. ^e Gärtner.

Catesby says, the fruit is a berry with a single cell. His authority however is but slight.

Jacquin's synonym seems doubtful on account of the inequality at the base of the leaves in his figure, which is never the case in our plant; nor is it found in any specimen of *Portlandia* in Sir Joseph Banks's herbarium.

This species, as well as the next, has occasionally six stamens, and six divisions of the flower.

Dr. Browne gathered it among rocks at the foot of mountains in Jamaica plentifully^f.

Notwithstanding the difference in the leaves observed by Dr. Smith in Jacquin's figure, I cannot but think that this celebrated author intended the same species with that of Browne. Swartz celebrates Browne's figure as very good, and so it is in general; but Jacquin observes that the filaments are not made to spring from the bases of the tube, and that the draughtsman has represented the excrements of insects for seeds, and that he seldom could find the real seeds, even in unripe fruit. He mentions the very grateful and refreshing odour of the flowers in the evening.

It was introduced in 1775 by — Ellis, Esq. and flowers in July and August^g. It is rare in the English gardens, but very frequently flowers at the Marchioness of Rockingham's^h.

4. This is a shrub, six feet in height, upright, divided into branches that are round, but at the origin of the peduncles compressed, rugged with small warts scattered over them. Leaves ovate, quite entire, ending in a bluntish point, very smooth, veined, petioled, opposite, five inches long. Common peduncles three-flowered, the axillary ones solitary, the terminating ones in threes: the pedicels short. Flowers handsome, sweet, numerous, near three inches in length; the petals flesh-coloured on the outside, white within, marked with lines. Capsules brown variegated with ash-coloured dots. The seeds are mostly eaten by insectsⁱ. Jacquin however found ripe seeds in April. It flowers in August and September. Native of woods and coppices about Carthagera, Guiana and Cayenne.

PROPAGATION AND CULTURE.

3. This may be increased either by seeds or cuttings. The seeds, when they can be obtained, may be sown in pots in light earth, and plunged in the tan-pit. The cuttings do not strike very easily. The plants must be managed in the same way as other woody plants from Jamaica, and require a stove heat.

PORTULA. See *Peplis*.]

PORTULACA (of Pliny, by the Greeks *Ανδραχύν*. According to some, it should be writ, *Portulata*, quia foliis portulas imitatur. But *Portulaca* may be formed from *Portula*, as *lingulaca* from *lingula*, &c. *Salmasius* will have it to be *Porculata*, from *Porcula*, a pig; whence it was called *Porcellia* and *Porcacia*; and by the Greeks *Χοιροβοτάνον*. *Vossius*.)

Lin. gen. n. 603. *Reich.* n. 659. *Schreb.* n. 824.*Gärtn.* t. 128. *Tournef.* t. 118. *Juss.* 312.*Anacampseros edit. prim.* *Telephiastrum.* *Dill.**elth.* 280. *Orygia.* *Forsk.*

Class. 11. 1. Dodecandria Monogynia.

Nat. order of *Succulentæ*. *Portulacæ*, *Juss.*

GENERIC CHARACTER.

CAL. *Perianth* bifid, small, compressed at the tip, permanent: (two-leaved, superior, caducous, G.)

COR. *Petals* five, flat, erect, blunt, larger than the calyx.

STAM. *Filaments* many, (to twenty, G.) capillary, shorter by half than the corolla. *Anthers* simple.

PIST. *Germ* roundish, (half-inferior, G.) *Style* simple, short. *Stigmas* five, oblong, the length of the style.

PER. *Capsule* covered, ovate, one-celled, (cut transversely. G.) *Receptacle* free, (five, free, separate. G.)

SEEDS numerous, small.

OBS. Some species (1 to 4) have a circumscised capsule; in others (5, 7, 8, 12) the capsule is three-valved. *P. fruticosa* has a five-leaved calyx, and a three-valved capsule. *P. quadrifida* has a four-parted corolla, eight stamens, and an inferior germ. *Jussieu* would remove those

^f Smith. ^g Hort. kew. ^h Smith. ⁱ Jacquin. *Species*

species which have a three-valved capsule into a genus called Talinum by Adanson.

ESSENTIAL CHARACTER.

Cal. bifid (or two-leaved.) *Cor.* five-petalled. *Caps.* one-celled, cut round, or three-valved. (*Receptacles* five, free, distant. *G.*)

SPECIES.

1. *Portulaca oleracea*. Garden Purslane.
Lin. spec. 638. *syft.* 445. *Reich.* 2. 423. *Gron. virg.* 59. *hort. upf.* 147. *cliff.* 207. *mat. med.* 119. *Brown. jam.* 233. *Thunb. jap.* 192. *Lour. cochinch.* 293. *Burm. ind.* 110. *Hall. belv.* n. 968. *Neck. gallob.* 207. *Scop. carn.* n. 564. *Pollich pal.* n. 449. *Krock. fles.* n. 713. *Villars dauph.* 3. 818. *Allion. pedem.* n. 1678. *Blackw. t.* 287. *Regn. bot. Plenck ic.* 361. *Abbot, Georg. t.* 39.
P. sylvestris. *Matth. epit.* 258. *Ger.* 418. 2. *emac.* 521. 2. *Park. theat.* 723. 1. *Raii hist.* 1039.
P. angustifolia f. *sylvestris.* *Baub. pin.* 288.
P. sylv. minor f. *spontanea.* *Baub. hist.* 3. 678.
β. *P. latifolia* f. *sativa.* *Baub. pin.* 288. *Raii hist.* 1039.
P. domestica. *Lob. ic.* 388. *Ger.* 418. 1. *emac.* 521. 1.
P. hortensis. *Park. parad.* 499.
Leaves wedge-shaped, flowers sessile.
2. *Portulaca pilosa*. Hairy Purslane.
Lin. spec. 639. *syft.* 445. *Reich.* 2. 423. *Gærtn. fruct.* 2. 212. *Kniph. cent.* 4. n. 64. *Comm. hort.* 1. 9. *t.* 5. *Herm. par. t.* 215. *Pluk. phyt.* t. 247. f. 7. *Volk. norib. t.* 341. *Brown. jam.* 234. (*Anacampseros.*)
β. *Herm. par. t.* 214. *Pluk. phyt. t.* 105. f. 4.
Leaves awl-shaped alternate, axils hairy, flowers sessile terminating.
- [3. *Portulaca quadrifida*. Creeping annual Purslane.
Lin. syft. 445. *Reich.* 2. 424. *mant.* 73. *Herm. par.* 216. *Pluk. mant.* 169. (*Sedum.*)
P. linifolia. *Forsk. ægypt.* 92.
Bractes in fours, flowers quadrifid, stem with hairy joints.
4. *Portulaca halimoides*. Halimus-like Purslane.
Lin. spec. 639. *syft.* 445. *Reich.* 2. 424. *Sloan. jam.* 1. 205. *t.* 129. f. 3. *Brown. jam.* 206. (*Halimus.*)
Leaves oblong fleshy, stem corymbose, flowers sessile.
5. *Portulaca triangularis*. Triangular-racemed Purslane.
Lin. syft. 445. *Reich.* 2. 425. *Jacqu. obs.* 1. 35. *t.* 23. *amer.* 147. *piet.* 73. *Herm. parad.* 21. (*Chamæcistus.*) *Plum. spec.* 7. *t.* 150. f. 2. (*Helianthemum.*)
P. racemosa. *Lin. spec.* 640.
Leaves obovate flattish, raceme simple three-sided.
6. *Portulaca crassifolia*. Thick-leaved Purslane.
Lin. syft. 446. *Jacqu. hort.* 3. *t.* 52.
Leaves lanceolate flat, racemes three-sided, stem erect.]
7. *Portulaca Anacampseros*. Round-leaved Purslane.
Lin. spec. 639. *syft.* 446. *Reich.* 2. 425. *hort. upf.* 146. *cliff.* 207. *Comm. hort.* 2. 177. *t.* 89. *Raii suppl.* 507. n. 18.
Telephiastrum folio globofo. *Dill. elth.* 375. *t.* 281. f. 363.
Leaves ovate gibbous, peduncle many-flowered, stem shrubby.
- [8. *Portulaca patens*. Panicked Purslane.
Lin. syft. 446. *Reich.* 2. 425. *mant.* 242.
P. paniculata. *Lin. spec.* 640. *Jacqu. amer.* 22. *piet.* 73. *t.* 136. *hort.* 2. *t.* 151.
Talinum reflexum. *Cavan. hisp.* 1. *t.* 1.
Leaves lanceolate-ovate flat, panicle branched, calyxes two-leaved.
9. *Portulaca cuneifolia*. Wedge-leaved Purslane.
Vahl symb. 1. 33.
Orygia portulacifolia. *Forsk. descr.* 103.
Leaves wedge-shaped flat, lower peduncles of the raceme three flowered, calyxes two-leaved.
10. *Portulaca meridiana*.
Lin. syft. 446. *suppl.* 248.
Leaves elliptic fleshy flat, joints hairy, flowers sessile terminating.

11. *Portulaca decumbens*. Prostrate Purslane.

Vahl symb. 1. 33.

Orygia decumbens. *Forsk. descr.* 103.

Leaves obovate mucronate, calyxes five leaved, stem shrubby decumbent.

12. *Portulaca fruticosa*. Shrubby Purslane.

Lin. syft. 446. *Reich.* 2. 426.

P. paniculata. *Lin. spec.* 640. *Comm. hort.* 1. 7.

t. 4. *Sloan. jam.* 1. 205. *Brown. jam.* 234.

(*Anacampseros.*)

Leaves obovate flattish, peduncles racemed, calyxes five-leaved, stem shrubby.

DESCRIPTIONS, &c.

1. Common Purslane is an annual herbaceous plant, with a round, smooth, procumbent, succulent stem, frequently red, and diffused branches, often throwing out fibres at the joints. Leaves more or less wedge-shaped, oblong, blunt, fleshy, smooth, quite entire, sessile, clustered, especially at the ends of the branches. Flowers sessile, scattered: corollas yellow, spreading; petals subtruncate at the tip and emarginate. Stamens ten. Capsule one-celled, opening horizontally. Seeds round, black, very small^k.

The stamens vary in number: according to Haller they are from eight to fifteen; Gmelin says, from six to twelve and more; Villars twelve. Haller and Scopoli attribute five styles to it; and Gmelin says that the stigma is four-parted. According to Linneus the flowers open from eleven to twelve: Pollich affirms, that he has seen them open at nine a. m.

Native of both Indies, China, Cochinchina, Japan, the island of Ascension, &c. and now in many parts of Europe. We learn from Turner, that it was cultivated here in 1562^l. This is our earliest written authority; but we probably had it earlier, since it was formerly much in request as a wholesome salad and pickle, and as a medicine for various disorders. But it is now little used.]

β. Garden Purslane differs from the wild, only in having larger and more succulent leaves. If it be permitted to scatter the seeds, in two years it will become in every respect like the wild plant.

There are two other varieties; one with deep-green leaves; and the other with yellow leaves, which is called Golden Purslane; but they are only feminal variations.

2. This also is an annual herbaceous plant, with very succulent stalks, of a purple colour, and branching out greatly: the lower branches lie near the ground, but those above are more erect. Leaves narrow, of a lucid green. At the joints are tufts of white hairs, and between these come out the flowers, of a fine pink colour, but of short duration, seldom continuing open longer than five or six hours. They are succeeded by short roundish capsules, filled with small black seeds.

[The capsule is half inferior, covered by the permanent, shrivelled corolla as with a veil, of an oblong spheroidal form, girt round the middle with a prominent rim, one-celled, cut transversely: the valves hemispherical, nearly equal. Receptacles five, free, distant, filiform, branched, erect, fastened to the bottom of the capsule. Seeds kidney-form with a beak, shagreened as it were with very minute sharp tubercles disposed in parallel rows. The receptacles distinguish this genus from all others^m.

Linneus remarks, that the leaves are alternate, except that the terminating or floral ones are eight together in a ring: that the flowers are sessile and terminating, with a bifid calyx; that there are fifteen stamens; and that the style is five-cleft.

Native of the West Indies. Browne says, it is cultivated in many of the gardens about Kingston in Jamaica, where it has been introduced, on account of its constant greenness, and the frequent shooting of its flowers. It is a native of the Keys, or smaller sandy islands beyond Port-Royal; and grows in spreading tufts or beds about the root. All the parts of the plant are very bitter, and frequently used by the poorer people as a stomachic, &c.

^k Loureiro.

^l Hort. kew.

^m Gærtner.

It was cultivated here in 1690, in the Royal garden at Hampton Court^a.

3. Root annual, fibrous. Stems annual, prostrate, numerous, round, even, alternate, branched, half a foot long, with rooting, hairy joints. Leaves opposite, spreading, distant, ovate-lanceolate, fleshy, even, sessile, quite entire, concave underneath, with transparent *micæ* scattered over them. Flowering petioles terminating, but when adult becoming lateral, one-flowered, thickened at top, the length of the leaves, terminated by four spreading cruciate bractes, resembling the leaf. Flowers sessile, yellow, surrounded with white hairs, like the joints. Calyx two-valved, membranaceous, ovate. Corolla four-parted, ovate-oblong, shrivelling. Filaments eight, bristle-shaped, curved outwards at the base, the length of the corolla. Anthers roundish. Germ inferior, rounded. Style cylindric, thicker at top, the length of the stamens. Stigmas four, oblong, blunt, recurved, pubescent. Capsule ovate, slightly four-cornered, sharpish, one-celled, opening transversely. Seeds roundish, mucicate.

Native of Egypt^a:—of the East Indies. Introduced by Sir Joseph Banks^b.

4. This grows in beds, and spreads a little upon the ground, but the stems seldom exceed two or three inches in length: the leaves are disposed pretty thick at the top of the branches, and the flowers blow in the centre of them. There is a sort of cotton shoots about the flowers, as it grows old, which in time spreads over most parts of the plant^c. The calyx is two-leaved; and the capsule opens transversely^d. It is an annual plant; native of Jamaica.

5. This is a shrubby plant, two feet high. Stems round, woody at bottom, smooth, branched, from procumbent erect. Leaves oblong or subovate, attenuated at the base, shining, thickish, emarginate with a point, convex or flat, with the sides often rolled back, brittle, scattered alternately. Peduncles at least two-flowered, erect, triangular, terminating. Flowers pretty, but without scent, with a bifid calyx, and yellow petals. The capsule opens perpendicularly in three parts.—Native of the West Indies, on rocks by the coast^e.

6. This was received by Jacquin under the name of *P. triangularis*. The seeds sown in a stove succeeded well, and produced several flourishing plants. It agrees in general appearance with *P. triangularis*, Jacq. hist. stirp. amer. From a branching root arises a fleshy stem of the thickness of one's thumb or more; upright, two feet high, and more: perennial, branching, purple below the leaves; the remainder green: it is round, but obscurely angular to the touch: the younger branches are apt to be nipped by the frost and to wither: the leaves are lanceolate, obtuse, or a little sharpened; and sometimes emarginate; thick, veinless, alternate, subsessile, perfectly entire, rather attenuated towards the base. Racemes triangular, upright, either simple or branched, many-flowered, terminal; and at the sides of these new branches arise. Flowers inodorous, pedunculated; calycine leaves ovate, acute, concave, whitish and transparent. Petals red; thrice the length of the calyx, extremely obtuse. Filaments about thirty, reddish, and with glandular hairs. Anthers yellow. Stigma trifid, and deep purple. Capsule globose. The whole plant is very smooth^f.]

7. This has a shrubby stalk, four or five inches high. Leaves thick and succulent. At the top of the stalk comes forth a slender peduncle about two inches long, supporting four or five red flowers, appearing in July, but not succeeded by seeds in England. [The axils of the leaves are hairy; and the succulent leaves unite this with the *Portulacas*, although it has very many stamens, and a three-valved capsule. The calyx is two-leaved.

Native of the Cape of Good Hope^g. Cultivated in 1732, by James Sherard, M. D.^h

^a Hort. kew.

¹ Browne.

² Jacquin, hort.

^o Linn. mant.

^r Linn.

^u Linn.

^p Hort. kew.

^s Jacquin, amer.

^x Hort. kew.

8. This also is shrubby. Stems round, woody at bottom, smooth, brittle, suberect. Leaves oval, acute at both ends, thick, fat to the touch, quite entire, petioled, alternate; the lower three inches long; the upper gradually smaller. Panicle a foot long, spreading, erect, terminating. Flowers small, numerous, red, without scent. Calyx bifid, concave. Stamens at least fourteen, equal to the corolla. Stigmas three, thickish. Capsule roundish, obsoletely three-cornered, perpendicularly three-valved^y.

Stem a foot high, flexile; with alternate, even, four-cornered branches; the lower ones longer. Leaves subpetioled, half an inch long, quite entire, keeled, brittle. Panicle elongated; with filiform, dichotomous pedicels. Calyx two-leaved, red. Petals five, ovate, red. Anthers yellow. Styles three. Capsule globular, one-celled, three-valved, with the valves doubled. Seeds several, black. It is quite distinct from *P. fruticosa*, which has white flowers and a five-leaved calyx^z.

Native of the West Indies. Introduced in 1776, by Chevalier Murray^a.

Cavanilles, who following Adanson and Jussieu separates this from the *Portulacas* under the name of *Talinum reflexum*, says that the stem sometimes perishes, and accordingly he marks it as biennial, that the calyx is monophyllous, and the corolla is deep yellow. But plants that are perennial in their native soil, frequently die in a short time in our stoves. Jacquin might possibly take a calyx deeply bifid for a two-leaved one, and as for the colour of the corolla we cannot depend much on that. I am inclined to prefer descriptions of plants made on the spot, or from specimens gathered in places where they grow naturally, to such as are formed from the plants as they appear in our stoves.

9. This is allied to the preceding, but is distinguished from it by the peduncles being thicker, and the lower ones having the flowers in threes and pedicelled, at the tip^b.—Native of Egypt.

10. Annual. Stems the stature of *Sedum acre*, filiform, herbaceous, creeping, jointed, branched, round, loose, red: the joints are rooting, and have a few hairs scattered over them. Leaves elliptic-lanceolate, even, somewhat fleshy, terminating, opposite by pairs or by fours. Flowers yellow, solitary, surrounded by wool and four leaves. Calyx two-valved, very tender: leaflets ovate, acute, red. Stamens four to eight, but inconstant.

Native of the East Indies; flowering from twelve at noon through the day^c.

11. Stem shrubby, decumbent: branches angular, covered with the same bloom as the whole plant. Leaves alternate, petioled, remote, quite entire, somewhat waved, veinless, thickish. Racemes from the uppermost axils, with an awl-shaped scale on the side opposite to the pedicel. Calyx five-leaved. Capsule five-valved^d.—Native of Egypt.

12. The leaves are round and succulent, all disposed about the bottom of the stalk, which rises generally to the height of sixteen or twenty inches^e.—Calyx five-leaved. Corolla white. Capsule three-valved^f. Native of Jamaica. Browne says it is a beautiful plant, and grows in a gravelly soil in the road through Cambridge hill.

GENERAL OBSERVATIONS.

The capsule in the five first species is cut transversely or horizontally, which Linneus calls *circumscissa*; in the rest it divides vertically into three valves, except in the eleventh which is five-valved. Hence the division into two genera by Adanson, Jussieu and Cavanilles. But it is very well remarked by the younger Linneus, that *Portulaca* is an exceedingly polymorphous genus in the fructification and number of parts.

The four first species and the tenth are herbaceous; the rest are shrubby. Cavanilles indeed considers the eighth as herbaceous; but Jacquin as shrubby.

^y Jacquin.

^b Vahl.

^z Linn. mant.

^c Linn. suppl.

^d Vahl.

^e Linn. syst.

^a Hort. kew.

^g Browne.

The calyx in the eleventh and twelfth is five-leaved; in the rest it is two-leaved or deeply bifid.

The corolla is four-cleft in the third species; five-cleft in the fourth—the rest have probably five petals.

The filaments vary exceedingly in number. The first species has from six to fifteen; the second has fifteen; the third and fourth have eight; the eighth has sixteen; the tenth has from four to eight; and the twelfth has from twelve to eighteen.

The following table will discriminate the species at one view:

- I. Capsule cut transversely. 1 to 5.
- Herbaceous. 1 to 4.
 - Corolla five-petalled. 1. 2.
 - Stamens six to fifteen. N. 1.
 - Stamens fifteen. N. 2.
 - Corolla four-cleft. N. 3.
 - Corolla five-cleft. N. 4.
 - Shrubby. N. 5.
- II. Capsule opening vertically, 6 to 12.
- In three valves. 6 to 10 and 12.
 - Shrubby. 6 to 9 and 12.
 - Calyx two-leaved or deeply bifid. 6 to 9.
 - Leaves lanceolate flat. N. 6.
 - ovate gibbous. N. 7.
 - lanceolate-ovate flat. N. 8.
 - wedge-shaped flat. N. 9.
 - Calyx five-leaved. N. 12.
 - Herbaceous. N. 10.
 - In five valves. N. 11.]

PROPAGATION AND CULTURE.

1. Sow the seeds upon a bed of rich light earth during any of the summer months; but to have it early in the season, it should be sown upon a hot-bed. This seed being very small, little of it will be sufficient for a family. Keep the plants clear from weeds, and in dry weather water them two or three times a week. In warm weather they will be fit for use in six weeks. To continue a succession, sow three or four times, at the interval of a fortnight or three weeks.

If the seeds are intended to be saved, leave some of the earliest plants for this purpose, drawing out all such as are weak, or have small leaves. When the seeds are ripe, cut up the plants, and spread them upon cloths to dry; then beat out the seeds and sift them, to clear them from the leaves and seed-vessels.

2, &c. The other sorts, being too tender to live in the open air, must be kept in pots and placed in the dry stove or tan-pit, according to the country whence they come. The herbaceous sorts are propagated by seeds, and the shrubby ones by cuttings. The seventh may be treated in the same way as the most succulent sorts of Aloes.

[Browne says, that the second species roots from the joints, and is very easily propagated in Jamaica; but thrives best in a warm rich soil.]

PORTULACA. See *Atriplex*, *Cactus*, *Glinus*, *Montia*, *Sesuvium*, *Trianthema*.

PORTULACARIA.

Lin. gen. Schreb. n. 522. Jacqu. collect. 1. 160.

Class. 5. 3. Pentandria Trigynia.

GENERIC CHARACTER.

CAL. *Perianth* two-leaved, coloured, permanent: *leaflets* roundish, concave, obtuse, spreading very much, opposite.

COR. *Petals* five, obovate, obtuse, quite entire, concave at top, flat at the base with the sides mutually incumbent, spreading very much, almost three times as long as the calyx, permanent.

STAM. *Filaments* five, awl-shaped, very short, erect, two on each side of the germ, the other solitary. *Anthers* erect, ovate.

PIST. *Germ* three-cornered, superior, the length of the petals. *Style* none. *Stigmas* three, spreading very much, ascending at the tip, mucronate above.

PER. none. The calyx and corolla, now erect, closely embrace the base of the seed.

SEED single, ovate-oblong, obtuse, winged-three-sided.

ESSENTIAL CHARACTER.

Cal. two-leaved. Pet. five. Seed one, three-sided and winged.

SPECIES.

1. *Portulacaria afra*.

Lin. spec. ed. Willd. 1515. Jacqu. collect. 1. 160. t. 22.

Claytonia Portulacaria. Lin. mant. 211. syst. ed. Reich. 1. 573.]

Crassula Portulacaria. Lin. spec. 406. Mill. dict. n. 11.

Anacampsetos caule arboreo, foliis cuneiformibus oppositis. Lin. hort. cliff. 207. upf. 147.

Crassula portulacæ facie arborefcens. Dill. elth. 120. t. 101. f. 120.

DESCRIPTION, &c.

1. This plant rises with a strong thick succulent stalk to the height of three feet; sending out branches on every side, so as to form a kind of pyramid, the lower branches being extended to a great length, and the others diminishing gradually to the top; they are of a red or purplish colour and very succulent. The leaves are also succulent and roundish, very like those of Purslane, whence the gardeners call it the Purslane Tree.

[Native of Africa. It was cultivated in Sherard's botanic garden at Eltham before the year 1732. In that year Dillenius's sumptuous catalogue of that famous garden was published, and then this plant had been well known many years before, but had not flowered: "quæ (planta) licet satis vulgaris sit et a multis retro annis innotuerit, ejusque plantæ satis annosæ passim observentur, non memini tamen flores ejus vel a me, vel ab aliis adhuc observatos esse." Mr. Miller has it in the second volume of his Dictionary, published in 1739.

I do not know that it has yet flowered in England, any more than in the Swedish stoves. It flowered in Italy and Linneus had the characters of the fructification from Turra.]

PROPAGATION AND CULTURE.

It is propagated with great facility by cuttings, planted during any of the summer months, and having been laid to dry for some days before. It must be placed in a warm glass case in winter, where it may enjoy the full sun, and should have very little water during that season. In summer the plants should be placed abroad in a sheltered situation, and in warm weather should be refreshed with water twice a week; but the stalks being very succulent, too much wet is always hurtful to the plants.

[PORTULACÆ AFFINIS. See *Trianthema*.

PORTULACÆ FACIE. See *Portulaca*.

PORTULACASTRUM. See *Sesuvium* and *Trianthema*.

POSOPOSA. See *Carica*.

POSOQUERIA. See *Cyrtanthus* and *Ignatia*.

POSSIRA. See *Rittera*.

POTALIA. See *Nicandra*.

POTAMOGETON, (of Pliny, Ποταμογεντων of Dioscorides. From ποταμος, a river, and γενων, neighbouring or near. These plants growing in or near water.)

Lin. gen. n. 174. Reich. n. 186. Schreb. n. 234.

Gærtn. t. 84. Tournef. t. 203. Juss. 19.

Class. 4. 3. Tetrandria Tetragynia.

Nat. order of *Inundatæ*. *Naiades*, Juss.

GENERIC CHARACTER.

CAL. none.

COR. *Petals* four, roundish, obtuse, concave, erect, clawed, deciduous.

STAM. *Filaments* four, (or eight, G.) flat, obtuse, very short. *Anthers* twin, short.

PIST. *Germ* four, ovate-acuminate. *Style* none: (simple, very short, recurved. G.) *Stigmas* obtuse.

PER. none.—*Drupe* four, one-celled. G.

SEEDS four, roundish, acuminate, gibbous on one side, compressed on the other, and angular. Seed hooked and curved in. G.

ESSENTIAL CHARACTER.

Cal. none. Pet. four. Style none (or very short). Seeds four. (Drupe four. G.)

SPECIES.

1. *Potamogeton natans. Broad-leaved Pond-weed.*

Lin. spec. 182. syst. 168. Reich. 1. 355. Willd.

712. hort. cliff. 40. fl. suec. n. 145. lapp. n. 68.

Gærtn. fruct. 2. 23. Hudf. angl. 74. Witber.

- arr. ed. 3. 211. Smith, angl. 193. Relb. cant. n. 134. Sibth. oxon. n. 202. Hall. belv. n. 843. Gmel. fib. 3. 34. Neck. gallob. 94. Pollich pal. n. 171. Roth. germ. 1. 92. 2. 201. Hoffm. germ. 57. Fl. dan. t. 1025. Krock. files. n. 252. Villars dauph. 2. 341. Desfont. atlant. 148. Lamarck, illustr. n. 1736. t. 89. Mill. illustr. t. 11.
- Potamogeton. Fuchs. hist. 651. Matth. 1137. Trag. 688.
- P. spicata. Tabern. ic. 739.
- P. latifolium. Ger. 675. 1. emac. 821. 1.
- P. rotundifolium. Baub. pin. 193. Raii hist. 188. syn. 148. Petiv. brit. t. 5. f. 4. Mor. hist. f. 5. t. 29. f. 1. Tournef. inst. 233.
- Fontalis major latifolia vulgaris. Park. theat. 1254. 1. Upper leaves oblong-ovate petioled floating; elliptic acute rounded and subcordate at the base. W.
2. Potamogeton fluitans. Lin. spec. ed. Willd. 713. Roth. germ. 1. 72. 2. 202. Hoffm. germ. 57. Gron. virg. 139. Leaves lanceolate-ovate drawn to a point at both ends, on long petioles, floating.
3. Potamogeton heterophyllum. Various-leaved Pond-weed. Lin. spec. ed. Willd. 713. Schreb. spicil. 21. Hoffm. germ. 59. Upper leaves elliptic drawn to a point at both ends petioled, lower ones clustered sessile linear.
4. Potamogeton perfoliatum. Perfoliate Pondweed. Lin. spec. 182. syst. 168. Reich. 1. 355. fl. lapp. n. 60. succ. n. 145. Hudf. angl. 74. Wither. arr. ed. 3. 212. Smith, angl. 194. engl. bot. 168. Lightf. scot. 121. Relb. cant. n. 135. Sibth. oxon. n. 203. Fl. dan. t. 196. Hall. belv. n. 845. Gmel. fib. 3. 35. n. 26. Scop. carn. n. 179. Roth. germ. 1. 72. 2. 203. Hoffm. germ. 57. Krock. files. n. 253. Villars dauph. 2. 341. Desfont. atlant. 148. Raii hist. 188. syn. 149. Petiv. brit. t. 5. f. 6. P. foliis latis splendentibus. Baub. pin. 195. Mor. hist. f. 5. t. 29. f. 3. Tournef. inst. 233. P. 3. Dod. pempt. 582. Ger. emac. 822. 3. P. altera. Dod. Baub. hist. 3. 778. 2. P. rotundifolium alterum. Loef. pruss. 205. t. 65. Leaves cordate embracing all immersed.
5. Potamogeton densum. Close-leaved Pond-weed. Lin. spec. 182. Reich. 1. 356. Willd. 714. Hudf. angl. 75. Wither. arr. ed. 3. 212. Smith, angl. 194. Engl. bot. t. 397. Lightf. scot. 122. Relb. cant. n. 139. Sibth. oxon. n. 206. Abbot, bedf. 38. n. 131. Hall. belv. n. 849. Neck. gallob. 94. Pollich, pal. n. 172. Hoffm. germ. 57. Roth. germ. 1. 73. 2. 203. Krock. files. n. 254. Villars dauph. 2. 341. Desfont. atlant. 149. P. minus, foliis densis mucronatis non ferratis. Magn. monsp. 304. Tournef. inst. 233. P. f. Fontalis media lucens. Raii syn. 149. Fontalis media lucens. Baub. hist. 3. 777. 2. Raii hist. 189. Tribulus aquaticus minor alter. Clus. hist. 2. 252. Leaves ovate acuminate opposite clustered, stem dichotomous, spike four-flowered.
6. Potamogeton lucens. Shining Pond-weed. Lin. spec. 183. syst. 169. Reich. 1. 356. Willd. 714. hort. cliff. 40. fl. succ. n. 147. Hudf. angl. 74. Wither. arr. ed. 3. 212. Smith, angl. 194. engl. bot. t. 376. Relb. cant. n. 136. Sibth. oxon. n. 204. Hall. belv. n. 847. Fl. dan. t. 195. Gmel. fib. 3. 34. Neck. gallob. 95. Pollich, pal. n. 173. Roth. germ. 1. 73. 2. 204. Hoffm. germ. 53. Krock. files. n. 255. Villars dauph. 2. 342. Desfont. atlant. 149. Kniph. cent. 5. n. 70. P. foliis angustis splendentibus. Baub. pin. 193. Mor. hist. f. 5. t. 29. f. 4. P. longis acutis foliis. Ger. emac. 822. 4. P. altera. Dod. pempt. 582. 2. P. aquis immersum, folio pellucido lato oblongo acuto. Raii hist. 188. syn. 148. P. alpinum plantaginis folio. Tournef. inst. 233.

- Fontinalis lucens major. Baub. hist. 3. 777. 1.
- β. P. folio angusto pellucido fere gramineo. Raii syn. 148. 3? Leaves ovate-lanceolate flat attenuated into the petioles, spike many-flowered squeezed close.
7. Potamogeton crispum. Curled Pond-weed. Lin. spec. 183. Reich. 1. 356. Willd. 714. fl. succ. n. 148. Hudf. angl. 75. Wither. arr. ed. 3. 213. Smith, angl. 195. Lightf. scot. 122. Curt. lond. 5. 15. Relb. cant. n. 137. Sibth. oxon. n. 205. Fl. dan. t. 927. Hall. belv. n. 848. Neck. gallob. 95. Hoffm. germ. 58. Roth. germ. 1. 75. 2. 204. Pollich, pal. n. 174. Scop. carn. n. 181. Villars dauph. 2. 342. Krock. files. n. 256. Gmel. fib. 3. 33. n. 23. P. f. Fontinalis crispa. Baub. hist. 3. 778. 1. Raii hist. 189. syn. 149. Petiv. brit. t. 5. f. 8. 9. P. fol. crispis f. lactuca ranarum. Tournef. inst. 233. —farmentis planis. Baub. pin. 193. Fontilapathum pusillum. Lob. ic. 286. Tribulus aquaticus minor. Clus. hist. 2. 252. 2. — quercus floribus. Ger. emac. 824. 2, 3. — prior & alter. Park. theat. 1248. 2, 3. β. P. ferratum. Hudf. angl. 75. Leaves lanceolate alternate waved serrate.
8. Potamogeton ferratum. Lin. spec. 183. syst. 169. Reich. 1. 357. Willd. 715. Hall. belv. n. 846. Roth. germ. 1. 75. 2. 205. Hoffm. germ. 58. Guett. stamp. 1. 102. Krock. files. n. 257. P. longo ferrato folio. Baub. pin. 193. Leaves lanceolate opposite somewhat waved.
9. Potamogeton compressum. Flat-stalked Pond-weed. Lin. spec. 183. syst. 169. Reich. 1. 357. Willd. 715. hort. cliff. 40. fl. succ. n. 149. Hudf. angl. 75. Wither. arr. ed. 3. 213. Smith, angl. 196. engl. bot. 418. Lightf. scot. 123. Relb. cant. n. 140. Fl. dan. t. 203. Hall. belv. n. 851. Roth. germ. 1. 75. 2. 205. Hoffm. germ. 58. Pollich, pal. n. 175. Krock. files. n. 258. P. gramineum latifolium. Loef. pruss. 206. t. 66. P. caule compresso. folio graminis canini. Raii hist. 189. syn. 149. Petiv. brit. t. 5. f. 10. Dill. giff. 122. Leaves linear obtuse, stem compressed.
10. Potamogeton gramineum. Grassy Pond-weed. Lin. spec. 184. syst. 169. Reich. 1. 358. Willd. 716. fl. succ. n. 151. Hudf. angl. 76. Wither. arr. ed. 3. 214. Hall. belv. n. 850. Krock. files. n. 261. Neck. gallob. 92. P. gramineum latiusculum, foliis & ramificationibus densissime stipatis. Dill. in Raii syn. 149. t. 4. f. 3. Leaves linear-lanceolate alternate sessile wider than the stipule, stem round subdichotomous.
11. Potamogeton pusillum. Small Pond-weed. Lin. spec. 184. Reich. 1. 358. Willd. 717. fl. succ. n. 153. Hudf. angl. 77. Wither. arr. ed. 3. 214. Smith angl. 197. Engl. bot. 215. Relb. cant. n. 142. Sibth. oxon. n. 209. Hall. belv. n. 852. Neck. gallob. 93. Roth. germ. 1. 74. 2. 208. Hoffm. germ. 59. Pollich, pal. n. 177. Krock. files. n. 263. Villars dauph. 2. 342. P. minimum, capillaceo folio. Baub. pin. 193. prodr. 101. P. gramineum tenuifolium. Loef. pruss. 206. t. 67. P. pusillum, gramineo folio, caule tereti. Raii hist. 190. syn. 150. Petiv. brit. t. 5. f. 11. P. pus. gram. fol. breviori. Vaill. par. t. 32. f. 4. Leaves linear opposite and alternate, narrower than the stipule, spreading at the base, stem round, peduncles axillary.
12. Potamogeton pectinatum. Fennel-leaved Pond-weed. Lin. spec. 183. Reich. 1. 357. Willd. 715. fl. succ. n. 150. Hudf. angl. 76. Wither. arr. ed. 3. 213. Smith, angl. 197. engl. bot. t. 323. Relb. cant. n. 141. Sibth. oxon. n. 208. Fl. dan. t. 126. Neck. gallob. 93. Roth. germ. 1. 70. 2. 206. Hoffm. germ. 58. Krock. files. n. 259. Hall. belv. n. 853. P. gramineum ramosum. Baub. pin. 193. prodr. 101.

P. millefolium, f. fol. gramineis, ramosum. *Raii hist.* 189. *syn.* 150. *Petiv. brit.* t. 5. f. 13.
Millefolium tenuifolium. *Lob. ic.* 1. 790. *Ger. emac.* 828. 4.

β. *P. maritimum.* *Sea Pond-weed.*

Lin. spec. 184. *fst.* 169. *Reich.* 1. 358. *Willd.* 715. *fl. succ. n.* 152. *Huds. angl.* 76. *Wither. arr. ed.* 3. 213. *Smith, angl.* 197. *Lightf. scot.* 124. *Relb. suppl.* 2. 9. n. 1068. *Pollich, pal.* n. 176.

P. maritimum ramosissimum, grandiusculis capitulis, capillaceo folio, nostras. *Pluk. phyt.* t. 216. f. 5. *Dill. in Raii syn.* 150.

P. ingens, gramineo folio longiori. *Vaill. par.* t. 32. f. 3.

Leaves bristle-shaped parallel approximating distich sheathing at the base.

13. *Potamogeton setaceum.* *Setaceous Pond-weed.*

Lin. spec. 184. *Reich.* 1. 357. *Willd.* 716. *Huds. angl.* 76. *Wither. arr. ed.* 3. 214. *Smith, angl.* 198. *Roth. germ.* 1. 74. 2. 206. *Hoffm. germ.* 58.

P. ramosum angustifolium. *Baub. pin.* 123. *prodr.* 101.

Leaves bristle-shaped opposite.

14. *Potamogeton contortum.*

Desfont. atlant. 150.

Stem filiform, leaves alternate subulate-filiform contorted.

DESCRIPTIONS, &c.

These are perennial herbaceous plants, inhabitants of the water.—Leaves sheathing; those on the stem often alternate, the floral leaves frequently opposite. Flowers in spikes, terminating or axillary; the branchlets and spikes have often two spathes at the base².

1. The root consists of long simple fibres. The stems are very long, round, leafy. Lower leaves submerged and linear; upper ones floating, oval-oblong, nerved, on long petioles. Stipules intrafoliaceous, linear, acute, almost equal to the petiole. Peduncles solitary, with a bracte at the base of the same form with the stipules, simple, thick, round. Spike simple, emerging from the water. Flowers brownish-green³. Gærtner will have what Linneus calls naked seeds to be drupes.

Dr. Stokes remarks that the leaves of this species are opaque, whereas in the others they are pellucid: they also float wholly, like those of *Nymphaea*, on the surface of the water⁴. The leaf-stalks are for the most part longer than the leaves⁵. The sheaths are very large. Spikes cylindrical, two inches long, close, slender⁶. Flowers numerous, (forty-five) sessile, greenish or yellowish⁷.

Native of Europe, in slow rivers, lakes, ponds and ditches: flowering in July and August.

The floating leaves afford an agreeable shade to fish, and are the habitation and food of a moth named *Phalæna potamogetonis*. The roots are a favourite food of the swan⁸.

Linneus remarks, that when it grows in water which is dried up in summer, it surprisingly changes its appearance, growing upright and resembling a small *Plantago*⁹. According to Dr. Withering, in this case, the sheaths of the peduncles and petioles are less than half the length of their respective stalks. The leaves are alternate, except the upper pair: the lower ones are lanceolate, on long petioles; the upper ones are oval, with shorter petioles. The stem is about four inches high. It is a smaller plant, and flowers a month or six weeks earlier than the common plant. Dr. Withering found it on boggy ground, on Birmingham-heath.

2. This resembles the preceding, and perhaps is only a variety arising from place: about Berlin however it is constantly distinct. In rivers of Europe.

3. In the upper leaves this resembles *P. natans* and *fluitans*, but it is only half the size, and distinguished by its lower leaves being linear, and very like those of *Grais*.

² Jussieu.

³ Withering.

⁴ Lin. succ. & Withering.

⁵ Smith.

⁶ Haller.

⁷ Linn. lapp. & Haller.

⁸ Woodw. Neck. Wither.

⁹ Fl. lapp.

Native of Germany, in ponds¹⁰.

I have inserted these two plants, though I can scarcely regard them as distinct species. Desfontaines observed the leaves to be sometimes lanceolate and acute, in Barbary. Pollich remarks that the leaves under water have the petioles of a great length in rapid streams. Our common broad-leaved Pondweed has the submerged leaves linear, and is therefore heterophyllous. These differences therefore seem only to constitute varieties.

4. Stems very long, round, alternately branched, with leaves crowded about the top and branches. Leaves cordate-ovate, or rather ovate than cordate, at least in the most common appearance of the plant; they are almost all uniform. Spikes erect, solitary, short, brown. Petals bent in and converging, but distant at the base; they are of a dull purple, and from their situation, the air easily passes between them, to waft the pollen to the stigma. The seeds are compressed and shining.

Every part of the plant, except the flower-stalks, is under water, so that it is only discovered by the spikes standing a little above the surface in July and August, and abounding in whitish pollen. It should seem that the respiration of such truly aquatic vegetables must be as different from the respiration of those which inhale atmospheric air, as the breathing of fishes is from that of beasts and birds. Accordingly the leaves are of a different texture, pellucid like oiled paper, as Haller remarks, very vascular, harsh and ribbed, but often very brittle: their surface, like that of aquatic animals, destitute of hair or down of any kind¹¹.

Linneus says, that the leaves in this and the other species are most usually alternate, but at the forkings of the fruiting stalk opposite.

Native of Europe, Siberia, Barbary, in ditches, ponds, lakes and slow rivers.

Haller has made Loefelius's plant a different species, n. 844.

5. This propagates itself by runners which throw out fibrous roots here and there into the mud, and send up round stems, naked and simple below, dichotomous above, and thickly clothed with numerous pairs of opposite sessile spreading leaves, both rows of which often incline to one side. Each leaf is ribbed, waved and entire. According to Withering, they are linear-lanceolate, three-ribbed, with the edges very finely serrulated. Haller, Pollich and others say that the leaves are not serrate, and Dr. Smith has not found any serratures or prickles on their margin. Peduncles from between the divisions of the stem, the uppermost terminating, till young branches are protruded beyond it, solitary, short, round, recurved, bearing a short spike, or rather a little head, of two or four flowers, well compared by Clusius, and by Gerarde after him, to those of *Adoxa*. Every part of the flower is pale green¹².

According to Mr. Abbot, one flower arises from the fork of the stem, sitting on a short fruit-stalk. Bauhin and Clusius say that there are three or four flowers together, and this is confirmed by Desfontaines.

Native of Britain, Denmark, Flanders, France, Germany, Switzerland, Italy, Siberia and Barbary; in ditches, ponds and slow streams; flowering in the early part of summer.

Dr. Goodenough remarks, that it varies in size according to the depth of the water.

6. Stems long, nearly simple, a little flexuose or zigzag, leafy, round. Leaves alternate, except where the flowers are situated, entire, a little waved, ribbed, running down into a short foot-stalk, and accompanied by a long obtuse folded intrafoliaceous stipule, longer than each joint of the stem. According to Withering, the leaves are beautifully green and pellucid, like those of the *persoliatum*, sometimes eight inches long, and an inch and half broad. Flowers in a long dense spike, on a round tumid stalk, which stands solitary in the axil of one of the opposite leaves, and is sheathed at

¹⁰ Willdenow.

¹¹ Smith, angl. & Engl. bot.

¹² Id. Id.

the bottom by the stipule. Flowers dark green; the stigma often purplish^s. Dr. Withering says the flowers are reddish.

There are two common varieties of this species; one with lanceolate leaves, tapering down very gradually to their insertion, figured in Flora Danica, &c. the other with leaves perfectly ovate, and placed on a real foot-stalk, less perceptibly winged by the running down of the leaf; as figured in English Botany: these two plants however differ in no other respect, and may easily be traced one into the other.

It is frequent in ditches, ponds, lakes and flow-flowing rivers, chiefly on a clay soil, growing, like most others of the genus, all immersed in the water, except the spike of flowers, which appears above the surface about midsummer, or a little after^t.

7. Stem angular. Leaves immersed, blunt, commonly alternate. Peduncles emerging. Spike few-flowered. Flowers reddish, somewhat remote^u.

Stems branched, flattened. Leaves alternate, but at the forks of the stem opposite, sessile, nearly linear, semitransparent, very crisp. Spikes as long as the peduncles. Flowers white or reddish^x.

Stem reddish. Leaves rigid, the lower alternate, the upper opposite and heaped at the top of the stem. Spikes from six to eight-flowered. Peduncles from two to four inches long^y.

Stems numerous, of various lengths, dirty flesh-coloured, somewhat transparent, flattened with a groove on each side. Sheaths short, of the same colour as the stem, scarcely to be distinguished. Leaves shining, three-ribbed, sharply and finely serrate. Peduncles thickish, somewhat flattened. Petals greenish brown. Filaments scarcely to be distinguished. Anthers white. Seeds naked, rather large, dirty green, flattened on each side, toothed externally at the base^z.

Native of Europe and Siberia, in ponds and flow rivers; flowering in June and July.

Ducks very readily eat not only the seeds but the leaves; the introduction of water-fowl therefore may probably prevent it from increasing too much^a.

β. In this variety the upper leaves are opposite, whereas in the other they are commonly alternate^b.

8. This is not a variety of the preceding, but differs chiefly in having the leaves more in clusters and quite entire^c.

Haller refers to synonyms, which we have given under *lucens*; and says that the waving edges make the leaves appear to be serrate, although they are not really so. In the Swiss lakes the plant grows to the length of from ten to twenty fathoms, forming whole woods as it were in the middle of them.

Krocker says that the edges of the leaves are really serrate; the peduncles thick and reflex; the stipules long, wide, whitish; the spike eight-flowered and cylindrical.—Native of Europe.

9. Stem flexuose, alternately branched, very much compressed all the way up. Leaves pale green, generally alternate, but the uppermost often opposite, quite entire, all exactly linear, having a strong central nerve, and two fine lateral ones on each side. Stipules intrafoliaceous, one to each leaf and wider, embracing the stem, flattened or depressed in angles; the lower ones generally acute and lacerated, the upper ones more obtuse and entire. Peduncle short, solitary, flattened, terminating till the stem grows above it. Flowers about four or six, distant in pairs. It has most affinity with *P. pusillum*, but is twice as large in all its parts, and essentially distinguished by its compressed stem; neither do the leaves spread so immediately from the base as in that species^d.

Withering remarks, that the leaves are narrower than in the seventh species, and not waved; the spikes shorter than the peduncles; and the flowers greenish.

Ray says, that it has the leaves of *Triticum repens*, but shorter, with three nerves; a thin pellucid sheath under each leaf; a short spike of pale-green flowers.

Lightfoot remarks, that the leaves are four or five

^s Engl. bot. ^t Idem. ^u Smith, angl. ^x Withering.
^y Relhan. ^z Curtis. ^a Idem. ^b Smith.
^c Willdenow. ^d Smith.

times longer than the stipules; and that the spike produces about six small flowers.

Native of Europe, in ditches and flow streams; flowering in June and July, when its small spikes of about four or more brownish-green flowers emerge from the water^e.

10. Stem slender, flexuose, very much branched. Leaves spreading, approximating, bluntish, scarcely serrulate. Stipules rolled up and tubular; thence, at least the lower ones, narrower than the leaves. Spikes ovate, few-flowered, close, solitary; the primary one, from the forking of the stem. Peduncles the length of the spikes. The Pondweed figured in Flora Danica, t. 222. seems to be a different species^f.

Native of Europe, in ditches and flow streams. Near Deptford. Binsey-common. Ditches by the road side going to Port-meadow, Oxford. River Skern, near Darlington. It flowers in July.

11. The root of this, as well as of the preceding, has all the appearance of being perennial, though Linneus marks it as annual; and several fibres are thrown out from the lower part of the stem, which is very slender, striated, and alternately branched above. Leaves very narrow, mostly alternate, but opposite under every peduncle, not sheathing the stem, their margin perfectly smooth and entire. Stipules membranous, lanceolate, inserted above each leaf and much broader than it, embracing. Peduncles axillary, solitary, frequently terminating till the stem shoots beyond them, shorter than the leaves, longer than the spike; which is ovate, small, close, bearing three or four greenish flowers^g.

The whole plant is extremely slender, and the stem much branched. Leaves pointed, spreading extremely at the base, sometimes almost bent back. Stipules short, but broader than the leaves. Spike short, Flowers pedicelled^h.

Leaves rather longer than the internodes. Spikes nearly globular, with about three flowers in eachⁱ.

Native of Europe, in ditches and ponds, especially in a clayey soil; flowering in July.

12. Root originating from a tuberous lump, then creeping horizontally, slender, much branched, as is also the stem, which floats under water, extending often two or three feet; it is round, with alternate approximating branches. The leaves, though extremely narrow and pointed, are flat and grow alternately, spreading in two directions, on the small branches, having long sheathing bases. Stipule growing to the leaf, with a membranaceous margin, and a bifid acute top. The flowers only rise above the water in June or July, in a simple spike, but clustered two or three together irregularly, often on very long peduncles, the lower ones very remote. Petals kidney-shaped, of a dull olive colour. Anthers yellow, very distinctly two-lobed. Stigmas obtuse, entire^k.

According to Withering, the petals are whitish. Mr. Stackhouse says, there are five or six flowers on each peduncle. Mr. Ray, that the upper branchlets end in loose spikes composed of three or four flowers in a sort of whorl.

Native of Europe, in ponds, and not unfrequently in rivers, in which, if the stream be rapid, it rarely flowers.

β. Leaves growing from the sheaths, which are slightly forked at the extremity, as in *P. pectinatum*. In stagnant salt water ditches the whole plant is shorter; the branches and leaves closer and more frequent. In running water, salt or fresh, it grows to a vast length, and the branches and leaves are farther asunder, but in both cases preserve their parallelism. Spike long, with sessile flowers, growing mostly in interrupted whorls: t. 186, in Flora Danica more exactly resembles our fresh than salt water plants, though quoted in *Syst. veget.* for *P. maritimum*. In water that is quite fresh it becomes *P. pectinatum*, according to the observation of Mr. Crowe^l. Dr. Smith does not perceive differential marks in the marine plant sufficient

^e Smith. ^f Idem. ^g Idem. ^h Woodward.
ⁱ Withering. ^k Engl. bot. & Smith, angl.
^l Woodward in Withering.

even to constitute it a variety of that which grows in fresh water.

13. This is distinguished by its opposite bristle-shaped leaves.—Native of Europe in ditches. Mr. Hudson found it in peaty ditches in Lancashire. On his authority it rests entirely as an English plant.

Dr. Smith has not seen the plant either in the Linnean herbarium or elsewhere. It flowers in July and August^m.

14. Found by Desfontaines in the rivulets of Caffa in Barbaryⁿ.

POTAMOGETON. See *Najas*, *Polygonum*, *Ruppia*, *Vallisneria*, *Zannichellia*.

POTAMOGITON. See *Myriophyllum*, *Polygonum*, *Potamogeton*.

POTAMOPITHYS. See *Elatine*.

POTATOES. See *Solanum*.

———, CANADA. See *Helianthus tuberosus*.

———, SPANISH. See *Convolvulus*.]

POTENTILLA. (Diminutive from *Potentia*, on account of its supposed medicinal powers.)

Lin. gen. n. 634. Reich. n. 690. Schreb. n. 866.

Juss. 338. *Quinquefolium* & *Pentaphylloides*.

Tournef. t. 153. *Pentaphyllum*. Gertn. t. 73.

Class. 12. 5. Icolandria Polygynia.

Nat. order of *Senticosæ*. *Rosaceæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leaved, flattish, ten-cleft: the alternate segments smaller reflex.

COR. *Petals* five, roundish, spreading, inserted by their claws into the calyx.

STAM. *Filaments* twenty, awl-shaped, shorter than the corolla, inserted into the calyx. *Anthers* elongate-lunulate.

PIST. *Germes* numerous, very small, collected into a head. *Styles* filiform, the length of the stamens, inserted into the side of the germ. *Stigmas* obtuse.

PER. none. Common receptacle of the seeds roundish, juiceless, very small, permanent, covered with seeds, inclosed within the calyx.

SEEDS numerous, acuminate-wrinkled. G.

OBS. If a fifth part of the number be taken away in all parts of the fructification *Potentilla* gives *Tormentilla*: since they differ therefore only in number, the two genera might be combined.

ESSENTIAL CHARACTER.

Cal. ten-cleft. Pet. five. Seeds roundish, naked, fastened to a small juiceless receptacle.

SPECIES.

* With pinnate leaves.

1. *Potentilla fruticosa*. Shrubby Cinquefoil.

Lin. spec. 709. Reich. 2. 539. hort. cliff. 193. fl. suec. n. 451. Hudf. angl. 222. Wither. arr. ed. 3. 472. Smith, brit. 547. Engl. bot. t. 88. Dicks. hort. succ. 6. 12. Kalm, it. 2. 263. Gmel. fib. 3. 180. n. 26. Du Roi herb. 2. 153. Kniph. cent. 5. n. 71. Lour. cochinch. 326.

Pentaphylloides rectum frutic. eboracense. Mor. hist. 2. 193. f. 2. t. 23. f. 5. Hortul. angl. t. 54. Duham. arb. 2. t. 20. Tournef. inst. 298.

P. rectum frutescens. Walth. hort. 95. t. 17.

P. fruticosa. Raii syn. 256. cat. ed. 2. 228. t. 1. Petiv. brit. t. 41. f. 8.

P. fruticosum. Raii hist. 616.

P. frut. elatior, minus hirsuta. Amm. ruth. 88. t. 17. Leaves pinnate, stem shrubby.

2. *Potentilla anserina*. Silvery Cinquefoil, Silver-weed or Wild-Tansy.

Lin. spec. 710. syst. 477. Reich. 2. 539. fl. lapp. n. 210. suec. n. 452. hort. cliff. 193. mat. med. 131. Hudf. angl. 222. Wither. arr. ed. 3. 473. Smith, brit. 548. Curt. lond. 3. t. 31. 203. Lightf. scot. 268. Relb. cant. n. 373. Sibth. oxon. n. 464. Fl. dan. t. 544. Gunn. norv. n. 38. Neck. gallob. 221. Pollich pal. n. 493. Scop. carn. n. 615. Villars dauph. 3. 575. Krock. files. n. 791. Regn. bot.

^m Smith, brit.

ⁿ Desfont. atlant.

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Fragaria caule repente, fol. pinnatis ferratis tomentosis, petiolis longis unifloris. Hall. belv. n. 1126.

F. Anserina. Crantz. austr. 71.

Potentilla. Baub. pin. 321. Camer. epit. 758. Matth. 1016. Park. theat. 593.

P. f. Argentina. Baub. hist. 2. 398. b.

Argentina. Dod. pempt. 600. 1. Ger. 841. emac. 993. Raii hist. 617. Blackw. t. 6.

Pentaphylloides Argentina dicta. Raii syn. 256. Petiv. brit. t. 41. f. 11.

P. incanum Tanacetii folio. Mor. hist. f. 2. t. 20. f. 4.

P. argenteum alatum f. Potentilla. Tournef. inst. 298. Leaves interruptedly pinnate ferrate silky underneath, stem creeping, peduncles one-flowered.

[3. *Potentilla sericea*. Silky Cinquefoil.

Lin. spec. 710. Reich. 2. 539. Hall. goett. 2. 106.

Leaves bipinnate tomentose on both sides, segments parallel approximating, stems decumbent.

4. *Potentilla multifida*. Multifid Cinquefoil.

Lin. spec. 710. Reich. 2. 540. Gmel. fib. 3. 182.

n. 30. Pallas it. 3. 194. Kniph. cent. 2. n. 62.

Fragaria fol. subtus tomentosis pinnatis, pinnis primis pinnatis, ultimis simplicibus. Hall. belv. n. 1125.

Pentaphylloides supinum minus, folio glabro non serrato. Amm. ruth. 116?

P. humile, fol. angustis. Amm. ruth. n. 113. t. 16. sec. Pallas.

P. repens, fol. pinnatis. Buxb. cent. 1. 30. t. 49. f. 1?

β. *P. supina minor*, fol. alatis hirsutis varie dissectis. Amm. ruth. 117.

Leaves bipinnate, segments quite entire distant tomentose underneath, stem decumbent.

5. *Potentilla fragarioides*. Strawberry-leaved Cinquefoil.

Lin. spec. 710. Reich. 2. 540. Gmel. fib. 3. 182.

n. 31. t. 34. f. 2. Hall. goett. 2. 106.

Leaves pinnate and ternate, the outmost larger, runners creeping.]

6. *Potentilla rupestris*. Rock Cinquefoil.

Lin. spec. 711. syst. ed. 13. 396. 14. 477. Reich.

2. 541. hort. cliff. 193. fl. suec. n. 453. Hudf.

angl. 223. Wither. arr. ed. 3. 473. Smith, brit.

548. Pallas, it. 2. 655. Jacqu. austr. 2. 9.

t. 114. Scop. carn. n. 616. Gouan, illustr. 32.

Pollich pal. n. 494. Villars dauph. 3. 575.

Krock. files. n. 792. t. 9. Kniph. cent. 11.

n. 88.

Fragaria fol. pinnatis, pinnis septenis subrotundis serratis. Hall. belv. n. 1127.

F. rupestris. Crantz, austr. 72.

Pentaphylloides erectum. Baub. hist. 2. 398. d. Mor. hist. f. 2. t. 20. f. 1. Raii hist. 616. syn. 255.

Petiv. brit. t. 41. f. 6. Tournef. inst. 298.

Pentaphyllum fragiferum. Clus. hist. 2. 107. n. 5. Ger. emac. 991. Park. theat. 397. 7.

Quinquefolium fragiferum. Baub. pin. 326. Clus. hist. 2. 107. f. 1.

Leaves lyrate-pinnate in sevens, fives and threes, leaflets ovate serrate hairy, stem erect.

[7. *Potentilla bifurca*. Bifid-leaved Cinquefoil.

Lin. spec. 711. syst. 477. Reich. 2. 541. Gmel. it.

1. 149. t. 27. f. 1. Krock. files. n. 794.

Pentaphylloides orientale supinum, fol. alatis bifidis vel trifidis. Tournef. cor. 21.

Leaves pinnate almost equal, leaflets oblong subbifid, the outmost confluent.

8. *Potentilla pimpinelloides*. Burnet-leaved Cinquefoil.

Lin. spec. 711. Reich. 2. 541.

Pentaphylloides orientale erectum, folio & facie Pimpinellæ. Tournef. cor. 21. Buxb. cent. 1. 30. t. 48.

Leaves pinnate, leaflets roundish toothed equal, stem erect.

9. *Potentilla pensylvanica*. Agrimony-leaved Cinquefoil.

Lin. syst. 477. Reich. 2. 542. mant. 76. Jacqu.

hort. 2. 89. t. 189.

Pentaphylloides canadense, fol. Agrimonix. Boerb. lugdb. 1. 40.

Lower leaves pinnate, upper ternate, leaflets gash-serrate, stem erect pubescent.

10. *Potentilla supina*. Trailing Cinquefoil.

Lin. spec. 711. syst. 477. Reich. 2. 542. hort. cliff.

193. upf. 133. Reyg. ged. 1. 133. n. 2. Gmel.

it. 1. 149. t. 27. f. 2. Jacqu. austr. 5. 3.

9 Q

t. 406.

- t. 406. *Pollich pal. n. 495. Krock. files. n. 793.*
t. 10.
Pentaphyllum supinum, Potentillæ facie. *Clus. hist. 2. 107. Ger. 837. 6. emac. 988. 6.*
P. alpinum minus supinum. *Pluk. phyt. t. 106. f. 7.*
Pentaphylli species flore luteo enneaphyllos hirsuta. *Ambros. phyt. t. 414.*
Pentaphylloides supinum. *Baub. hist. Raii hist. 616. Mor. hist. f. 2. t. 20. f. 3.*
Quinquefolio fragifero affinis. *Baub. pin. 326.*
Leaves pinnate, stem dichotomous decumbent.]
- ** With digitate leaves.
11. *Potentilla recta. Upright Cinquefoil.*
Lin. spec. 711. syst. 477. Reich. 2. 542. hort. upf. 133. Jacqu. austr. 4. 43. t. 383. Scop. carn. n. 618. Krock. files. n. 795. Villars dauph. 3. 569.
Fragaria caule erecto, fol. quinis & septenis acute ferratis. *Hall. helv. n. 1121.*
F. recta. *Crantz, austr. 79.*
Quinquefolium rectum luteum. *Baub. pin. 325. Tournef. inst. 297.*
Q. alterum vulgare. *Dod. pempt. 116.*
Q. montanum erectum hirsutum luteum. *Garid. aix. 393. t. 83.*
Pentaphyllum majus luteo flore vel albo. *Park. theat. 396. 1.*
P. rectum. *Baub. hist. 2. 898.—majus, flore subluteo, interdum albo & rubro. Lob. obs. 393.—flore albo. Raii hist. 614.*
Leaves septenate lanceolate ferrate somewhat hairy on both sides, stem erect.
12. *Potentilla argentea. Hoary Cinquefoil.*
Lin. spec. 712. syst. 477. Reich. 2. 543. fl. succ. n. 454. hort. cliff. 193. Hudf. angl. 223. Wither. arr. ed. 3. 474. Lightf. scot. 270. Smith, brit. 549. engl. bot. t. 89. Relb. cant. n. 374. Sibth. oxon. n. 465. Abbot, bedf. 113. Fl. dan. t. 865. Reyg. ged. 1. 133. Pollich pal. n. 496. Krock. files. n. 796. Scop. carn. n. 619. Villars dauph. 3. 571. Gmel. fib. 3. 184. n. 37. Kniph. cent. 11. n. 86.
Fragaria caule erecto, fol. quinatis apice ferratis subtus tomentosis. *Hall. helv. n. 1124.*
F. argentea. *Crantz, austr. 73.*
Quinquefolium petræum majus. *Tabern. 122.*
Q. folio argenteo. *Baub. pin. 325. Tournef. inst. 297.*
Q. Tormentillæ facie. *Ger. 138. 7. emac. 988. 7.*
Pentaphyllum minus. *Camer. epit. 760.*
P. album. *Matth. 1020.*
P. erectum, fol. profunde sectis subtus argenteis, flore luteo. *Baub. hist. 2. 398. c. Raii hist. 613. n. 14. syn. 255. Mor. hist. f. 2. t. 19. f. 11.*
Leaves quinate wedge-shaped gasbed tomentose underneath, stem erect.
- [13. *Potentilla intermedia.*
Lin. syst. 477. Reich. 2. 543. mant. 76. Villars dauph. 3. 568. Hall. helv. n. 1120.
Quinquefolium montanum luteum erectum hirsutum. *Baub. pin. 325. prodr. 139. Raii hist. 613. 11. exter. 213.*
Root-leaves quinate, stem-leaves ternate, stem almost upright very much branched.]
14. *Potentilla hirta. Hairy Cinquefoil.*
Lin. spec. 712. syst. 477. Reich. 2. 543. mant. 400. Krock. files. n. 797. Villars dauph. 3. 570. Allion. pedem. n. 1478. t. 71. f. 1. Kniph. cent. 4. n. 65.
Quinquefolium rectum minus, angustioribus foliis, monspeliense. *Raii exter. 213.*
Q. montanum erectum hirsutum luteum. *Magn. monsp. 216.*
Leaves septenate and quinate wedge-shaped gasbed hairy, stem erect rough-haired.
- [15. *Potentilla stipularis. Stipular Cinquefoil.*
Lin. spec. 712. syst. 478. Reich. 2. 544. Gmel. fib. 3. 185. t. 37. f. 2.
Leaves in sevens sessile placed on the dilated stipule.

16. *Potentilla opaca. Opaque Cinquefoil.*
Lin. spec. 713. Reich. 2. 544. amoen. 4. 274. Pollich pal. n. 498. Krock. files. n. 800. t. 12? Villars dauph. 3. 566?
Quinquefolium minus repens lanuginosum luteum. *Baub. pin. 325.*
Q. 4 flavo flore 2 species. *Clus. hist. 2. 106.*
Quinquefolio similis enneaphyllos hirsuta. *Baub. pin. 325. prodr. 139.*
Root-leaves quinate wedge-shaped ferrate, stem-leaves subopposite, branches filiform decumbent.
17. *Potentilla aurea. Golden Cinquefoil.*
Lin. spec. 712. syst. 478. Reich. 2. 545. amoen. 4. 316. Wither. arr. ed. 3. 475. Smith, brit. 549. engl. bot. t. 561. Fl. dan. t. 114. Jacqu. vind. 245. Krock. files. n. 798. Villars dauph. 3. 565.
Fragaria caule reclinato, fol. quinis ferratis. *Hall. helv. n. 1122. t. 21.*
F. aurea. *Crantz, austr. 77. n. 9.*
Pentaphyllum alpinum splendens aureo flore. *Baub. hist. 2. 398. Raii hist. 612.*
P. incanum repens alpinum. *Park. theat. 398. n. 2.*
Quinquefolium minus repens alpinum aureum. *Baub. pin. 325.*
Q. minus flore aureo. *Ger. emac. 990.*
Root-leaves quinate obovate gasb-ferrate hairy submembranaceous, stem-leaves ternate, stem almost upright.
18. *Potentilla verna. Spring Cinquefoil.*
Lin. spec. 712. syst. 478. Reich. 2. 544. fl. succ. n. 455. lapp. n. 212. hort. cliff. 194. Hudf. angl. 224. Wither. arr. ed. 3. 475. Smith, brit. 550. engl. bot. t. 37. Lightf. scot. 270. Relb. cant. n. 375. Dickf. hort. succ. 13. 19. Reyg. ged. 1. 133. Pallas, it. 1. 147. Scop. carn. n. 621. Pollich pal. n. 497. Krock. files. n. 799. t. 11. Villars dauph. 3. 564. Ger. prov. 468. n. 7. Allion. pedem. n. 481. t. 24. f. 2. Thunb. jap. 219. Kniph. cent. 8. n. 78.
Fragaria caule decumbente, fol. quinatis ferratis subhirsutis. *Hall. helv. n. 1119.*
F. verna. *Crantz, austr. 2. 12. t. 1. f. 1.*
Quinquefolium minus repens luteum. *Baub. pin. 325. Dalech. 1264. Tournef. inst. 297.*
Q. vernum minus. *Schwenkf. 174. Tabern. 156. ic. 123.*
Quinquefolii quarti secunda species. *Clus. hist. 2. 106.*
Pentaphyllum parvum hirsutum. *Baub. hist. 2. 398. a. 1. Raii hist. 612. syn. 255.*
P. minus repens lanuginosum. *Park. theat. 399.*
P. incanum. *Ger. emac. 988. 8.*
Root-leaves quinate wedge-shaped ferrate marked with lines ciliate subcoriaceous, stem-leaves ternate, stem declined.
19. *Potentilla astracantha. Astrachan Cinquefoil.*
Lin. syst. 478. Jacq. icon. rar.
Root-leaves and lowest stem-leaves quinate, stems villose procumbent at the base dichotomous.
20. *Potentilla canadensis. Canadian Cinquefoil.*
Lin. spec. 713. Reich. 2. 545.
Quinquefolium canadense humilius. *Mor. hist. 2. 188.*
Leaves quinate villose, stem ascending hirsute.
21. *Potentilla alba. White Cinquefoil.*
Lin. spec. 713. syst. 478. Reich. 2. 546. mant. 400. hort. cliff. 194. Hudf. angl. 224. Wither. arr. ed. 3. 474. Smith, brit. 551. Jacqu. austr. 2. 10. t. 115. Krock. files. n. 801. Villars dauph. 3. 573. Ger. prov. 469. n. 8. Kniph. cent. 8. n. 77.
P. nitida. *Scop. carn. n. 624.*
Fragaria alba. *Crantz, austr. 82. n. 2.*
Quinquefolium album. *Hall. it. helv. 70. Dalech. 1265. Camer. epit. 761.*
Q. alb. minus, & alb. majus alterum. *Baub. pin. 325. Tournef. inst. 297. Raii hist. 614.*
Q. Tragi, *hist. 507.*
Q. sylvaticum. *Schwenk. 174. Tabern. 121.*
Q. majus candidum. *Fuchs. hist. 623. ic. 357.*
Q. sylvaticum majus flore albo. *Ger. 839. emac. 989. 10.*
Pentaphyllum album. *Baub. hist. 2. 598. d.*
P. majus alterum album. *Park. theat. 396. 2.*
P. majus

- P. majus* flore albo. *Clus. hist.* 2. 105. 1. *Mor. hist.* f. 2. t. 19. f. 6.
Leaves quinate silky underneath converging-ferrate at the tip, stems filiform procumbent, receptacles very hirsute.]
22. *Potentilla caulescens.* *Alpine Cinquefoil.*
Lin. spec. 713. *syst.* 478. *Reich.* 2. 546. *amoen.* 4. 317. *Jacqu. austr.* 3. 11. t. 220. *vind.* 246. *Krock. filef.* n. 802. *Villars dauph.* 3. 572. *Allion. pedem.* n. 1482.
Quinquefolium album majus. Bauh. prodr. 139.—
caulescens. pin. 325. *Hall. opusc.* 263. n. 50. 47.
Q. 2 minus albo flore. Clus. hist. 2. 105.
Q. majus albo flore. Schwenk. 1. 173.
Leaves quinate converging-ferrate at the tip, stems many-flowered decumbent, receptacles hirsute, petals oblong.
- [23. *Potentilla clusiana.* *Clusius's Cinquefoil.*
Lin. syst. 478. *Jacqu. austr.* 2. t. 116.
Leaves quinate converging-ferrate at the tip, stems many-flowered decumbent, receptacles hirsute, petals roundish.
24. *Potentilla nitida.* *Shining Cinquefoil.*
Lin. spec. 714. *syst.* 478. *Reich.* 2. 546. *mant.* 400. *amoen.* 4. 316. *Jacqu. austr.* 5. app. t. 25. *Villars dauph.* 3. 574.—*P. subacaulis. Scop. carn.* n. 627. *sec. Villars.*
Heptaphyllum argenteum alpinum trifoliatum fabaudum. Bocc. mus. 2. 20. t. 9.
Trifolium argenteum alpinum. Ponæ bald. 222. *Raii hist.* 615.—*perfici flore. Bauh. pin.* 328.
Comaroides alpina argentea perfici flore. Segu. ver. 1. 497.
Pentaphyllum argenteum alpinum flore albo—& trifolium argent. alp. Ponæ. Raii hist. 614 & 615. *sec. Villars.*
Leaves subternate tomentose converging-three-toothed, stems one-flowered, receptacles woolly.
25. *Potentilla valderia.*
Lin. spec. 714. *Reich.* 2. 547. *Allion. pedem.* n. 1484. t. 24. f. 1. *Villars dauph.* 3. 572.
Leaves septenate obovate ferrate tomentose, stem erect, petals shorter than the calyx, receptacles woolly.
26. *Potentilla reptans.* *Common creeping Cinquefoil.*
Lin. spec. 714. *Reich.* 2. 547. *mat. med.* 131. *Woodv. med. bot.* 160. t. 59. *Huds. angl.* 224. *Wither. arr. ed.* 3. 474. *Smith, brit.* 551. *Curt. lond.* 1. t. 37. *Lightf. scot.* 271. *Relb. cant.* n. 376. *Sibth. oxon.* n. 466. *Fl. dan.* t. 1164. *Neck. gallob.* 222. *Pallas, it.* 1. 205. *Pollich pal.* n. 499. *Scop. carn.* n. 622. *Krock. filef.* n. 803. *Villars dauph.* 3. 568. *Allion. pedem.* n. 1485. *Blackw. t.* 454. *Ludw. est.* t. 116. *Kniph. cent.* 7. n. 73. *Regn. bot.*
Fragaria fol. quinis ferratis, petiolis unifloris, caule reptante. Hall. helv. n. 1118.
F. Pentaphyllum. Crantz, austr. 80.
Quinquefolium. Matth. 1018. *Camer. epit.* 759.
Q. vulgare. Ger. 836. 1. *emac.* 987. 1.
Q. maj. Dod. pempt. 116. 1.—*luteum. Fuchs. hist.* 624. *Dalech.* 1264.
Q. maj. repens. Bauh. pin. 325. *Tournef. inst.* 297.
Pentaphyllum f. Quinquefolium vulgare repens. Bauh. hist. 2. 397. *Mor. hist.* f. 2. t. 19. f. 7.
P. vulgatissimum. Park. theat. 399. 1. *Raii hist.* 611. *syn.* 255. *Petiv. brit.* t. 41. f. 3.
Leaves quinate obovate ferrate, stem creeping, peduncles one-flowered.]
 *** *With ternate leaves.*
27. *Potentilla monspeliensis.* *Montpelier Cinquefoil.*
Lin. spec. 714. *Reich.* 2. 547. *hort. upf.* 134.
Pentaphylloides majus erectum, flore luteo. Mor. hist. 2. 193. f. 2. t. 20. f. 2.
P. fragariæ folio. Magn. monsp. 304.
Fragaria sterilis alpina caulescens. Boerb. lugdb. 1. 42.
Leaves ternate, stem branched erect, peduncles springing out above the joints.
- [28. *Potentilla norvegica.* *Norwegian Cinquefoil.*
Lin. spec. 715. *syst.* 479. *Reich.* 2. 548. *fl. lapp.* n. 211. *suec.* n. 457. *Fl. dan.* t. 171. *Retz. obs.* 1. 20. *Krock. filef.* n. 804.
Pentaphyllum norvegicum. Gært. fruct. 1. 349.
Quinquefolium hirsutum luteum paucioribus laciniis. Loefel. pruss. 218. t. 70.

- Fragaria fol. ternatis hirsutis, caulinis tripartitis, stipulis ovato-lanceolatis. Hall. helv.* n. 1115.
Leaves ternate, stem dichotomous, peduncles axillary.
29. *Potentilla tridentata.* *Trifid-leaved Cinquefoil.*
Ait. kew. 2. 216. t. 9. *Vahl symb.* 2. 59. *Fl. dan.* t. 799.
Leaves ternate wedge-shaped trifid at the tip.
30. *Potentilla nivea.* *Snow-white Cinquefoil.*
Lin. spec. 715. *syst.* 479. *Reich.* 2. 548. *fl. suec.* n. 458. *Gunn. norv.* n. 512. t. 3. f. 1. *Gmel. fib.* 3. 183. t. 36. f. 1. *Hall. goett.* 2. 108.
Fragaria sterilis folio subtus argenteo. Amm. ruth. 111.
Leaves ternate gashed tomentose underneath, stem ascending.]
31. *Potentilla grandiflora.* *Great-flowered Cinquefoil.*
Lin. spec. 715. *syst.* 479. *Reich.* 2. 548. *Gmel. fib.* 3. 183. n. 32. t. 35. f. 1, 2. *Villars dauph.* 3. 562. *Ger. prov.* 469. n. 10. *Curt. magaz.* t. 75.
Fragaria fol. tern. fericeis, caule declinato, petalis calycem superantibus. Hall. helv. n. 1114. t. 21.
F. sterilis, amplissimo folio & flore, petalis cordatis. Vail. par. 55. t. 10. f. 1.
F. ster. alpina angustifolia. Magn. hort. 80. t. 80. *Tournef. inst.* 296.
F. helvetica nana. Park. theat. 757. 3. t. 758. 3.
Trifolium fragariæ foliis luteo flore Berardi. Joncq. hort. 131. *Raii hist.* 610.
Pentaphylloides fragariæ folio. Mor. prælud. 154. 292.
Leaves ternate toothed somewhat hairy on both sides, stem decumbent longer than the leaves.
- [32. *Potentilla subacaulis.* *Stemless Cinquefoil.*
Lin. spec. 715. *syst.* 479. *Reich.* 2. 549. *Gmel. fib.* 3. 183. n. 34. t. 36. f. 2. *Villars dauph.* 3. 562. *Thunb. jap.* 219.
Fragaria sterilis molli lanugine pubescens. Amm. ruth. 84. 110.
F. ster. sylvestris fericea f. incana. Mor. hist. 2. 187.
F. affinis feric. incana. Bauh. pin. 327. *prodr.* 139.
Leaves ternate toothed tomentose on both sides, scape decumbent.

DESCRIPTIONS, &c.

These are mostly perennial herbaceous plants, the first is shrubby, and one or two species are said to be annual. The leaves are unequally pinnate in some, (*Pentaphylloides*, *Tourn.*) digitate in others, (*Quinquefolium*, *Tournef.*) and in a third set ternate, as in *Fragaria*; hence Linneus's three subordinate divisions. Stipules like wings fastened to the bottom of the petiole. Flowers commonly in terminating corymbs.

Tournefort and others separated this genus too much. *Haller* has thrust too many genera into it. *Linneus* had no objection to *Tormentilla* being joined to *Potentilla*: but *Haller* has inserted *Fragaria*, *Potentilla*, *Tormentilla*, *Sibbaldia*, *Comarum*, and called the whole *Fragaria*.

1. The whole plant is set with fine silvery hairs. Stems erect, clothed with a brown bark which cracks longitudinally, branching very much, about three feet (or in gardens four feet) high, frequently reddish. Leaves alternate, covering the branches, petioled, quinate-pinnate, or consisting of five rarely seven oblong leaflets, somewhat rolled back, quite entire, hairy underneath, the upper ones ternate. *Dr. Withering* says, the leaves can hardly be called pinnate, consisting of two pairs set cross-wise, rising from the same point, with a terminating one divided down to the base into three open segments; and that the leaflets are linear-lanceolate, turned back at the edges, dark green above, pale underneath. *Loureiro* affirms that they are truly pinnate, though represented as digitate in *Amman's* figure. Stipules embracing. Flowers terminating, solitary, peduncled, of a bright yellow or golden colour and very ornamental; petals roundish or obcordate. The five outer leaves of the calyx are oval, spreading and remarkably large.

Native of Oeland, England, Siberia, China; between the rivers Delaware and New York in North

• *Jussieu.*

• *Smith and Withering.*

America.

America. In England this shrub was first observed by Johnson of Brignal near Greta-bridge in Yorkshire, on the south bank of the Tees below Thorp, and below Eggleston Abbey in Yorkshire. He showed it to Mr. Ray, and communicated the ample description which is given in his History of plants. Mr. Lawson afterwards observed thousands of these plants by Mickel Force in Teesdale. Mr. Robson, of Darlington, informs us, that it still grows about the river Tees plentifully. It flowers with us in June and July.

The beautiful appearance of its numerous flowers has gained this shrub admittance into gardens. Befoms are made of it. Kine, horses, sheep and goats are said to eat it, and swine to refuse it^a.

2. Root branched, outwardly dark brown or whitish, furnished with small fibres, and penetrating deep. Stems or rather runners extending to a considerable length, round, jointed, reddish, downy, creeping. Leaves silvery-white underneath, petioled: leaflets sessile, opposite, oval, gash-ferrate, blunt, the lower ones gradually smaller: the root-leaves on longer petioles and procumbent. Petioles villose, flat on the upper side, forming a sheath at the base, which is hollow, membranous, tender, downy, running down each side of the petiole. Sheaths of the stem or rather stipules of the runners solitary at the joints, bifid and often multifid at top, bearing an oblong indented small leaf. Peduncles axillary, solitary, round, villose, upright. Calyx silky, the five inner segments entire, sharpish, yellowish at the base; the five outer bluntish and jagged. Petals yellow, obtuse, twice the length of the calyx. Receptacle hairy. Germs ovate, obtuse, white, surrounded by these hairs: styles yellowish, shorter than the stamens: stigmas truncate.

Few plants render themselves more conspicuous by the whiteness of their leaves than this, indeed its old name *Argentina* was derived from this circumstance; it must be remarked however that in this particular it is subject to much variation, the leaves being sometimes silvery on both sides, and sometimes entirely green, but it is most commonly found with the upper side of the leaves green, and the under side silvery; the more clayey the soil, the whiter the leaves are generally found to be.

It is a plant which thrives most in moist situations, especially in clay where the water is apt to stagnate, and is common by way sides; flowering from June to September^c.] Mr. Miller says it is a sure mark of the sterility of the soil.

[Ray informs us, that about Settle in Yorkshire they call the roots *Moors*, and that during the winter the boys dig them up and eat them: he adds, that he was a witness to swine devouring them greedily, and that an apothecary of that neighbourhood assured him that they had a sweet taste, like Parsneps.

These roots are frequently eaten by the common people in Scotland, either roasted or boiled. In the islands of Tirey and Col they are much esteemed, as answering in some measure the purposes of bread; they have been known to support the inhabitants for months together during a scarcity of other provisions. In their barren and impoverished soils, and in seasons wherein their crops succeed the worst, the roots of the Moor-grass never fail to afford a seasonable relief to them^d.

The leaves are mildly astringent; dried and powdered they have been given with success in agues; the usual dose is a table-spoonful of the powder, every three hours, between the fits. Kine, horses, goats and swine are said to eat it; and sheep to refuse it^e.

It should seem by the names *Anserina*, *Goose-grass*, and *Goose Tansey*, that geese are fond of it. The leaves resemble those of *Tansey* very much; hence it is also called *Wild Tansey*.

3. The habit of the leaves is that of the preceding, although they are very small: but it has the stem and fructifications of the *verna*. The root is clothed with black scales which are the remains of leaves. The leaves consist of about thirteen ovate silky leaflets,

^a Withering.^c Curtis.^d Lightfoot.^e Withering.

which are pectinate-pinnatifid. Peduncles hairy. Stems twice or thrice the length of the leaves, having no runners, and not creeping, furnished in the middle with a single smaller and more divaricating leaf, round, with a few yellow alternate peduncled flowers at top.

Native of Siberia^u. Introduced in 1780 by Peter Simon Pallas, M. D.^x

4. The habit shows much affinity with *P. argentea*. The leaves consist of seven leaflets. The segments are linear or lanceolate, five or at most seven, alternate except in the odd leaflet where they are opposite, gaping from each other or remote at the tip, tomentose underneath^y.

Gmelin and Pallas refer n. 116 of Ammann and the synonym from Buxbaum to *P. bifurca*. Pallas says, that Linneus's description given above is a variety of *P. sericea*.

Native of Siberia—Linneus says of Tartary also, Cappadocia and Switzerland; but he has probably mixed two plants together. Cultivated in 1759, by Mr. Miller^z.

5. This has the appearance of *Fragaria sterilis*. Root somewhat tuberous. Leaves silky on hairy petioles, with three, five or seven leaflets, which are ovate, opposite, ferrate, lessening as they approach the base. Runners decumbent^z.

Willich refers Haller's name to *P. stipularis*^b.

Native of Siberia. Introduced in 1773, by Chevalier Murray^c.

6. Whole plant hairy. Stem forked above. Leaves, ferratures, and segments of the calyx tipped with scarlet or purple^d.

Stem almost a foot high, branched, leafy, striated. Leaflets subovate, blunt, gash-ferrate, veined, hairy but not hoary, five or seven in the root-leaves and lower stem-leaves, three only in the upper ones. Radical stipules linear, acute; roundish-rhomboid to the stem-leaves. Peduncles subpanicled, one-flowered, villose. Calyx villose at the base. Petals obcordate, white. Styles reddish. Seeds not wrinkled, but of an even surface; hence perhaps it should be referred to *Fragaria*, to which it is allied in appearance^e.

Native of several parts of Europe and Siberia, on shady alpine rocks. With us it has occurred only in Wales, on the sides of Craig Wreidhin mountain in Montgomeryshire, where it was found by Lhwd^f.

7. Root fusiform, little branched. Stem almost upright, round, tomentose, branched, a foot high, dichotomous, at the extremities very slender, almost filiform, leafy. Lower leaves pinnate, gash-ferrate, with two, three or four pairs of leaflets, with the end one trifid or bifid, wedge-form, smooth, on short petioles, which are alternate, winged and placed on small stipules; the number and size of the leaflets are successively diminished, so that at the extremities segments remain which are very short, solitary, petioled, bifid or more frequently trifid. Flowers come out singly from the axils alternately almost over the whole stem, on peduncles half an inch long, very slender, villose, reflexed when the flower goes off. Calyx whitish green, somewhat hirsute, with the segments almost equal. Petals small, brimstone coloured, equal to the calyx^g.

Native of Siberia and Silesia. Introduced in 1773, by John Earl of Bute^h.

8. Found by Tournefort in Armenia, among rocks. Cultivated in 1758, by Mr. Miller. It flowers from June to Augustⁱ.

9. This has the habit of *P. recta*. Root-leaves pinnate; leaflets oblong, bluntish, ferrate-toothed, marked with lines, soft, villose; the three outer connate and larger; the inner smaller and alternate: stem-leaves subdigitate, in sevens, as in *P. recta*, but pinnatifid. Petals scarcely larger than the calyx^k.

Native of North America. Introduced in 1773, by John Earl of Bute. It flowers from June to August^l.

^u Linn. spec.^x Hort. kew.^y Linn. spec.^z Hort. kew.^a Linn. spec.^b Reichard.^c Hort. kew.^d Withering.^e Smith, angl.^f Ray, syn.^g Krock.^h Hort. kew.^k Linn. mant.^l Hort. kew.

10. Root small, white within, covered on the outside with brown scales. Stem a foot or more in length, procumbent, dichotomous, leafy, round, having a few hairs on it: branches opposite. Leaves alternate except the uppermost which are conjugate, two inches in length, and near one inch in breadth, on long petioles: pairs of leaflets four or five, with the odd one more cloven, all oblong-ovate or lanceolate, gash-ferrate, sessile, white-tomentose on the back, near half an inch long, and three lines wide. Rachis pubescent, grooved above. Petioles slightly hairy, placed on embracing, ovate, acute stipules, ciliate at the edge. Peduncles from the forkings and tops of the branches, alternate, solitary, round, pubescent, four lines in length, erect but hanging down after the flower is gone off. Flowers little more than three lines in diameter. Calyx slightly pubescent: segments ovate, unequal, green not white. Petals yellow, obcordate, blunt, much smaller than the segments of the calyx. Receptacle pappose^m.

Native of Germany, Austria and Siberia. Introduced in 1773, by Chevalier Murray. It flowers in Julyⁿ.

11. Stem about a foot high, rigid, covered with a pile rather than hairs, reddish, at top corymbed, or dividing into several peduncles forming a sort of umbel. Leaves large, having each five or seven oblong villose leaflets, frequently of a russet colour, with ten or twelve blunt teeth; they are stiffer, longer and wider than in *P. birta*, and when old are almost naked: the lower ones are petioled, the upper ones sessile, finally becoming linear and stipular. The flowers are abundant on the top of the stem, erect on solitary peduncles, altogether making the stem paniced. Calyx tomentose, whitish, with almost equal segments. Petals large, emarginate, of a golden colour. Receptacle pappose^o.

Native of Germany and the South of Europe. Cultivated in 1648, in the botanic garden at Oxford. It flowers in June and July^p.

12. Stems many, woolly, round, hard, half erect, from a span to a foot or more in height. Leaves alternate, petioled, the upper side green, the lower covered with snow-white cottony down, as are the calyx and upper part of the stem, which last is dichotomous, and assumes the form of a corymb at top. The lower petioles are long, but gradually shorten upwards. The floral leaves have one or three linear entire segments. The flowers are numerous. The calyx downy, as long as the corolla: the petals small, bright yellow or golden coloured, and soon shedding. The flowers appear in succession from June to autumn. Seeds smoothish. No other British *Potentilla* can be confounded with this. Its form and habit much resemble the *Tormentilla*, except in being far more woody. The pure whiteness of the leaves, like that of the white Poplar, renders this plant conspicuous whenever it is disturbed by wind or any other accident^q.

Native of Europe. It was reckoned by Ray among our rarer plants, but is found in many parts of England on a gravelly soil. It is said to indicate clay under the surface^r.

In Cambridgeshire it grows among furze, near Hildersham, Gamlingay and White-wood. In Oxfordshire on Henley-park Hill. In Bedfordshire at Amp-hill, Aspley, and Rowney Warren. Near Harefield in Middlesex. On Blackheath, Kent. Holt Castle in Worcestershire. Among furze on the heaths and on the walls in Purbeck, Dorsetshire. About Harrogate in Yorkshire it is plentiful. Near Snenton in Nottinghamshire. In the den of Bethaick near Perth in Scotland. It flowers from June to September.

13. This is a middle plant between *P. argentea* and *norvegica*, whence its trivial name; it would indeed be the latter, if the root were not perennial, and the leaves next the root quinate. But the lower leaves are alternate, the upper opposite: leaflets obovate,

^m Pollich and Krock. ⁿ Hort. kew.

^o Krock and Villars. ^p Hort. kew.

^q Smith, Brit. and Engl. bot. and Robson in Withering.

^r Engl. bot. and Rose, bot. 382.

gash-ferrate, not tomentose, with nine serratures: the stem-leaves are ternate, opposite to the panicle^t.

Monf. Villars says that it approaches nearer to the *vesta* than any other, but that the species is well marked. The reddish villose stems a foot high, are much inclined, and branch out from the very bottom: the peduncles then are straight and inclined, some simple, others forked. The leaves at bottom are in sevens; they are oblong, villose, unequal, with seven or nine deep indentations: the stem-leaves are almost opposite, in threes, springing between two large wide stipules: the uppermost are simple or trifid, and confounded with their stipules. Petals yellow, middle-sized, emarginate. The divisions of the calyx are very villose; and the receptacle is a little so.—Haller has given Linneus's *opaca* as a synonym, and says that his description does not much differ from it; the *opaca* however has no farther similitude to this species than that of the genus. The *opaca* has the same relation to *verna*, that *intermedia* has to *vesta*, but it is not straight, and the branches are filiform.

Native of Switzerland and Dauphiné.

14. Root-leaves five or seven; stem-leaves five, all alternate, sublinear, with three or five teeth. Stem, peduncles and calyxes very hairy^u.

Monf. Villars gives two species much resembling each other, *birta* and *pilosa*; both have straight stiff stems, long hairs and deep indentations on the leaves. This is a foot high, and has many stems; it is not viscid; it is rougher, straighter and harder than the *pilosa*. It has the port of *P. argentea*, but is not at all white or silvery, only dusky and rough with long distinct hairs. *P. pilosa* is smaller than the *birta*. Stems villose, about half a foot high; having at top three or four yellow, middle-sized flowers, with emarginate petals. Leaves quinate, villose, deeply cut at the end, unequal, so that the lower or lateral ones are scarcely half the length of the middle ones, they have all long, weak, distinct, and very apparent hairs. The whole plant is a little viscid. The *heptaphylla* of Miller, n. 9. seems to be the *birta*.

Native of the South of France, the Pyrenees and Silesia. Cultivated in 1725 in the botanic garden at Chelsea. It flowers from May to September^x.

15. Stem ascending, filiform, even, divided at the tip. Stipules embracing, solitary, emarginate. Leaflets eight or nine, linear-lanceolate, subserrate, smooth, hanging from the notch of the stipule without any petiole.—Native of Siberia^y.

16. Stems short, branched from the bottom, decumbent, round, soft, tomentose, reddish, forming a tuft. Leaflets sessile, obovate, soft, tomentose, hoary: petioles sheathing, channelled above, villose, an inch and half in length. Stipules soft, tomentose. Floral leaves sessile, trifid and jagged. Flowers in a sort of panicle at the ends of the branches. Peduncles one-flowered, less than half an inch in length. Petals yellow, blunt^z.

Villars describes his *opaca* as having the port of the *verna*, but larger in all its parts. Leaves wider, of an ash-coloured or russet green on both sides; like those of the *subacaulis* lanuginous, blunt, with regular rounded indentations. Corolla small, somewhat notched, a little longer than the calyx, pale yellow without any deeper stain. Segments of the calyx blunt. This, with the short close pile that covers the plant, independent of the colour, size, &c. distinguishes it at first sight from *P. verna*.

Native of Germany, and some parts of the South of Europe.

17. Stems from three to six or seven inches high, nearly erect, branched, leafy, hairy. Leaves thin and almost membranous, of a lighter green than in *P. verna*, with foot-stalks more than twice as long: leaflets five, a little shining, somewhat hairy, paler beneath, and deeply ferrate towards the top: root-leaves on very long petioles, with blunt leaflets; stem-leaves subsessile; uppermost mostly opposite. Stipules lanceolate, entire. Peduncles axillary and terminating,

^t Linn. mant. ^u Linn. syst. ^x Hort. kew.

^y Linn. spec. ^z Pollich.

solitary, very long, one-flowered, hairy, erect. Calyx hairy, its segments all nearly equal in length, but alternately narrower. Petals obcordate, of a full yellow and almost orange colour. Seeds longitudinally wrinkled, which Gærtner considers as a distinguishing character of this genus^a.

Native of the mountains of Scotland, Denmark, Switzerland, Austria, Silesia and Dauphiné. It was first introduced as a British plant in Dr. Withering's new edition of his Arrangement, on the supposition of its being *Pentaphyllum parvum hirsutum* of Ray's Synopsis, referred by Hudson to *P. opaca* of Linneus. But Mr. Curtis is most probably right in referring Ray's plant to the *verna*. The real *aurea* was gathered in 1793 on Ben Lawers and other mountains of Breadalbane, by Mr. John Mackay. It flowers in July^b. It was cultivated by Mr. Miller in 1739; not being then known to be a native of England.

Crantz, Allioni and Villars have a species which they name *rubens*, from the redness of the stalks. Reichard refers Crantz's plant, with a mark of doubt, to Linneus's *opaca*: it has the lower leaves quinate, the upper ternate, and deep-yellow flowers without any spots. Allioni has described it at length, and refers to Villars; who says that it may be the *rubens* of Crantz; that the stems, leaves and flowers exactly hold a middle place between *P. aurea* and *intermedia*; that it has the size of the former, with fewer flowers, rougher blunt leaves, and a smaller corolla of a deep yellow colour; but without a golden stripe at the base of each petal, which he and Crantz assign to the *aurea*. Our *aurea* has it not, and therefore probably is the same with the *rubens* of these authors; if the *rubens* be really different from the *aurea*.

Monf. Villars has another species, which he names *inclinata*, and figures in his forty-fifth plate. The whole plant is hairy. The stem is very distinct and rising, naked in part, bifid at top, where there are two small ternate leaves. The lower leaves have five or six oblong leaflets, somewhat ash-coloured, with blunt teeth on the edge; the stem-leaves are ternate and oblong. Petals yellow, the length of the calyx, truncate and not cordate.

18. The whole plant is beset with soft shining silky hairs. Stems almost prostrate, branched, leafy, spreading very wide in a circular direction among grass. As the season advances they turn red, as well as the leaves; which colour, intermixed with the bright yellow of the flowers, makes a striking contrast. Leaves rigid, somewhat coriaceous, smoothish, marked with lines, ciliate along the edge and keel: root-leaves on longer petioles, quinate, with the leaflets wedge-shaped and somewhat retuse; stem-leaves ternate, trifid, subsessile; upper ones simple and often entire. Stipules in pairs, lanceolate, embracing. Peduncles subterminating, (or terminating and axillary) one-flowered, long, slender, upright. Calyx tomentose and hairy, with the segments not very unequal, half as long as the corolla. Petals emarginate or obcordate, of a golden colour. Seeds less wrinkled than in the preceding^c.

Native of most parts of Europe, in dry elevated pastures.

Thomas Willifell brought it to Ray from Kippax, near Pontefract in Yorkshire; the Rev. Mr. Wood has since found it there. It has occurred in several other places of Yorkshire and Lancashire, as Preston, Giggleswick, near Carr End Wensleydale, &c. Sir Thomas Gery Cullum, Bart. observed it many years since near Bury, in Suffolk. It grows also on Gogmagogh-hills near Cambridge. Mr. Pennant found it in Gloggaeth, Caernarvonshire. In the King's Park, Edinburgh, near Arthur's seat, by Dr. Hope; and on Braid-hills and Craig Lochart, by Mr. Brown; and in several other parts of Scotland.

Haller observes, that it is a very variable species, and approaches so nearly to many others, that its characters and synonyms are scarcely to be made out^d.

Villars has three species, which he allows may possibly be varieties of the *verna*:

1. *P. ferotina*; the leaves of which are a little larger and more cut; the stems longer; the flowers yellow without any stripe at the claw.

2. *P. filiformis*. Stems prostrate, red, villose; leaflets five or seven, oblong, widening at the end, unequal, ferrate; petals obcordate, deep yellow, a little larger than the calyx.

3. *P. rotundifolia*. Leaves smooth, wide, as are also the petals, inasmuch that they are often concealed one under the other. The leaflets have only four or five divisions, which are smooth and rounded; whereas the second has from nine to eleven divisions of oblong leaflets, villose or rough-haired.

Villars has also another species, which he names *frigida*. It is a small plant, with the stems creeping. The leaves resemble those of the *verna*, but they are ternate, villose, with sharp deep indentures; the petals are narrow, rounded at the end; the divisions of the calyx are large in proportion to the plant, they are equal, blunt, and nearly as long as the petals. The whole plant becomes red in autumn.

19. The seeds of this were received by Jacquin from Astracan. The first year they produced only radical leaves, but in the succeeding ones several stems, which were annual, ascendant, round, somewhat villose, and about a foot high, spreading into panicked peduncles: the alternate and lowest radical and cauline leaves are quinate, footstalked, rather hirsute, and at their origin are auriculated on each side by a lanceolate stipule: the leaflets are oblong, obtuse, sessile, and inciso-ferrate: the remaining cauline ones and those of the branches are ternate, with unequal and incised leaflets: the highest towards the peduncles are opposite, sessile, and trilobate; or rather these are trilobate stipules without leaves. The peduncles are one-flowered, and rather short: the calyxes hirsute: the petals yellow: the anthers deep yellow or luteous.

20. This has the habit of *Fragaria*. Root-leaves quinate: leaflets obovate, acutely ferrate, pubescent above, villose and silky-white underneath; the petioles very hirsute with white hairs. Stem a finger's length, branched, with few leaves on it. Corolla yellow. It resembles *P. verna*, but the leaves are very hairy, finely ferrate, roundish; and the stem is very hirsute.

Native of Canada^e.

21. Stems branched. Root-leaves on long petioles: leaflets lanceolate, bluntish, entire except towards the end, where there are five or seven serratures; they are slightly downy above, paler and more downy underneath, with the veins and edges white with a silky down. The petioles are also downy. Peduncles very long, slender, downy, one-flowered. Segments of the calyx acuminate, silky. Petals white, obcordate, as long as the calyx. Receptacle villose with long, close bristles. Seeds obscurely wrinkled^f.

Native of the South of France, Germany, Switzerland, Austria, Carniola, Hungary. According to Hudson, it was found in Wales by Mr. Haviland. Dr. Smith says, that he knows of no other authority.

22. The procumbent stem rises sometimes to three or four inches in height, bearing several white detached flowers, from the middle of which spring the hairs of the receptacles. The leaves are on long petioles; those that come out in summer continue on all the winter, and accompany the stem during the year following. The whole plant becomes red with age. Each leaflet is villose, entire, oval, rounded, with three or four pointed, approximating indentures at the top^g.]

The leaves are on foot-stalks which arise from the root, and are very long; the leaflets are oblong, a little ferrate at their ends, very hoary and silky on their under sides, but green on their upper. Flowers on long slender peduncles, which arise immediately from the root; they are white and appear in May, but are seldom succeeded by seeds in England.

Native of Austria, [Switzerland, Silesia, Dauphiné, Piedmont. Cultivated by Mr. Miller in 1759^h.

23. This, according to Jacquin, is an elegant species,

^a Smith, brit. and Engl. bot.

^c Smith, brit. and Woodw. in Withering.

^b Engl. bot.

^d Engl. bot.

^e Linn. spec.

^g Villars.

^f Smith, brit. and Woodward.

^h Hort. kew.

growing among the clefts of the Alpine rocks, the stems are numerous, and are commonly roughened by the remains of the lost leaves: the principal stems are decumbent, the others upright: the flowering stems rise on the sides of the terminal leaves; and are simple, erect, pubescent, purple, annual, two or three inches high, and bear but few flowers: the leaves are of a pale green. The flowers are subcorymbose, pedunculated, inodorous, and the calyx is in some hirsute and purple: the petals white and obtuse: the filaments in some white; in others red. Jacquin thinks it truly distinct from the *P. caulescens* of Linneus¹.

Native of Austria. Allioni does not think it distinct from the *caulescens* of Linneus.

24. This species is very small; the stems are only an inch or two in height, sometimes upright, sometimes decumbent, bearing but one flower, seldom two. Leaves small and silvery, three or four rarely five together; they are short, quite white, a little notched, with two or three sharp teeth at the end. Corolla white, open, with the petals a little longer than the calyx, entire, narrow at the claw, widening suddenly, as in most of the *Arenarias*, and then oval. The flower is frequently reflex. Receptacle lanuginose^k.

Turre remarks that the leaves are ternate. Linneus says, that he has a specimen or two with the lower leaves only quinate, and that the root-leaves are to be determined by culture^l.

Villars informs us, that on Mont-Bovinant it is ternate, and at Colet in the way to Charmanfon constantly quinate, although the plants are not larger or in any wise different from the others.

Native of Monte Baldo, Dauphiné, Austria.

25. There are a few ternate leaves on the stem. Flowers dichotomous, corymbed, clustered. Petals white, shorter than the calyx^m.

Villars remarks that this species may easily be confounded with *caulescens* and *alba*: but *caulescens* is partly decumbent, *alba* is quite so, and this not at all. *Alba* has narrow leaves, in *caulescens* they are a little wider, and in this still more so. The upright villose stem rises to the height of six or eight inches, and branches at top, where it has ten or twelve flowers very close together. The leaves in some degree resemble those of the Lupin, and are in sevens; the leaflets are villose, dusky, rounded, and slightly toothed at the end; they are wide enough to touch one another, and even to conceal their margins. Flowers in tufts: petals white, narrow, distinct, oblong, little emarginate, almost always approaching to the pistils, which are villose and lanuginose.

According to Allioni, the root is thick, red, tough, and divided. This throws out a great number of leaves on long petioles, and many stems that are almost upright or a little reclining. The leaves proceed from a wide stipule, and the petioles are hirsute: leaflets firm, silky-hoary, veined and nerved underneath, five, six or seven. Stems almost naked, with flowers in a corymb on the branches. Stem-leaves quinate, on shorter-hooked stipules. Leaves at the origin of the branches ternate. Petals very pale sulphur or white. The whole plant is silky-hoary, with the stems and petioles evidently subhirsute.

Native of the mountains of Piedmont and Dauphiné.

26. Root fusiform, with few fibres, penetrating deep, the size of the little finger, or even of the thumb when old, outwardly of a dark chestnut colour. Stems round, smooth, prostrate, creeping, leafy. Leaves petioled, erect, quinate, (sometimes septenate, sometimes ternate;) leaflets obovate-cuneate, hairy, unequal in size, ending in purplish points. The petioles come out in pairs from the joints of the stem at considerable distances. Stipules in pairs, composed of three ovate or ovate-lanceolate leaflets. Peduncles solitary, nearly upright, longer than the leaves, one-flowered. Calyx hairy. Petals of a golden colourⁿ.

Native of Europe, common in meadows, and by way sides; flowering from June to September.

¹ Jacquin. ^k Villars. ^l Syst. veg. ^m Linn. spec. ⁿ Curtis, Smith.

Tormentilla reptans has been thought by some a variety of this, but they are very different; this striking root at every joint, that trailing, but never striking root from the stem^o.

This plant is the *Pentaphyllum* of the London Pharmacopœia. The roots have a bitterish styptic taste: They were used by Hippocrates and Dioscorides, and by the former particularly recommended for the cure of intermittents. Ray tells us that the peasantry still employ them with this intention. The medicinal quality is confined to the red cortical part of the root, and depends merely upon its astringent effects; it has therefore been chiefly prescribed internally in diarrhœas and other fluxes, and externally in gargles for loose teeth and spongy gums, and in astringent lotions: but its efficacy being much inferior to many other plants of this class, Cinquefoil is now rarely used. In large doses however, it may be found no bad substitute for some of the other astringents^p.

The roots have been used for tanning leather. All our domestic quadrupeds will eat the leaves^q, and therefore it is no bad plant in pastures.]

27. This is a perennial plant. The stalks grow erect, about a foot high; they are very hairy. Leaflets oblong, serrate. The peduncles come out above the joints of the stalk. The flowers are white and large: they come out in June; and the seeds ripen in autumn.

[Linneus observes, that the leaflets are ovate, bluntly and equally serrate. He marks it as annual, but it is not.

Native of the South of France. Cultivated by Mr. Miller, in 1759^r.

28. Root annual, fibrous. Stems several, a foot high, at first erect, roundish, with spreading hairs. Leaves petioled, having spreading hairs scattered over both sides, serrate-toothed: leaflets oblong, veined. Branches from the axils. The upper part of the stem is dichotomous, and the leaves there become opposite and subsessile. Peduncles naked, one-flowered from the divisions. Petals yellow, entire; the stamens and pistils are of the same colour, but the stigmas are blackish. Stipules half-cordate, gashed or toothed, especially in the lower leaves^s.

Seeds, according to Gærtner, small, subovate, above obliquely mucronate, compressed like a lens, marked with wrinkles downwards, diverging towards each edge of the seed, of a yellowish bay colour. Coats three: *outermost* coriaceous, wrinkled; *middle* crustaceous, smooth, thickish; *innermost* membranaceous, of a red ferruginous colour. The seeds are wrinkled in almost all the species.

Retzius remarks, that it puts forth the upper peduncles from the forkings of the branches, but the lower from the branch itself, at a distance from the axil.

Native of Norway, Sweden, Prussia, Silesia, Switzerland, Canada, Siberia. Linneus says that it has migrated from Norway into Sweden.

29. Stem herbaceous, ascending, quite simple, a span high, with villose hairs thinly scattered over it. Leaves heaped at bottom, but only one or two on the stem: leaflets smooth, veinless, acute at the base, bluntly three-toothed at the top, almost equal only the side ones narrower. Floral leaves three-parted, sessile, lanceolate at the base and in the middle of the peduncles. Petioles linear, channelled, the length of the leaflets. Stipules lanceolate. Peduncles bifid at top; peduncle at the fork leafless, one-flowered. Calycine leaflets lanceolate, hairy. Germs hairy^t.

Native of Newfoundland and Groenland. Introduced in 1766, by Benjamin Bewick, Esq. It flowers in June^u.

30. This has the structure of *P. verna*, or the leaves of *P. argentea*, but ternate and wider, more hirsute, and snow-white underneath. Corolla yellow. The Lapland plant has larger leaves, smoother on the upper surface than the Siberian^x.]

^o Afzelius in Withering. ^p Woodville. ^q Curtis. ^r Hort. kew. ^s Linn. succ. ^t Vahl. ^u Hort. kew. ^x Linn. spec. and succ.

31. Root perennial. Stems trailing. Leaflets ovate, obtuse, bluntly indented on their edges. Flowers larger than in the *monspeliensis*, and the whole plant of a deeper green. It flowers in July, and the seeds ripen in autumn.

[Linneus marks it as annual, but there is little doubt of its being perennial. He observes that the leaves are of the same colour on both sides, not silvery underneath; and that the stems are a foot high, ascending, and rufescent.

Culture, says Mr. Curtis, is known to produce great alterations in the appearance of most plants, but particularly in those which grow spontaneously in dry mountainous situations: this is strikingly exemplified in this species of *Potentilla*, which becomes in every respect much larger, as well as much smoother than in its natural state.

Native of Switzerland, Dauphiné, the Pyrenees and Siberia. Cultivated by Mr. Miller in 1768¹.

32. Leaves wrinkled, coriaceous, wedge-shaped, blunt. Stipules wide, acute, hairy. Stem or scape decumbent, often longer than the leaves, two-flowered or one-flowered. Corolla very large, yellow: petals emarginate, paler yellow at the base. Stamens yellow².

Native of the South of France, Granada, Siberia, Japan.]

PROPAGATION AND CULTURE.

1. The best season for transplanting the Shrubby Cinquefoil is October, that it may get new roots before the hard frost sets in; for as it grows naturally upon moist boggy land, when removed in the spring, if due care be not taken to water it in dry weather, it is apt to miscarry; nor will this plant live in a dry hot soil, but in a shady situation and on a cool moist soil it will thrive exceedingly.

2 and 26. Are common weeds, increasing much by roots or runners.

3, &c. Most of the other species are easily increased by seeds, or parting the roots, or both. Autumn is the time for sowing, parting and transplanting.

6. Loves a moist soil and shady situation.

22. This may be increased by runners like the Strawberry, in autumn. It loves a cool soil and a shady situation.

27. If the seeds are permitted to scatter, they will produce plants in plenty the following spring.

31. This will also come up from seeds, or the roots may be parted.

[POTENTILLA. See *Comarum*, *Fragaria*, *Tormentilla*.]

POTERIUM (of Pliny. *Ποτηριον* of Dioscorides; from *ποτηριον*, a cup.)

Lin. gen. n. 1069. Reich. n. 1167. Schreb. n. 1445.

Juss. 336. Pimpinella. Tournef. t. 68. Gärtn. t. 32.

Class. 21. 7. Monoecia Polyandria.

Nat. order of *Miscellanea*. *Rosacea*, Juss.

GENERIC CHARACTER.

* Male Flowers in a spike.

CAL. Perianth four-leaved: leaflets ovate, coloured, caducous.

COR. four-parted: segments ovate, concave, spreading, permanent.

STAM. Filaments very many, (thirty to fifty) capillary, very long, flaccid. Anthers roundish, twin.

* Female Flowers in the same spike above the males.

CAL. Perianth as in the male.

COR. one-petalled, wheel-shaped. Tube short, roundish, converging at the mouth. Border five-parted: segments ovate, flat, reflex, permanent.

PIST. Germs two, ovate-oblong, within the tube of the corolla. Styles two, capillary, coloured, flaccid, the length of the corolla. Stigmas pencil-form, coloured.

PER. Berry formed of the tube of the corolla, hardened, thickened, closed.

SEEDS two—inverted, Gärtn.

OBS. P. spinosum has a fleshy globular berry, with oblong, cylindrical seeds.

¹ Hort. kew.

² Linn. spec.

P. Sanguisorba has a juiceless angular berry, with four-cornered seeds acuminate at both ends; and two weak pistils inserted into the male flower.

Calyx two, three or four-leaved. Reich. four-parted, superior, Gärtn.

Gärtn. who joins this genus with Pimpinella, calls the fruit a drupe.

ESSENTIAL CHARACTER.

MALE. Cal. four-leaved. Cor. four-parted. Stam. thirty to forty.

FEM. Cal. four-leaved. Cor. wheel-shaped, five-parted. Pist. two. Berry formed of the hardened tube of the corolla.

SPECIES.

1. Poterium Sanguisorba. Lesser or Upland Burnet.

Lin. spec. 1411. Reich. 4. 158. hort. cliff. 446.

upf. 288. mat. med. 202. Hudf. angl. 421.

Wither. arr. ed. 3. 493. Curt. lond. 2. 64. Relb.

cant. n. 711. Leers, herb. n. 736. Pollich pal.

n. 908. Ludw. cat. t. 187. Sabb. hort. 2. t. 71.

Blackw. t. 413. Fl. rust. t. 69. Dickf. hort. succ.

Sanguisorba officinalis. Regn. bot. t. 1.

S. minor. Fuchf. 789. Baub. hist. 3. b. 116. Raii

syn. 203. Pet. brit. 4. 12.

Pimpinella polytemon. Hall. belv. n. 706.

Pimp. Sanguisorba. Gärtn. fruct. 1. 162. Camer.

epit. 777. Dod. pempt. 105. 1.

P. Sang. minor hirsuta. Baub. pin. 160.

P. f. Sang. minor. Matth. 1034.

P. vulgaris f. minor. Park. theat. 582. 1.

P. hortensis. Ger. 889. emac. 1045. 1.

P. minor, spica minore rubra, fol. hirsutis. Mor. hist. 3.

f. 8. t. 18. f. 1.

β. Pimpinella Sanguisorba minor lævis. Baub. pin. 160.

Pollich. Kniph. cent. 1. n. 66.

P. min. sp. minore rubra, fol. glabris. Mor. f. 2.

γ. Pimp. sang. inodora. Baub. pin. 160. prodr. 84.

Raii hist. 402.

Unarmed, with the stems somewhat angular.

[2. Poterium ancistroides.

Desfont. atlant. 346. t. 251.

Suffruticose, leaflets very smooth roundish deeply toothed, flowering stem angular procumbent.]

3. Poterium hybridum. Sweet Burnet.

Lin. spec. 1412. Reich. 4. 159. Sabb. hort. 2.

t. 72. Desfont. atlant. 347.

Pimpinella agrimonoides. Lin. hort. upf. 288. Gärtn.

fruct. 1. 162. Bocc. sic. 57. t. 30. f. 1. Raii hist.

402. 5.—odorata. Barrel. rar. t. 632.

Pimp. Agrimoniae foliis. Mor. hist. f. 8. t. 18. f. 9

Unarmed, stems cylindrical striat.

[4. Poterium caudatum. Smooth shrubby Burnet.

Ait. hort. kew. 3. 354.

Unarmed, frutescent, branches round villöse, spikes elongated loose.]

5. Poterium spinosum. Prickly shrubby Burnet.

Lin. spec. 1412. Reich. 4. 159. hort. cliff. 445.

Gron. orient. 290. Sabb. hort. 2. t. 73. Kniph.

cent. 9. n. 74.

Pimpinella spinosa. Mor. hist. 3. 262. f. 8. t. 18. f. 5.

Gärtn. fruct. 1. 162.

Poterio affinis, foliis Pimpinellæ, spinosa. Baub. pin.

388.

Stoebe legitima. Clus. hist. 2. 303.

With branching spines.

DESCRIPTIONS, &c.

1. [The common, small or upland Burnet has a perennial root, penetrating deep into the earth. Stems nearly upright, from nine inches to a foot high:] Mr. Miller says, a foot and half, [as it is in cultivation: branched, striated, reddish, smooth except at bottom, where they are slightly hairy. Leaves unequally pinnate, on pretty long peduncles, next the root collected into a tuft, on the stem alternate. Leaflets smooth, pale or blueish underneath, deeply serrate about the edge, the lower ones on the same leaf commonly alternate, and the upper ones opposite. The bottom leaves have seven or eight pairs of roundish leaflets; the stem-leaves have five or six or at top only two pairs of ovate pointed leaflets. The petiole is three-cornered, channelled, hairy, and some-

somewhat membranaceous at the base. Stipules toothed. Flowers peduncled in little roundish heads; greenish, sometimes purplish on the outside, the terminating one largest: each head has male flowers below, and female or fertile flowers above, expanding before the former, which are frequently imperfect hermaphrodites. Calyx two, three or four-leaved, inferior. Corolla four-parted. Filaments twenty or more, very long, commonly red. Stigma very red^a. Linneus considers the fruit as a Berry formed of the calyx hardened; according to Gartner it is a Drupe, which in this species is ovate, acuminate at both ends, quadrangular with the angles compressed and sharp, wrinkled with little excavations at the sides: rind coriaceous, of a yellowish bay colour, or sometimes reddish: shell the substance of paper, ovate, two-celled. Seeds ovate-acuminate, plano-convex, pale yellow, with a ferruginous area at the base.

Leers remarks, that the male flowers have a germ and stigmas, but all imperfect and barren, as in *Valeriana dioica*: Curtis—that the styles are shorter and the stigmas less expanded; both calyx and corolla larger.

This has the habit of the Great Burnet, (*Sanguisorba officinalis*) and the fruit bears a near resemblance. But that is a coarser larger plant, and grows in moist meadows; it has only hermaphrodite flowers, and differs from this in the number and disposition of the stamens. The stems of upland or lesser Burnet are not stiff and upright, but rather declining; the lower leaflets rounder; the heads sometimes purplish when in fruit; but never of so deep a tinge or shining, as in the Great Burnet.

Native of England, Germany, Switzerland, in high dry pastures, in a calcareous soil; flowering in May, and sometimes in April.

The leaves, when bruised, smell like Cucumber, and taste something like the paring of that fruit; they are sometimes put into salads and cool tankards.

The leaves and seeds are mildly astringent, and have been used in dysenteries and hæmorrhages.

Some years since Mr. Rocque attempted to bring Burnet into use as an early spring-feed for cattle, and it was said to grow so fast as to allow of being mowed three times during the summer.

On the subject of so doubtful a plant it may not be amiss to state the most material evidence on each side.]

Mr. Miller says, this plant has been of late recommended by persons of little skill, to be sown as a winter pabulum for cattle; but whoever will give themselves the trouble to examine the grounds where it naturally grows will find the plants left uneaten by the cattle, when the grass about them has been cropped to the roots; besides in wet winters and on strong land the plants are of short duration, and therefore very unfit for the purpose, nor is the produce sufficient to tempt any persons of skill to engage in its culture.

[Burnet, says Mr. Curtis, is one of those plants which has for some years past been attempted to be introduced into agriculture, but not answering the farmer's expectations, is now in a great degree laid aside. Cattle are said not to be fond of it; nor is its produce sufficient to answer the expense attending its culture. It is to be lamented that persons do not pay a little more attention to the nature of plants before they so warmly recommend them. It seems very unlikely that a small plant, scarce ever met with but on hilly and chalky ground, and to which cattle in such situations do not show any particular attachment, should afford better, or more copious nourishment, than the Clovers and other plants already in use. It is not meant by this however to discourage that laudable spirit of improvement which so happily prevails at present; but to caution such as introduce any new plant, to make themselves well acquainted with its natural history.

According to Mr. Boys, in the Agricultural Survey of Kent, it affords herbage in the winter and spring

^a Curtis, Stokes, Fl. rustica.

months, but is not much liked either by cattle or sheep.

Dr. Anderson reports, that Burnet retains its verdure pretty well during the winter months, but affords such scanty crops, as hardly to be worth the attention of the farmer^b.

A correspondent in the Museum Rusticum, a work very favourable to Burnet, confesses with reluctance that it is not deserving of any exalted character, but rather the contrary; and that it is in no degree to be compared to the common Clover, which is cultivated at half the expense^c.

It appears from some accounts there that horses will not eat it at all, and that kine frequently will not take it without great reluctance. Its slow growth is also made a great objection: being only about five inches high, and having scarce one head in flower; whilst Lucerne, on the same soil, sown the same day and much thicker, was eighteen or twenty inches in height^d.

A Warwickshire correspondent in the same work, says it is a general rule with surveyors on enclosures in that county, to set land abounding in Burnet at the lowest quality. He attributes its keeping long green to a pungent oil with which it abounds; this oil preserves it from frost, but at the same time makes cattle not fond of the hay; it heats their mouths, and after a day or two they will rather eat straw^e.

Certainly Burnet, in its wild state, is generally small, dry and not succulent. Cattle and even sheep will not eat it when it is run up to stalk. But this is not peculiar to Burnet; and we are not to judge of the value of plants in cultivation from the appearance they make when wild. Nor are we, from this difference of appearance, to conclude, as some have done, that the wild and cultivated Burnet are specifically different.

A gentleman farmer sowed five acres of a poor sandy soil, well prepared, with Burnet seed, bought of Mr. Rocque, twelve pounds to the acre, in the month of August. The first season it ran all to stalks, with few leaves, so that he had not above seven hundred weight of hay from each acre, and that very bad. The next year the crop was still worse, perhaps owing to a long drought. However he was dissatisfied with it, and finding Saintfoin much superior on his land, ordered the five acres to be ploughed up^f.

Others affirm that Burnet is so stalky and stiff, that it is more fit for fuel than hay; that horses will sooner eat their litter than this plant; and that even sheep will rather eat the hedge round the close than the crop of Burnet in it^g.

But let us now attend to the other side of the question.

Mr. Rocque, of Walham Green in the parish of Fulham in Middlesex, first introduced Burnet to public notice, as food for cattle, about the year 1760, at the recommendation, as it is said, of Mr. Wyche, who first gave Rocque the *Bird-grass*, which is a species of *Poa*; and, as I believe, the *Timothy-grass* or *Phleum pratense*.

Rocque's own account of it is, that it is always in sap, and that you can have the green feed from the middle of September, till February, March and April, which are the months when other grasses are commonly scarce. He directs it to be sown from February to the first of May: to be mowed for seed about the middle of June, and to be threshed between wet and dry, leaving part of the seed with the hay, which will be as good as corn and hay together, even if the seed is not amongst it. It must be mowed again in the middle of September, and threshed like the first. Mr. Rocque adds, I now (December 1763) actually keep a horse with only the Burnet hay or straw, and every body is astonished to see how well he looks: and Burnet is of such a strong nature, that when horses feed upon it, their flesh is so firm, that the highest-kept horses are not to be compared to those fed upon Burnet, for firmness of flesh. The chaff, he believes, is as good as Pollard for a horse; and in his

^b Essays, 2. 46.

^c Vol. 6. 157.

^d Id. 5. 253, 257.

^e Id. 4. 36.

^f Id. 5. 157.

^g Id. 5. 299, 300.

opinion, when cattle are fed upon it, we shall have firmer meat than ever we had^b. When horses have the grease, he advises them to be turned in upon the Burnet, but observes, that it is only the first crop which has this effect. He affirms that it is always green, even when the seed is ripe; and that no dry weather stops or injures it; insomuch that he has seen Fennel perish, whilst Burnet remained green and thriving¹.

Large allowance is to be made for the partiality and feelings, both of a man who has introduced a new object to public notice, and of those who from some cause have been disappointed in their great expectations.

A neighbour of Mr. Rocque's, early in november 1763, saw his plot of Burnet: it had been cut at the end of september, looked then very fresh and vigorous, and had acquired a considerable growth since the cutting. He also saw some hay made of it, in Mr. Rocque's barn: it was not bad, but would have been excellent had it not been left till the seed was perfected, and had it not been got up in a wet season. The best time, he justly says, to make Burnet into hay, is just before it begins to flower, as it is then fullest of sap, tender and nourishing: when the seeds are left to perfect, the stalks are apt to grow sticky.

Burnet, he adds, is not only a wholesome food for cattle, but they are remarkably fond of it both in a green and dry state: this, with its vegetating in the cold winter months, should induce farmers to sow it, especially as there is no fear of its thriving in almost any soil, and it is a quick grower^k.

Mr. Rocque himself informs us in another place that the first crop of Burnet purges horses, as well as the strongest physic, for three days successively; and that being at Lord Uxbridge's in august 1764, he saw six horses feeding upon three acres of Burnet: they had been turned upon it three weeks and four days; they purged excessively the three first days, but the fourth day it stopped, and they then throve amazingly. The Burnet grew faster than the horses could eat it, though the land is gravelly and full of large stones¹.

Mago, who was a well known character, and a very good farmer, informs us, that he rode several times during the winter of 1764-5 by Mr. Rocque's Burnet; that there were four acres of it; that they looked surprisingly well, and were a fine deep feed^m.

This gentleman having first heard of Burnet in the spring of 1763, in july 1764 sowed a piece of ground with five pounds of Rocque's seed; and in the october and march following planted it out on four acres of light hot land: the summer was very dry, his plants however stood it out, and were of a beautiful verdure; the weeds were kept down, and about 160 pounds of seeds were collected by hand: part was then mowed, and afterwards four cows and two horses were turned into the field. The cows ate very freely, preferring the lower part as being most leafy; the horses took stalks and all without distinction: but at first the horses did not seem to like it so much as the cows. After these had been two or three days on the Burnet, the butter and cream were perceptibly improved in flavour. The coach-horses lived upon it near a month, and throve very much, after a day or twoⁿ.

Christopher Baldwin, Esq. of Clapham Common made several experiments on Burnet in the years 1763 and 1764. In july 1764 he sowed eight rods of ground with five pounds of Rocque's seed, and in the autumn and spring following transplanted it on four acres. The plants were once hoed, and stood over for seed. When that was got, four cows and two horses were turned in. The cows fed freely on it, but the horses did not seem to like it much at first, though in two or three days they fed well upon it. In four or five days the cows increased much in milk, and the cream was superior in flavour. The horses were afterwards fed in the stable about five weeks with the haulm from which the seed had been thrashed; and they throve much upon it, though they had only half their allow-

ance of oats. The next winter four cows were turned in, which were in very good feed on natural grass, and had besides a large truss of oat-straw put in their cribs every night, yet they gave very little milk, and indeed were almost dry. They had not been in the Burnet above six days, before they gave much more than double the milk, of an exceeding fine quality, and soon began to leave half their straw in the cribs. Mr. Baldwin's land is dry poor upland gravel^o.

The Earl of Northington sowed an acre of Burnet at the Grange by way of experiment. The soil was light, but rich enough for wheat or any other common grain. It was sown by itself broadcast, kept clean, and mown once the first year; the second twice, once for seed, and once for green food: horses, hogs and sheep fed freely on it, which was supposed to depend upon not giving it them when too old and stalky. When Mr. Young saw it in 1767, it was two years old that spring, was standing for a crop of seed, not having been cut that season, and was a very fine thick crop, of great bulk, with very few weeds in it^p.

Mr. Johnston of Ilford had one rood drilled in rows two feet asunder, and one acre in rows at three feet distance; both very fine crops in 1767. The year before he fed cows and horses with the produce of the rood; both eat it very freely, and even with greediness. The land is dry and gravelly^q.

Mr. Young also viewed an acre of Burnet at Stoak in Norfolk, which was three years old in 1767: it was sown broadcast on a good loam, and kept perfectly clean from weeds a year at the expense of above two guineas; but it answered very well, for it has every year yielded a great quantity of hay, besides luxuriant food so early as the month of february for many horses. It was a regular crop, and appeared to grow very quick^r. He remarks that Lord Clare had a piece of Burnet at Gosfield for his deer in winter, which answered extremely well^s.

Mr. Young observes, it appears extremely clear from these minutes, that the idea of cattle disliking Burnet is a most mistaken one: and that the trial at Stoak is perfectly satisfactory, particularly in the point of having a luxuriant head of food for sheep and horses in january and february, which no other grass would give^t.

Mr. Young relates an experiment made by Mr. George Sisson, a farmer of Bridge Casterton in the county of Rutland, in may 1767, upon an acre of light sandy land, in Ingthorp lordship, which turned out very advantageously, and when Mr. Young saw it was a fine after-crop, the first having been mowed for hay. He sowed fourteen pounds of seed, and in july 1768 he mowed it, and having threshed it, he had twenty-three bushels of seed, which weighed five hundred sixty-two pounds and a half^u.

Sir Digby Legard, in april and may 1766 and 1767, sowed twelve acres with Burnet seed, twelve pounds to the acre, on light loam well prepared; the seed was sown by hand and without corn. The first year's crops were a ton on an acre; the next year better, but the third much inferior. The produce of seed very great. The hay is coarse, but cattle will eat it. Cows and horses in general eat it very greedily, but some horses dislike it at first. Three acres yielded fourteen bushels of seeds in 1767, one bushel of which weighed twenty-four pounds^x.

Mr. Searanche, at Hatfield, on an upland gravel, sowed Burnet by itself, after a complete fallow and manuring with saintfoin, and also with oats. It was kept clean for a year by hand work. For hay he esteems it as nothing; but good for cows, making fine butter; and also very early for sheep. It stands the rigour of the severest winter without being damaged.

Mr. Dalton, at Sleningsford, on a shallow light loam on limestone, sowed five acres with barley in 1767. It was fed down the first spring by forty sheep, three weeks in april, after which it stood for hay, and yielded

^b Id. 1, 298, 308.

¹ Id. 4. 177.

^k Id. ib. 462.

^m Id. ib. 229.

ⁿ Id. ib. 230.

^o Id. 6. 28.

^p Id. ib. 259.

^q Young's Six week's tour. 5. 204.

^r Id. 237.

^s Id. 1. 33.

^t Id. 2. 75.

^u Id. 7. 346.

^x Six month's tour through the north of England, 1. 71.

^y Id. 2. 41.

a large cart load by the acre. Very good, and eaten freely by cattle.

From these trials, Mr. Young observes, it appears clearly, that Burnet will abide the winter's frost, yield plenty of green feed early in the spring, and make cows yield very fine milk; and that horses feed on it both green and in hay.

There is only one minute against it, which is Mr. Hewet, of Bilham, on a fine light hazel mould, in drills, and kept perfectly clean. He says, no cattle whatever would eat it, unless absolutely forced by hunger^y.

Mr. Young, in his Eastern Tour^z, says that in summing up his intelligence concerning Burnet in his tour of 1768, he found the accounts very contradictory. That it is a good pasture in some places, and a bad one in others, he justly looks upon as highly improbable; and imputes the diversity of accounts to circumstances unrelated, or in some instances perhaps to prejudice.

Cattle, he observes, may have been turned into it, after it had got a head and was near feeding; then it is generally agreed they will not touch it. But so it is with Ray-grass; what is that good for as feed after midsummer?—The seed of Burnet having fetched a good price, much has been seeded, and the *straw* has been too often confounded with the *hay*. The original intention of it was for a winter pasture; and in that season cattle will eat and thrive on food, which at other times they will not touch: this has not been sufficiently attended to. Cattle may have been turned into a Burnet field so hungry, that they might feed on it for a time, without proving it to be good food in general. From actual practice however several facts may be deduced.

First, the balance of the account is greatly in favour of Horses eating it in the common manner of all other food.

Secondly, we cannot deny it to be a good food for Sheep, and the balance of intelligence lies much in favour of it.

Thirdly, in a few instances Cows and Oxen dislike it, but in many they eat it freely.

Upon the whole the reports are favourable: but the proper application of Burnet seems to be, to leave it a good head in autumn ready for sheep in the spring, for them to keep it down as close as possible about two months, upon the plan of Ray-grass; and after that to let it stand for a crop of hay.

But the most advantageous method seems to be, to sow it with other grasses in laying down land to pasture.

Since these observations of Mr. Young's were made, there have been other trials of Burnet.

Mr. W. Pitt, of Pendeford near Wolverhampton, in april 1783, sowed an acre of Burnet instead of the usual feeds, in the midst of a field of barley, the rest of the field being seeded with clover and ray-grass. The seeds came well, and the following autumn it was pastured with sheep and horned cattle. The sheep preferred the clover and ray-grass; but the horned cattle seemed to prefer the Burnet. It was hayed up at Christmas, and notwithstanding the great inclemency of the weather at Lady-day, the Burnet was a good picking for cows. It evidently preserved its verdure in severe weather much beyond clover^a.

The same excellent cultivator, in his Agricultural Survey of Staffordshire^a says, that Burnet has been sown by many persons there of late years, and by some on a broad scale; that he knows it by experience to be a valuable addition to cow pastures; cows preferring it to clover: that Mr. Miller, a very attentive neighbour of his, who keeps a large dairy, and has for some years back sown large quantities of it, is so very partial to Burnet, that he would have sown ten hundred weight of the seed, could he have procured it. Certainly, says Mr. Pitt, it is a good mixture with other herbage, with which it interferes little, drawing its nourishment deep from the earth by a long tap root.

^y Id. vol. 4. p. 70.

^z Vol. 4. p. 131. letter 35.

^a Young's Annals, 1. 394.

He thinks that sheep and horses prefer clover, and he allows that it is by no means so productive as broad clover, by one third.—However he esteems it a good plant to sow instead of ray-grass with clover or trefoil; being abiding, and extremely hardy, bidding defiance to frost, coming very early in the spring, and sustaining the chilling blasts of the east wind without fading. It has also the property of preserving hay from overheating in the stack^b.

That sheep eat wild Burnet when young appears from many of our chalk downs, particularly Salisbury-plain between Salisbury and Everley, where this plant forms almost the whole staple of the herbage over a great extent of that most excellent sheep-walk. It is kept sheared very close by the large flocks which depasture on it every day, except here and there a flower-stem which is left growing. Hence Dr. Withering observes, he has no doubt but that it is a most valuable plant in hard-stocked sheep pastures^c.

To ascertain how far sheep are fond of cultivated Burnet, Thomas Le Blanc, Esq. of Cavenham in Suffolk, in october 1782, sowed a space, several perch square, with Burnet-seed and rye, being part of a hundred acres laid to ray-grass, trefoil and white clover; the soil a blowing sand upon a chalk bottom. It was folded for the rye. The 5th of april 1784 between six and seven hundred sheep were turned in. The grasses were in general backward, but the Burnet was much forwarder than the rest. For the first two or three days they did not eat it at all; but a fortnight after it was eaten to the ground, and on the 4th of june it was pared close. When a flock has so large a range as a hundred acres, and the growth of any small spot is eaten up so clean, it is a far more satisfactory proof that the sheep have no dislike to the plants growing there, than if they were confined to a small field with no other herbage^d.

On this decisive experiment Mr. Young makes the following very pertinent observations.—On three-fourths of the sheep-walks in England, ray-grass is the only plant used, or sometimes broad clover on soils much too poor for it. Granting the necessity of some ray-grass, is it not a great object to introduce other plants, not so exhausting, that shall have the same or superior qualities? There is no doubt of the exhausting quality of ray-grass; but the broad leaf of Burnet, and its deep carrot root indicate the contrary effect, and accordingly in several trials it has been found to ameliorate. The poorest soils in the kingdom agree well with it; and the hot pungent quality of the plant has been found exceedingly beneficial to sheep touched with the rot.

The assertions that were made for some years against Burnet resulted from attempting to feed it when too much grown. The right time to feed it with sheep is while it is in its young yellow shoot, and in that period of its growth nothing refuses it.

Mr. Le Blanc also, in the spring of 1788, laid down an acre of inclosed good but loose sand, with ten pounds of Burnet seed. He kept it in autumn for sheep feed, and fed it bare in the spring accordingly. At the end of may it was risen again to be a fine regular growth, and produced seven bushels of seed. In the spring of 1790 he fed it again with sheep. In part of the same field were turnep-rooted cabbages. When sheep and cows were turned in promiscuously they did not begin the burnet till the cabbages were eaten; but at last they eat it bare as a board to past the middle of april^e.

J. William Allen, Esq. of Whipstead made an experiment on a strong tenacious loam, on a clay bottom. Five roods of this land were summer-tilled in 1791, and in the spring of 1792 sown with barley, at the same time twenty-eight pounds of Burnet were harrowed in. The Burnet looked well after harvest, and at michaelmas was about six inches high. The 5th of april he turned in thirty Norfolk ewes and lambs; they eat it greedily, and in three weeks had trimmed it so

^b Idem, 3. 366.

^c Arrangem. of Brit. plants, p. 494. ed. 3. note.

^d Young's Annals, 2. 168.

^e Idem. 16. 355.

much as to become restless, and were therefore removed. On the 1st of May nineteen Leicester ewes with twenty-three lambs were turned in till the 10th, when the field was shut up for seed. It was mowed on the 20th of July, and produced three quarters and two bushels of clean seed. The straw was laid up for winter provision for sheep; and the horses are very fond of the chaff^f.

Robert Proctor Anderdon, Esq. thinks Burnet so healthy a grass for sheep, that he earnestly recommends it to all farmers to interperse some of it in every field sown with grass-seeds to remain in pasture; for he conceives it to be warm and astringent, having put sheep that scoured into such of his fields as abound with it, by which they have soon been visibly benefited^g.

His cows, in a dry summer, being put into an old hilly pasture, where Burnet grows naturally, produced an amazing increase of milk^h.

From the above accounts we may collect the utility of this plant properly cultivated on a suitable soil. The produce of it, both in hay and seed is considerable; the pasturage, not only in autumn and spring, but in winter, maintaining its growth and verdure in drought and frost, render it particularly valuable; in general cattle and sheep are fond of it, and grow fat by it; the milk, cream and butter of cows feeding on it are excellent in quality and great in quantity: it will flourish and afford large crops on sandy, gravelly and shaley soils. These are valuable qualities, and yet Burnet is not cultivated to any great extent, nor is it generally admitted that cattle and sheep will always eat it; and with respect to horses many deny that they will crop the herbage willinglyⁱ.

There are some varieties of the common upland Burnet scarcely worth mentioning: as one that is much smoother; a second that has no smell; and a third with larger seeds.

The differences between this and the great Burnet (*Sanguisorba officinalis*, *Linn.*) have been given above. Some confusion has arisen from the Burnets and Burnet-Saxifrages having all had the name of *Pimpinella* in old authors. The Burnet-Saxifrages (*Pimpinella Saxifraga et magna*, *Linn.*) are, as all botanists know, extremely different, being umbellate plants. Dr. Anderson still calls the cultivated Burnet *Pimpinella sylvestris*, which is the name of the Great Burnet in Gerarde's herbal.

2. Stem the thickness of the finger, rough with the dried rudiments of the petioles. Leaves unequally pinnate, very smooth, shining above, paler underneath. Petioles clustered on the top of the stem, sheathing at the base. Leaflets nine to nineteen, subopposite, sessile, truncate at the base. Flowering branches slender, angular, procumbent. Leaves on them few, with roundish leaflets, sometimes obovate or even linear. Peduncles few, long, unequal. Head of flowers long. Germ inferior, four-cornered. Calyx four-parted. Stamens about twenty; with violet-coloured filaments. Drupe wrinkled, sharp-pointed at both ends, coriaceous.

Native of Barbary near Tlemsen, in the fissures of rocks; flowering early in spring^k.]

3. This is a biennial plant, decaying soon after the seeds are ripe. Leaves like those of Agrimony, composed of three or four pairs of oblong leaflets, placed a little alternate; they are deeply indented, and have an agreeable scent. Stems two feet high, with one of these leaves at each joint, gradually diminishing in size to the top; and just above the leaf arises a long peduncle, which supports two or three small ones, each sustaining a small roundish spike of flowers. These appear in July, and are succeeded by seeds which ripen in autumn.

[Desfontaines remarks, that the whole plant is villose, and of an ash-colour; the leaflets ovate.

The drupe is smallish, ovate-oblong, attenuated to both ends, wrinkled, obscurely four-cornered, bay-

coloured, one-celled: rind coriaceous, thin: shell cartilaginous, ferruginous on the outside. Seed cylindrical-acuminate, bay-coloured^l.

Native of the South of France, Italy and Barbary. Cultivated in 1683, by Mr. James Sutherland^m.

4. Native of the Canary Islands, where it was found by Mr. Francis Masson. Introduced in 1779. It flowers in March and Aprilⁿ.]

5. This has a shrubby stalk, rising about three feet high, and dividing into several slender branches armed with sharp branching thorns. Leaves very small, unequally pinnate with six or seven pairs of opposite leaflets, of a lucid green and continuing all the year. Flowers of an herbaceous colour, in small heads at the ends of the branches: they appear the beginning of June, and there is a succession of them most part of the summer; but those only which come early, are sometimes succeeded by seeds in England.

[Drupe globular, obscurely angular towards the base, red: rind spongy, very thick: shell elliptic, sharp-pointed at both ends, bony, two-celled. Seeds semi-cylindrical, pale yellowish, with a chestnut-coloured area at the base^o.

Native of the Levant; the foot of Libanus, Candia and several islands of the Archipelago.—Cultivated by Gerarde in 1596^p.]

PROPAGATION AND CULTURE.

1. Common or Small Burnet is easily propagated in gardens for salads, &c. by seeds sown in autumn, soon after they are ripe. If sown in the spring, the seeds frequently lie in the ground till the spring following. If the seeds be permitted to scatter, the plants will come up in plenty; and if these be transplanted into a bed of undunged earth, at about a foot distance every way, and kept clean from weeds, they will continue some years without farther care, especially if the soil be dry. Burnet may also be increased by parting the roots in autumn, but as it grows so freely from seeds, this method is seldom practised.

[Field Culture of Burnet.]

Mr. Rocque directs the ground to be prepared for Burnet in the same manner as for Lucerne; to be ploughed or trenched as deep as the staple will admit, and to be well dunged: the seed to be sown broadcast without corn, twelve pecks to the acre, in April, or any of the succeeding months till August; before sowing, harrow and roll; after sowing, harrow with a light harrow and roll again; ten days after the seed will come up with a round leaf; but it is generally said by others that the seed takes about twenty-three days to vegetate: keep the crop very clean the first year, and it will keep itself clean afterwards^q.

Unless it be sowed early, Burnet must not be grazed the same summer, because when young it bleeds too much; but it should be left till February or March; it may then be fed till the beginning of May, when the cattle should be taken out, and it may be mowed for seed about the middle of June.

For Burnet after Turneps, Mr. Rocque directs, after the Turneps are cleared off, suppose in March, to plough the same depth as was ploughed for the Turneps; then about the middle of May to trench-plough it, to break the staple, and facilitate the growth of the roots; in the middle of June trench-plough again, but no deeper than the first time, not to bring up the dead earth. Harrow and roll well, and then sow; after which run a light harrow over it, not to bury the seed too deep, and roll it again: then let it lie till August, when if there are any weeds harrow backwards and forwards, and if there should be occasion hoe or hand weed it^r.

A dry soil suits Burnet best. It grows in stony and gravelly lands, but its natural bed is calcareous. The ill success which has sometimes attended this crop may perhaps be owing to its having been sowed in a soil improper for it. We have seen however that

^f Id. 21. 171.

^g Bath papers, vol. 2. p. 58.

^h Id. ib. p. 60. note.

ⁱ Museum rusticum, vol. 6. 159. note, and 240. note.

^k Desfontaines.

^l Gartner.

^o Gartner.

^m Hort. kew.

^p Hort. kew.

^r Id. ib. 460.

ⁿ Idem.

^q Mus. rust. 1. 296.

it succeeded in one instance in strong land, but perhaps the subsoil was marly. It will not do where water settles on the surface, or on a wet bottom.

Burnet will not succeed on new broke-up land, but a crop of oats or potatoes should first be taken. The ground should be worked very fine for this crop¹.

Others have transplanted Burnet in rows with good success.—Mago sowed five pounds of Rocque's seed in the summer of 1764 broad-cast after peas. At the end of august, when it was six or seven inches high, he mowed it to destroy the weeds. It soon shot up again, and topt the weeds.

By the fourth of october having got two acres of light dry land, that had had a crop of oats, well ploughed twelve inches deep, he planted them with the Burnet; and though it was so late as from the fourth to the tenth of october, the plants in general took, vegetated through the winter, and in the spring were very promising: the rows were twenty inches apart, and the plants were fifteen inches from each other in the rows². In march the same gentleman transplanted two acres more.

Mr. Baldwin also pursued the same method. In the beginning of july 1764 he sowed about eight rods of ground with five pounds of Rocque's Burnet seed. Rain falling soon after, the plants came up and throve so well, that he ploughed up an acre of ground, and planted it on the fourth of october, in rows twenty inches apart, and fifteen inches asunder in the rows. The plants took well, and throve through the winter with surprising vigour. In the spring he planted three acres more, and notwithstanding the uncommon drought of the summer, the whole grew well, without being watered. The plants were once hoed, and stood over for seed. Cows and horses were turned in, and they having fed it down, it was hoed again and harrowed once over.

Mr. Baldwin afterwards sowed twelve acres broad-cast, after oats, with 160 pounds of seed, on the 26th of august: no rain falling till the 18th of september, the plants did not appear till the 28th. His land is poor dry upland gravel³.

Other gentlemen have practised the drill husbandry with equal success, on Burnet. It has been sown indifferently in spring and autumn, but most commonly in the former season: with corn and without, but seemingly to most advantage alone.

For hay it should be mown when in full blossom. When mown for seed, much of it will be lost; for what is full ripe is apt to shed, and as it ripens successively, some will be quite green, when the forwardest is quite mature.]

3. Sow the seeds in autumn, and the plants will come up in spring: thin them and keep them clean from weeds. The second year they will flower, ripen their seeds, and decay.

4, 5. These may be increased by slips or cuttings, planted in a bed of light earth, during any of the summer months; cover them close with a hand or bell-glass and shade them from the sun. When they have taken root, take them up, and plant them singly in small pots, filled with fresh undunged earth. Place them in the shade till they have struck root, and then remove them to a sheltered situation. When frosts come on, place them under a hot-bed frame. They require little water, especially in cold weather.

[**POTHOS** (of Pliny. *Πόθος* of Theophrastus. It signifies desire. Pausanias calls Cupid by this name.)

Lin. gen. n. 1031. Reich. n. 1122. Schreb. n. 210. Juss. 24.

Class. 4. 1. Tetrandria Monogynia.—olim Gynandria Polyandria.

Nat. order of *Piperitæ*. *Aroideæ*, Juss.

GENERIC CHARACTER.

CAL. *Spathe* globular, one-leaved, gaping on one side.

Spadix quite simple, thickened, covered all over with sessile fructifications.

Perianth none, unless the corolla be taken for it.

COR. *Petals* four, wedge-shaped, oblong, erect.

¹ Id. 4. 177.

² Id. ib. 229.

³ Id. 6. 259.

STAM. *Filaments* four, widish, erect, narrower than the petals, and of the same length. *Antbers* very small, twin.

PIST. *Germ* paralleliped; truncate. *Style* none: *Stigma* simple.

PER. *Berries* aggregate, roundish, two-celled.

SEED single, roundish.

ESSENTIAL CHARACTER.

Spathe. *Spadix* simple, covered. *Cal.* none: *Pet.* four, *Stam.* four. *Berries* two-seeded.

SPECIES.

1. *Pothos scandens*: *Climbing Pothos*.

Lin. spec. 1374. Reich. 4. 76. Willd. 684. fl. zeyl.

n. 329. Burm. zeyl. 197. Lour. cochinch. 532.

Appendix duplo folio. Rumph. amb. 5. 490. t. 184.

f. 1, 2, 3.—t. 181. f. 2. Lour.

Ana-parva. Rheed. mal. 7. t. 40.

Petioles the breadth of the leaves, stem rooting.

2. *Pothos acaulis*. *Stemless Pothos*.

Lin. spec. 1675. Syst. 829. Reich. 4. 76. Willd.

684. Jacqu. amer. 240. t. 153. pict. 118:

t. 231.

Planta innominata. Plum. amer. t. 57:

Leaves lanceolate quite entire nerveless.

3. *Pothos lanceolata*. *Lance-leaved Pothos*.

Lin. spec. 1373. Reich. 4. 76. Willd. 684. Plum.

amer. 47. t. 62. fil. t. 206. (Arum.)

Leaves lanceolate quite entire three-nerved, scape three-sided at the tip.

4. *Pothos crenata*. *Notch-leaved Pothos*.

Lin. spec. 1373. Reich. 4. 76. Willd. 685. Plum.

spec. 4. ic. 39. (Arum.)

Leaves lanceolate crenate.

5. *Pothos violacea*. *Violet-fruited Pothos*.

Lin. spec. Willd. 685. Swartz, prodr. 32. descr.

270. Brown. jam. 333. n. 13.

Dracontium scandens. Aubl. guian. 836. 3.

Leaves ovate-lanceolate entire nerved dotted.

6. *Pothos crassinervia*. *Thick-nerved Pothos*.

Lin. spec. Willd. 685. Jacqu. ic. rar. 3. t. 610.

collect. 4. 122.

Leaves oblong acuminate quite entire veined, with the midrib of the leaf three-keeled.

7. *Pothos cordata*. *Heart-leaved Pothos*.

Lin. spec. 685. Reich. 4. 76. Willd. 685. Plum.

spec. 4. ic. 38. fil. t. 205. (Arum.)

Leaves cordate, lobes imbricate, spadix nearly equal to the spathe.

8. *Pothos macrophylla*. *Large-leaved Pothos*.

Lin. spec. Willd. 686. Swartz, prodr. 33. descr.

269.

P. grandifolia. Jacqu. ic. rar. 3. t. 610. collect. 4.

121.

Dracontium cordatum. Aubl. guian. 2. 836. Plum.

amer. 48. t. 63.

Leaves cordate, lobes divaricate, spadix much longer than the spathe.

9. *Pothos pinnata*. *Pinnate-leaved Pothos*.

Lin. spec. 1374. Reich. 4. 77. Willd. 686.

Lasia aculeata. Lour. cochinch. 81. 103?

Appendix laciniata. Rumph. amb. 5. 489. t. 183. f. 2.

Leaves pinnatifid.

10. *Pothos palmata*. *Palmate-leaved Pothos*.

Lin. spec. 1374. Reich. 4. 77. Willd. 686. Plum.

amer. 49. t. 64, 75. (Dracontium.) fil. t. 207,

208. spec. 5. (Dracunculus.)

Leaves palmate, lobes nine lanceolate blunt.

11. *Pothos digitata*. *Digitate-leaved Pothos*.

Lin. spec. Willd. 686. Jacqu. ic. rar. 3. t. 611.

collect. 119.

Leaves digitate about nine oblong sharpish.

12. *Pothos pentaphylla*. *Five-leaved Pothos*.

Lin. spec. Willd. 687.

Dracontium pentaphyllum. Aubl. guian. 2. 837. t. 326.

Leaves digitate quinque ovate acuminate.

13. *Pothos foetida*. *Stinking Pothos* or *Scunk weed*.

Ait. kew. 3. 319.

Arum n. 12. Mill. dict.

Leaves cordate, spadix subglobular.

DESCRIPTIONS, &c.

1. This is a shrub climbing like Ivy, throwing out fibres as that does, by which it adheres to walls and the trunks

trunks of trees. Branches round. Leaves distich, alternate, lanceolate, striated, smooth, quite entire, on a membranaceous petiole, as in the Orange. Fructification axillary, solitary, peduncled, reflex^x. Spike globular in this: oblong in the following species^y.

Loureiro describes the leaves as much wider than the petioles, which are long, half embracing, and alternate. Flowers pale. Berries red, subovate, juicy, small, containing one or two seeds.

Native of the East Indies and Cochinchina. Loureiro says that Rumphius's *Appendix duplo folio*, referred to this plant by Linneus, is not a *Pothos*, but *Flagellaria repens*.

2. This is also parasitical, and in habit resembles the Aloe. It has no stem. Leaves wedge-lanceolate, acuminate, smooth, on a short petiole, coriaceous, somewhat rigid, numerous, radical, a foot and half or more in length. Scape axillary, round, a foot long. In Martinico they call it *Queue de rat* from the form of the flowering spadix^z.

Native of South America, and the islands of the West Indies. Jacquin observed it in the vast mountain woods of Martinico.

3. This was found by Plumier in South America.

4. Found in the island of St. Thomas by Plumier^a.

5. This is a subparasitical plant, with thick long filiform simple smooth whitish roots. Stems several, heaped, two or three feet long, rooting, simple, thickish, round, stiff, knobbed, sheathed, leafy, smooth. Sheaths at the knots of the stem or at the insertion of the petioles, surrounding the stem, of a netted texture, ferruginous. Leaves scattered, alternate, acuminate, convex, dotted but not perforated, membranaceous. Petioles thickish, middling, round, channelled above, smooth, sheathing at the base. Scapes from the bosom of and scarce longer than the petioles, erect, round, smooth, solitary, three-cornered. Spathe ovate, concave, entire, shorter by half than the spadix, spreading. Spadix half an inch long, cylindrical, green. What Linneus calls the corolla consists of four triangular valves retuse at the tip, not to be distinguished but in the berry-bearing spadix. Filaments four, like petals, membranaceous, whitish, permanent, within the valves, closing up the germ, concealed so that the anthers appear to sit on the stigma. Anthers twin, with one-valved lobes. Germ roundish. Stigma bifid. Berry rolled up in the valves at the base, pellucid, violet-coloured, four-seeded. Seeds oblong, remotely disposed in a square, white.

Native of Jamaica, on the highest mountains, at the roots and on the trunks of trees^b.

Browne observed it in the woods above St. Ann's bay; and says, that it sticks pretty close to the trunk of whatever tree it grows upon, but seldom runs above two or three feet in length.

Aublet found it in Guiana.

6. This is a parasitic species, growing on trees in hilly woods in South America. The whole plant is smooth; the roots numerous, cylindric, long, of the thickness of a quill, outwardly whitish, inwardly green: the radical leaves are several, oblong-lanceolate, pointed, perfectly entire, without veins, coriaceous, firm, upright, of a bright green, a little thickened at the edges, owing to the margin being a little reflected: on the under part, if viewed with a glass, they appear thickly scattered with whitish points; and their length is from about a foot and half to two feet and a half: the midrib is extremely thick, often equalling the thickness of a finger at the lower part, and protuberating on both surfaces: the footstalk is a finger thick and three or four inches long; flat above; round or a little subangulated beneath: the stipules are lanced, sharp, upright, firm, and three inches long: the scapes several, subcylindric, horizontally spreading, and from one to two feet long. The spathe is lanceolate, and of the length of the spadix, sharp, univalve, flat, hanging, green, but soon growing brown, and afterwards withering: the spadix ascendent, round, thicker than

a quill, and three or four inches long; the whole being very thickly and unequally covered with the fructifications, which are hermaphrodite and tetragonal: the petals pale at the base, and brownish at the top: the filaments white; anthers yellow: germ pale green with the top spotted with brown^c.

7. This very much resembles the next species, but yet it is entirely distinct from it, by having the lobes of the leaves imbricate, the leaves much smaller, and the spadix much shorter^d.

Native of South America.

8. This is a subparasitical, stemless plant. Root knobbed, unequal, thick, fleshy, a foot long, ferruginous-mealy on the outside, of a spongy red substance within, putting forth very long filiform fibres. Leaves all radical, very large, from one to two feet in length, membranaceous, hanging down, veined, nerved behind, smooth on both sides, shining, green. Petioles long, round, channelled, smooth. Peduncles or scapes longer than the petioles, round, smooth. Spathe lanceolate, attenuated, membranaceous, coloured. Spadix a foot long and more, round, thick, nodding, covered with minute florets in clusters, separated by lines cutting each other in squares. Flowers blue^e.

Native of the West Indies and Guiana.

9. Plant six feet-high and stemless. Leaves large and pinnatifid; on round long erect petioles. Scape naked, almost equal to the leaves, quite simple. Leaves, petioles and scapes all beset with many crooked short scattered prickles^f.

Loureiro separates it from *Pothos*, and names it *Lasia*, from *λασιος*, *horridus*, on account of its prickliness. Willdenow remarks that his description and Rumphius's figure do not agree.

Native of the East Indies and Cochinchina.

10. This was found by Plumier in South America. It is parasitic on the trunks of trees: the leaves are often more than three feet long, with a footstalk near four feet long: the leaves are divided in the manner of those of the *Vitex Agnus castus*; they are as thick as strong parchment, smooth, and of a deep green above; somewhat lighter beneath: the divisions of the leaf do not reach to the footstalk, and each is marked by a strong nerve or midrib. The fructifications are born on spikes of more than a foot long.

11. This is parasitic on trees in the hotter parts of South America. Professor Jacquin describes it as flourishing extremely well in the stove, and flowering through the whole summer and autumn, but not perfecting its fruit. It is a smooth plant, with large deep green leaves, rising from channelled footstalks: they are of a subcoriaceous substance, and marked with lateral veins: the spathe is sessile, suberect, green, flat, and leaf-like, but smaller than the leaves. The spathe is finger-shaped, upright, and about two inches long; and very thickly covered with flowers: the petals are white with green tips^g.

12. Native of woods in Cayenne, where it was discovered by Aublet. It differs from the former in having ovate-acuminate leaflets, which are always five in number. The corolla is hexapetalous, and the stamens six. The plant rises with several stems, which are voluble and scandent, and are scattered over the trunks of trees; rooting at the knots or joints. The leaves are alternate and smooth: the flowers numerous, and thickly set on the spadix^h.]

13. This has already been described under *Dracontium fetidum*, which see.

Mr. Miller was favoured with it by Mr. Peter Collinson, (before 1759) who procured it from North America. It flowered two years in the garden at Chelsea, but in a very dry season decayed. The flowers came up before there was any appearance of leaves, the spathe was large, and the spadix short and blunt, the florets were ranged in a sort of chequer-work diagonal to the spadix.

[POUTERIA. See *Labatia*.]

PRASIUM. (*Πρασιον* of *Dioscorides*. *Πρασια* are beds in gardens. *Πρασον* or *Πρασος* is the leek; and *Πρασιον*,

^x Linn. zeyl.

^y Linn. spec.

^z Jacquin.

^a Linn. spec.

^b Swartz, descr.

^c Jacquin, collect.

^f Loureiro.

^d Willdenow.

^g Jacquin.

^e Swartz, descr.

^h Aublet.

is an herb resembling Horehound or Marjoram in Dioscorides and Pliny.)

Lin. gen. n. 737. Reich. n. 795. Schreb. n. 992.

Gartn. t. 66. Juss. 117.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of Verticillatae. Labiatae, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, campanulate-turbinate, erect, bilabiate: upper lip wider, semitrifid, acute; lower lip a little smaller, two-parted.

COR. one-petalled, ringent: upper lip erect, ovate, obsoletely emarginate, concave: lower lip wider, trifid, reflex; the middle segment larger.

STAM. Filaments four, awl-shaped, pressed to the upper lip, spreading, shorter than the upper lip: two shorter than the two others. Anthers oblong, lateral.

PIST. Germ quadrifid. Style filiform, length and situation of the stamens. Stigma bifid, acute, with one segment shorter.

PER. Berries four, at the bottom of the calyx, roundish, one-celled.

SEEDS solitary, roundish.

Obs. The seeds themselves, being clothed with a berried epidermis, have the nature of a berry. Hence we have a tetragynous baciferous plant, by which mark it is distinguished from all other plants of this order.

ESSENTIAL CHARACTER.

Berries four, one-seeded.

SPECIES.

1. *Prasium majus*. Great Spanish Hedge-nettle.

Lin. spec. 838. Reich. 3. 103. hort. cliff. 309.

upf. 173. Gartn. fruct. 1. 321. Desfont.

atlant. 2. 33. Kniph. cent. 4. n. 66. Sabb.

hort. 3. t. 37.

Lamium arboreum perenne creticum. Zan. hist. 112.

Raii hist. 561.

Galeopsis hispanica frutescens, Teucris folio. Tournef.

inst. 186. Shaw. specim. n. 249. Zan. hist. t. 80.

Melissa fruticosa cretica sempervirens, Teucris facie,

flore albo. Mor. hist. 3. 408. f. 11. t. 21. f. 3.

Teucrium fruticans, amplo & albo flore, italicum.

Barrel. ic. t. 895.

Leaves ovate-oblong ferrate.

2. *Prasium minus*. Small Spanish Hedge-nettle.

Lin. spec. 838. syst. 548. Reich. 3. 103. hort. cliff.

309. Retz. obs. 1. 22. n. 67.

Lamium fruticans, Teucris folio lucido, calyce &

flore magno candido, tantilla purpura varie notato.

Cup. cathol. 106.

Melissa fruticosa sicula, calyce amplo patulo. Raii

hist. 568.

Leaves ovate with a double notch on each side.

DESCRIPTIONS, &c.

1. This rises with a shrubby stalk two feet high, covered with a whitish bark, and divides into many branches. The flowers come out from the bosom of the leaves in whorls round the stalks; they are white, and have large permanent calyxes, cut into five points.

[The branches are declining; the leaves are the size of those of Baum, cordate, smooth, blunt, petioled. Whorls of flowers approximating. Calyx large goblet-shaped, with ovate acuminate teeth. Corolla spreading: upper lip entire, obtuse, convex; lower three-lobed¹. Seeds four, like berries, subglobose, convex on one side, angular on the other, turning black when ripe: they have three integuments, the outer fleshy thin and soft, the middle crustaceous and brittle, the inner membranaceous and dry^k. Desfontaines remarks, that some of the seeds are usually abortive.

Native of Spain, Italy, Sicily, Tunis and Algiers, in hedges. It flowers here from June to August.—Cultivated by Mr. Miller in 1729¹.]

2. This has a shrubby stalk like the former, but rises a little higher; the bark is whiter, the leaves are shorter and ovate, and of a lucid green. The flowers are somewhat larger, and are frequently marked with a few purple spots.—Native of Sicily.

¹ Desfontaines.

^k Gartner.

¹ Hort. kew.

[Linneus doubts whether this be sufficiently distinct from the preceding to make it a species, or only a variety. Retzius asserts positively, that there is no character to distinguish them.]

PROPAGATION AND CULTURE.

These plants may be propagated either by cuttings, or from the seeds; if they are propagated by cuttings, they should be planted on a shady border towards the end of April; but the cuttings should not be taken from such plants as have been drawn weak, but rather from those which have been exposed to the open air, whose shoots are short and strong; and if a joint of the former year's wood is cut to each of them, they will more certainly succeed. These cuttings may remain in the same border till they are well rooted, when they may be transplanted into the places where they are to remain, or into pots, that they may be sheltered in winter under a common frame, where they may have as much free air as possible in dry weather, but only require to be screened from hard frost. If they are propagated by seeds (which the plants produce in plenty every year) they should be sown on a bed of light earth in April; and in May the plants will come up, when they require no other care but that of keeping them clean from weeds; and in the autumn following, they may be transplanted in the same manner as before directed for those raised from cuttings, and may be afterwards treated more hardily, as they acquire strength.

A plant or two of each of these species may be allowed to have a place where there are collections of the different sorts of ever-green shrubs, for the sake of variety; especially where the different sorts of Cistus, Phlomis, Tree-wormwood, and Medicago, are admitted, because these are equally hardy; and when a severe winter happens, which destroys the one, the others are sure of the same fate; but in mild winters they will live abroad, especially if they are planted in a dry rubbishy soil, and have a sheltered situation; but in rich wet ground, the plants growing vigorous in summer, are liable to injury from the early frosts in autumn.

[PREMNA. (From *πρεμνον*, stirps, truncus.)

Lin. gen. Reich. n. 823. Schreb. n. 1025. Gartn.

t. 56. Juss. 107.

Class. 14. 2. Didynamia Angiospermia.

Nat. order of Personatae. Vitices, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, campanulate, subbilobate, with the upper segment emarginate, permanent.

COR. one-petalled, irregular, tubulous: mouth quadrifid blunt: the two upper segments erect, shorter, the others spreading.

STAM. Filaments four, erect, middling: the two lower shorter. Anthers roundish.

PIST. Germ roundish. Style cylindrical, shorter. Stigma bifid.

PER. Drupe globular, one-celled.

SEED. Nut nearly four-cornered, four-celled, perforated by the axis.

ESSENTIAL CHARACTER.

Cal. two-lobed. Cor. four-cleft. Berry four-celled.

Seeds solitary.

SPECIES.

1. *Premna integrifolia*.

Lin. syst. 565. Reich. 3. 163. mant. 252.

Cornutia corymbosa. Burm. ind. 133. t. 41. f. 1.

Folium hirci. Rumph. amb. 3. 28. t. 134.

Leaves quite entire.

2. *Premna ferratifolia*.

Lin. syst. 565. Reich. 3. 164. mant. 253. Gartn.

fruct. 1. 269.

Cornutioides. Lin. zeyl. n. 416.

Sambucus zeylanica odorata aromatica. Herm. zeyl.

14. Burm. zeyl. 209.

Leaves ferrate.

DESCRIPTIONS, &c.

1. This is a small tree, much resembling the next species, and perhaps only a variety of it. Leaves ovate or cordate-ovate, obtuse, quite entire. There is an acute-leaved variety with lanceolate-ovate leaves.—Native of the East Indies.

2. Branches

2. Branches round, purplish, with truncated margined scars on them from the fallen leaves. Leaves opposite, petioled, ovate, blunt, even, ferrate, but quite entire towards the base. Stipules sub lanceolate, deciduous. Cymes terminating, first brachiate, then dichotomous. Bractes at the ramifications opposite, linear, minute. Flowers the same size with those of *Viburnum*^m. Calyx orbicular, quite entire, or obsoletely two-lobed, or slightly four-toothed. Drupe berried, small, spherical, rufescent or brown: flesh thin, subcoriaceous; shell bony, subglobular or rounded four-cornered, four-celled, perforated at the axis. Seed one in each cell, ovate, acuminate downwards, convex on one side, obscurely angular on the other, paleⁿ.—Native of the East Indies.]

PRENANTHES. (From *πρηνος*, *pronus*; and *ανθος*, *flos*: from the flower hanging down.)

Lin. gen. n. 911. Reich. n. 990. Schreb. n. 1236.

Gartn. t. 158. Vaill. aët. gall. 1721. 2. 18.

Juss. 168.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Semisfculosæ. Cichoraceæ, Juss.*

GENERIC CHARACTER.

CAL. Common calyced, cylindrical, smooth; scales of the cylinder the number of the corollets; scales of the base few, unequal, very short.

COR. Compound mostly of a single ring of florets; Corollets hermaphrodite, five to eight and more, equal.

Proper monopetalous, ligulate, truncate, four-toothed.

STAM. Filaments five, capillary, very short. Anthers cylindrical, tubulous.

PIST. Germ subovate. Style filiform, longer than the stamens. Stigma bifid, reflex.

PER. none. Calyx cylindrical, converging very slightly at the mouth.

SEEDS solitary, cordate. Pappus capillary, sessile.

REC. naked.

QBS. There is a species, in which the pappus is supported by a stipe.

ESSENTIAL CHARACTER.

Cal. calyced. Florets in a single row. Pappus simple, subsessile. Recept. naked.

SPECIES.

[1. *Prenanthes tenuifolia.* Fine-leaved *Prenanthes*.

Lin. spec. 1120. Reich. 3. 629. Lepich. it. 1.

264. Krock. files. n. 1261. Allion. pedem.

n. 828. t. 33. f. 2. Villars dauph. 3. 151.

P. angustifolia, flore purpureo. *Vaill. aët. 1721.*

193.

Chondrilla angustifolia longifolia integroque folio.

Juss. aët. 1709.

Leaves linear quite entire.

2. *Prenanthes chinensis.* Chinese *Prenanthes*.

Lin. syst. 714. Thunb. jap. 301.

Leaves linear-ensiform entire and toothed.

3. *Prenanthes viminea.* Rushy-twiggèd *Prenanthes*.

Lin. spec. 1120. syst. 714. Reich. 3. 629. Gouan,

hort. monsp. 409. Villars dauph. 3. 152. Krock.

files. n. 1262. Allion. pedem. n. 829. t. 52. f. 2.

Jacqu. austr. 1. t. 9.

Lactuca decorticata. *Forsk. descr. 216.*

Chondrilla viminea viscosa monspeliaca. *Baub. pin.*

130. prodr. 68. 1.

C. visc. caule foliis obducto. *Baub. pin. 130. Raii*

hist. 222. Tournef. inst. 472. Garid. 263.

C. saxatilis viscosa, caule enemidophoro. *Column.*

ecphr. 1. t. 240.

C. saxat. viscoso caule. *Park. theat. 783. 5.*

Fragments of the leaves adhering to the stem.]

4. *Prenanthes purpurea.* Purple *Prenanthes*.

Lin. spec. 1121. syst. 714. Reich. 3. 629. hort.

cliff. 383. Gartn. fruct. 2. 358. Gouan, hort.

409. Scop. carn. n. 963. Jacqu. austr. 4. 9.

t. 317. Pollich, pal. n. 732. Krock. files.

n. 1263. Villars dauph. 3. 150. Allion. pedem.

n. 827. Hall. helv. n. 19.

P. amplexicaulis. *Mill. dict. n. 4.*

^m Linn. mant.

ⁿ Gartner.

Lactuca montana purpureo-cærulea minor. *Baub. pin.*

123.

L. sylvatica purpurea. *Baub. hist. 2. 1005. Raii*

hist. 223.

L. sylvatica. *Gesn. ad Cord. hist. 140.*

L. sylvestris purpureo flore. *Park. theat. 814. 3.*

Sonchus sylvaticus. *Ger. emac. 294. 10.*

S. lævior punnonicus 4, purpureo flore. *Clus. hist. 2.*

147.

β. *Prenanthes purpurea.* *Mill. dict. n. 2.*

Lactuca montana purpureo-cærulea, major. *Baub.*

pin. 123.

Sonchus montanus purpureus tetrapetalos. *Col.*

ecphr. 1. 246. t. 246.

Florets five, leaves lanceolate toothletted.

5. *Prenanthes muralis.* Wall *Prenanthes*.

Lin. spec. 1121. syst. 714. Reich. 3. 630. hort. cliff.

383. fl. suec. n. 692. Hudf. angl. 338. Wither.

arr. ed. 3. 678. Smith, angl. Engl. bot. t. 457.

Curt. lond. 5. 58. 306. Lightf. scot. 431.

Relb. cant. n. 565. Sibth. oxon. n. 661. Fl.

dan. t. 509. Hall. helv. n. 18. Scop. carn. 21

n. 964. Reyg. ged. 1. 191. Pollich, pal.

n. 733. Krock. files. n. 1265. Villars dauph.

3. 151.

Sonchus lævis laciniatus muralis, parvis floribus. *Baub.*

pin. 124.

S. lævior vulgaris 2. *Clus. hist. 2. 146. 2.*

S. lævis sylvaticus 4. *Tabern. 194. Hall. Reich.*

S. lævis muralis. *Ger. emac. 293. 5.*

S. lævis alter parvis floribus. *Park. theat. 805. 2.*

S. fol. sinuato hederaceo. *Merr. pin.*

S. alter folio profundis laciniis sinuato hederaceo. *Lob.*

obs. 119. 1. ic. 1. 236. 1.

Lactuca sylvestris murorum flore luteo. *Baub. hist.*

2. 1004. Raii hist. 223. syn. 162. Petiv. brit.

t. 15. f. 5.

Chondrilla forchi folio, flore luteo pallescente. *Tournef.*

inst. 475. Garid. 106.

Florets five, leaves runcinate.

6. *Prenanthes altissima.* Tall *Prenanthes*.

Lin. spec. 1121. Reich. 3. 630. Pluk. pkyt.

t. 317. f. 2. (Sonchus.)

P. canadensis altissima, fol. variis, flore luteo. *Vaill.*

aët. 1721. p. 194.

Florets five, leaves three-lobed, stem erect.

[7. *Prenanthes chondrilloides.* Chondrilla-like *Prenanthes*.

Lin. syst. 714. Reich. 3. 630. mant. 107. Ard.

spec. 2. 36. t. 17. Krock files. n. 1264.

Lactuca inermis. *Forsk. descr. 144.*

Florets ten, calyxes eight-cleft, leaves lanceolate, root-

leaves undivided somewhat toothed.

8. *Prenanthes japonica.* Japanese *Prenanthes*.

Lin. syst. 714. Reich. 3. 630. mant. 107. Thunb.

jap. 302.

Florets fifteen, root-leaves lyrate, stem almost naked.

9. *Prenanthes alba.* White *Prenanthes*.

Lin. spec. 1121. Reich. 3. 631. hort. cliff. 383.

Gron. virg. 113. 89. Pluk. amalb. 195.

Florets very many, flowers nodding subumbelled, leaves

hastate-angular.

10. *Prenanthes repens.* Creeping *Prenanthes*.

Lin. spec. 1122. Reich. 3. 631. amoen. 2. 360.

t. 4. f. 23.

Hieracium heterophyllum. *Retz. obs. 2. 24. n. 80.*

Creeping, leaves three-lobed.

11. *Prenanthes pinnata.* Pinnate-leaved *Prenanthes*.

Lin. syst. 714. suppl. 347.

Shrubby, leaves unequally pinnate many-paired, leaflets

linear quite entire, panicle compound.

12. *Prenanthes integra.* Entire-leaved *Prenanthes*.

Lin. syst. 714. Thunb. jap. 300.

Leaves oblong entire smooth, panicle contracted.

13. *Prenanthes debilis.* Weak *Prenanthes*.

Lin. syst. 714. Thunb. jap. 300.

Leaves ovate entire, stem almost naked erect.

14. *Prenanthes dentata.* Tooth-leaved *Prenanthes*.

Lin. syst. 715. Thunb. jap. 301.

Leaves oblong toothed smooth, stem panicled.

15. *Prenanthes hastata.* Halbert-leaved *Prenanthes*.

Lin. syst. 715. Thunb. jap. 301.

Leaves hastate embracing toothed, stem branched.

16. *Prenanthes*

16. *Prenanthes humilis*. Dwarf *Prenanthes*.
Lin. syst. 715. *Thunb. jap.* 302.
 Leaves lyrate, lobes obtuse, stem almost naked, flowers terminating in twos or threes.
17. *Prenanthes multiflora*. Many-flowered *Prenanthes*.
Lin. syst. 715. *Thunb. jap.* 303.
 Leaves petioled runcinate, lobes acute toothed, panicle fastigate diffused.
18. *Prenanthes lyrata*. Lyrate-leaved *Prenanthes*.
Lin. syst. 715. *Thunb. jap.* 303.
 Leaves runcinate-lyrate toothed, panicle contracted.
19. *Prenanthes squarrosa*.
Lin. syst. 715. *Thunb. jap.* 303.
 Leaves sessile runcinate, segments recurved toothed.

DESCRIPTIONS, &c.

1. Root perennial, oblong, twisted, oblique, creeping, and here and there putting forth other straight roots. Stems erect, from two to three feet high and more, round, simple, leafy, slender. Leaves alternate, embracing, sessile, bright green. From the axil of each leaf issues a panicle of flowers; the peduncles of which are one or two-flowered. Each flower has five florets, which are purple, as in the fourth species, which this resembles, but the leaves are narrower, and rarely toothed at the base. Native of the South of Europe, on mountains^o.

2. The whole plant is smooth. Root-leaves attenuated at bottom, subpetioled, toothed, a hand in length: stem-leaves, the lower ones sessile, ensiform, toothletted and entire, the upper ones lanceolate, entire, an inch long. Flowers paniced, yellow. Peduncles directed one way, drooping, capillary, naked. Native of China and Japan^p.

3. Root biennial or perennial, oblong, pale yellow. Stems decumbent, from a foot or eighteen inches to two feet or even three feet in length, hard, round, whitish, viscid, striated, branched, covered by a portion of the leaf which is fastened along it. Root-leaves pinnatifid, and resembling those of *Lactuca perennis*: stem-leaves lanceolate, oblong, entire, viscid. Flowers axillary, by threes, almost sessile: calyx cylindrical, a little oval, smooth, composed of five large equal scales, and of four that are smaller, unequal, and membranaceous at the edge next the base: florets five yellow. Seeds oblong, flattened below; terminated by a small sessile egret. It is not easy to distinguish this plant at first sight from *Lactuca saligna*, but the stem partly covered by the leaves, and the sessile egret suffice for that purpose^q.

Parkinson calls it Galen's Gum Succory; and Ray, Wild Lettuce with booted stalks, which is a translation of Columna's Greek name.

Native of the South of Europe; Ray gathered it about Montpellier, and near Messina in Sicily, on rocky hills. It flowers in June and July.

Allioni has another species, which he names *ramosissima* (n. 830.) and figures in t. 33. f. 1. He says it approaches near to *viminea*, but that the latter is three times as high, and has much fewer branches; that the root-leaves are sinuate-pinnatifid, with the extreme pinnule triangular, and that they are firm, not truly runcinate: whereas in *ramosissima* the root-leaves are more tender, truly runcinate, not pinnatifid to the midrib, but only cut to the middle of the leaf, with the extreme pinnule linear-lanceolate. In *P. viminea* there are two, three or even four sessile flowers: the florets are wide, marked with lines, yellow, five-toothed, the length of the calyx; of which the five inner long scales are nearly equal, the five outer are unequal. The stem-leaves are pinnatifid, and have hairs here and there at the midrib.—The leaves in *P. ramosissima* are quite smooth, and not villose underneath, glaucous, even, tender, with a white rib: the stem is branched from the bottom; the branches are erect and simple; the leaves on the branches also are decurrent, lanceolate, and quite entire; there are two or three flowers from the axils of the leaves, with the florets twice as long as the calyx, which has all the

scales imbricate and unequal; the florets are five-toothed, but narrower than in *viminea*.

Native of the county of Nice on the sandy coast; and near Castiglia d'Ivrea. It is biennial and annual.

4. Root perennial, transverse, long, woody, fibrous. Stem erect, three, four or five feet high, much branched towards the top, terminated by nodding panicles of flowers, placed on naked axillary peduncles longer than the leaves. Leaves even, bright green above, glaucous underneath; stem-leaves acuminate, embracing, hooked, spreading, lanceolate, sharply toothed. Calyx green, cylindrical, with unequal scales in two rows, four or five in the inner, three or four in the outer. Florets four or five violet-purple, five-toothed. Seeds oblong, acute, with a sessile egret. Anthers reddish. Filaments white. Style purplish^r.

Villars remarks that this plant varies much; that the stems are even, firm, and cylindrical, very much branched at the end, and frequently at the axils of the leaves; that the stem-leaves are half embracing, and then are lengthened out and wider more or less towards the middle and end; that the whole plant is smooth; that the flowers come out on branches and peduncles divaricating almost at right angles, and very much subdivided; and that the purplish blue florets are five in number, almost always rolled up and oblique, and often pendant.

Receptacle very narrow, papillose, smooth. Seed oblong, attenuated below, obsoletely angular, striated, pale straw-colour. Pappus sessile, caducous; with numerous, silky-white, capillary rays, sparingly toothletted, half as long again as the seed^s.

Gærtner remarks, that *Prenanthes* differs chiefly from *Chondrilla* in having a sessile pappus. Jussieu thinks they might make one genus. But there is no end of such doubts in natural orders, which may be considered as one genus.]

Miller, following Caspar Bauhin, has made two species of this, a larger and a smaller, one four feet, the other only a foot in height, with a more branching stem, and wider leaves embracing it.

[Native of Germany, Switzerland, Austria, the South of France and Italy. Ray found it on mounts Jura and Saleve near Geneva, and in mountain woods between Schaffhausen and Constance.—It was cultivated in Britain by Mr. James Sutherland, in 1683; and flowers from July to September^t.

5. Root perennial, somewhat woody, branched, pale brown, milky. The whole plant smooth, tender, brittle, milky. Stem from one to two or three feet in height, upright, simple, leafy, somewhat flexuose at top, round, glaucous, purplish. Root-leaves very like those of the common Sow-thistle, darkish green, purple on the under side, on long foot-stalks, deeply notched, the lower segments few, somewhat oval, the terminating one somewhat triangular, but with five lobes, the middle one sharp, toothed. Stem-leaves alternate, embracing, nearly similar in figure; deeply notched; segments opposite, toothed, the terminating one largest. Panicle divaricating, flexuose; each flowering-branch subdivided into slender peduncles, bearing one flower, and having one minute ovate or lanceolate bracte. The outer calyx consists of three ovate or lanceolate scales; the inner of five linear leaflets, with membranaceous edges, and commonly coloured. Florets five, in a single row, lemon-coloured, spreading, longer than the calyx. Seeds oblong or obovate, compressed, furrowed, black, furnished with an egret on a flat circular substance on a very short stipe, rays simple, the length of the interior calyx^u.

There is a variety of it with the upper leaves undivided, described by Withering.

Native of many parts of Europe, in woods, hedges, and shady banks in a calcareous soil, and on walls; flowering from July to September. On Hampstead-heath, and Hornsey in Middlesex. On the willows by the old sluice at Grantchester near Cambridge, and

^o Krockner, Allion. Villars.^p Thunberg.^q Villars and Krockner.^r Krockner.^s Gærtner.^t Hort. kew.^u Woodw. Mss. Smith. Withering.

on Chippenham-park wall. On the top of Staunton Harcourt-kitchen, and in Stokenchurch-woods, Oxfordshire. Bishopsgate-street, Norwich. Welwyn in Hertfordshire. Croyden in Surry. Cleifden in Buckinghamshire. Weekly in Northamptonshire. Basford in Nottinghamshire. Peak's-hole in Derbyshire. —Our old authors call it *Ivy-leaved Lettuce*, or *Wall Sow-thistle*.]

6. The lower leaves are four or five inches long, and three broad, they are sometimes divided into five lobes, but generally into three; they are indented a little on their edges, smooth, dark-green above, but pale underneath. Stems three feet high, with a few small entire leaves on them: the flowers come out from the side of the stem in small bunches; they are of a pale yellow colour, and appear in July. There is a variety with pale purple flowers, arising from the same seeds.

Native of Virginia and Canada; according to Mr. Miller, of most parts of North America, where it is called Dr. Witt's Rattle-snake root, the roots being taken for an antidote to the venom of the Rattle-snake. It seldom lives longer than two years. [It is however marked as perennial in the Kew Catalogue; where it is also observed from Plukenet, that it was cultivated in the botanic garden at Chelsea in 1696.

7. Stem panicled. Stem-leaves linear, at the ramifications only, minute: root-leaves lanceolate, petioled, naked, minutely toothed*. Peduncles axillary, slender, not so long as in *purpurea*. Flowers almost as in that, but fewer, not nodding. Panicle narrower, less dichotomous†. Native of the South of Europe.

8. Root-leaves very many, lyrate, smooth, resembling those of *Lapsana communis*: lower lobes alternate, blunt, connected, reflex, angular-toothed, ciliate with a few short hairs; the terminating lobe is very large, blunt, gashed, angular-toothed, ciliate. Stem almost leafless, weak, erect, branched, smooth, from a foot to two feet high and more. Branches alternate, filiform, flowering. Flowers terminating, panicled, yellow. Peduncles and pedicels alternate, capillary, spreading. Bractes under the peduncles bristle-shaped. Calyx many-leaved, erect, smooth; calycle very short, smooth, with ovate acute scales. Native of Japan‡.

Linneus remarks, that the flowers are very numerous and very small; the florets in each about fifteen; and the down longer than the calyx.

9. Native of North America. Introduced in 1778, by Mr. William Young. It flowers in July and August§.

10. Retzius is of opinion that this plant belongs rather to the genus of *Hieracium*. He thus describes it. Stem creeping, rooting. Branches ascending, leafy, smooth. Root-leaves on long petioles, three-parted, with the lobes oval, toothletted: stem-leaves on short petioles, ovate, toothletted. Peduncles from one to three-flowered, scaly. Calyx simple, erect, glaucous, with linear-lanceolate leaflets, somewhat scarious at the edge, calyced as it were with smaller scales at the base. Corollas yellow, about twelve. Egret simple, sessile. Receptacle naked. Linneus had it originally from Kamtschatka; Bladh sent it afterwards from China¶.

11. This is a shrub with roundish resinous branches. Leaves approximating, petioled, a span long, spreading and recurved; pairs of leaflets ten or twelve, very slender and smooth. Panicle large. Calyxes smooth. Flowers small, yellow*. Retzius says that it is undoubtedly a species of *Sonchus*†. It was found by Masson on rocks in the island of Teneriffe‡.

12. Root annual. The whole plant smooth. Stem decumbent at bottom and creeping, then erect, round, striated, simple or panicled, a span high. Lower leaves aggregate, alternate, petioled, obovate-oblong, obtuse, rolled back at the edge, a hand in length; stem-leaves embracing, somewhat toothed,

an inch long. Panicles terminating, roundish. Flowers yellow.

13. The whole plant is tender and smooth. Root annual, fibrous. Stems several, weak, almost upright, few-flowered, a span high. Root-leaves very many, petioled, obtuse, a finger's length: stem-leaves few, sessile. Flowers terminating, one, two or three together, yellow.

14. The whole plant is smooth. Stem round, striated, erect, from a foot to two feet in height. Root-leaves petioled, oblong, blunt with a point, toothletted, a hand in length: stem-leaves embracing, ciliate-toothed at the base and in the middle, acute, a finger's length. Flowering branches rod-like, erect, panicled. Peduncles capillary, spreading, subumbelled.

15. The whole plant smooth. Stem round, striated, flexuose-erect, purplish, two feet high. Branches alternate, spreading, like the stem. Leaves on the stem and branches half embracing, hastate, subspatulate, acute, acutely toothed, nerved, an inch long, the upper ones gradually diminishing. Flowers on the extreme branches and branchlets terminating, panicled, yellow. Panicle roundish, spreading little, with very short peduncles.

16. Root annual, fibrous. The whole plant smooth. Stems radical, several, weak, decumbent or flexuose-erect, a hand in height. Root-leaves many, a finger's length: stem-leaves very few, half an inch long, all petioled; the outer lobe very large, rounded, somewhat toothed; the rest minute, reflexed. Flowers solitary, or two or three together, yellow.

17. Root fibrous, annual. Stem branched at the bottom, erect, grooved, villose, smooth at top, panicled, two feet high. Root-leaves subpetioled, smooth, a span long; lobes difform, angular, bristly-toothed: stem-leaves gradually less. Peduncles flexuose: pedicels capillary.

18. Root fibrous, annual. Stem round, striated, villose at bottom, gradually attenuated at top, smooth, weak, erect, seldom branched. Root-leaves very many: stem-leaves alternate, remote: all petioled, smooth above, villose-scarious underneath, a finger's length, gradually less: lobes angular, toothed; the terminating lobe larger. Flowers terminating, panicled, yellow. Panicle roundish, little spreading, often drooping.

19. Stem fleshy, herbaceous, round, striated, smooth, erect, simple, two feet high. Leaves alternate, attenuated below; pinnae recurved, toothed at the upper margin, glaucous underneath, acuminate, a span long. Flowers terminating, panicled. Panicle oblong, thyrsoid.—All these were found by Thunberg in Japan§.

PROPAGATION AND CULTURE.

These plants are seldom admitted into gardens; but the seeds may be sown soon after they are ripe in a sheltered situation, and when the plants come up, they require no other care but to be kept clean from weeds.

[PRIAPEIA. See *Nicotiana*.

PRICKLY PARSNIP. See *Echinophora*.

PEAR. See *Cactus*.

PRIMROSE. See *Primula*.

——, Nightly or Tree. See *Oenothera*.

—— Peerless. See *Narcissus*.

PRIMULA (*Dimin. from primus, being one of the earliest flowers of the spring.*)

Lin. gen. n. 197. Reich. n. 210. Schreb. n. 258.

Gartp. t. 50. Juss. 96. *Primula veris*, Tournef.

t. 47. *Auricula urli*, Tournef. t. 46.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Precie*. *Lyfimachia*, Juss.

GENERIC CHARACTER.

CAL. *Involucre* many-leaved, many-flowered, very small.

Perianth one-leaved, tubular, five-cornered, five-toothed, acute, erect, permanent.

COR. monopetalous. *Tube* cylindrical, the length of the calyx, terminated by a small hemispherical neck. *Border* spreading, half-five-cleft: *segments* obcordate, emarginate, obtuse. *Throat* pervious.

§ Thunberg, jap.

* Linn. mant. † Krock. ‡ Thunberg.
 § Hort. kew. ¶ Retz. obs. † Linn. suppl.
 † Obf. 5. p. 6. † Linn. suppl.

STAM. Filaments five, very short, within the neck of the corolla. Anthers acuminate, erect, converging, included.

PIST. Germ globular. Style filiform, the length of the calyx. Stigma globular.

PER. Capsule cylindrical, almost the length of the perianth, covered, one-celled, opening with a ten-toothed top.

SEEDS numerous, roundish. Receptacle ovate-oblong, free.

ESSENTIAL CHARACTER.

Involucr. of an umbellet. Cor. tube cylindrical with a spreading mouth.

SPECIES.

[1. Primula verticillata.

Lin. spec. ed. Willd. 800. Vahl. symb. 1. 15. t. 5. Forsk. descr. 42.

Leaves serrate smooth, flowers in whorls.]

2. Primula vulgaris. Common Primrose.

Huds. angl. 83. Wither. arr. ed. 3. 233. Smith, brit. 222. engl. bot. t. 4. Relb. cant. n. 156.

P. veris. Mill. dict. n. 1. Gært. fruct. 1. 233. Blackw. t. 52.

P. veris γ. acaulis. Lin. spec. 205. Reich. 1. 411. Fl. dan. t. 194. Hall. belv. n. 608.

P. acaulis. Jacqu. misc. 1. 158. n. 1. Ait. kew. 1. 192. Curt. lond. 6. t. 16. magaz. 229. Sibth. oxon. n. 224. Abbot, bedf. 44. n. 150. Villars dauph. 2. 467. Allion. pedem. n. 331.

P. elatior β. acaulis. Willd. spec. 800.

P. sylvestris. Scop. carn. n. 204.

P. veris minor. Dod. pempt. 147. 3. Ger. 636. emac. 781. 5.

P. veris vulgaris. Park. parad. 242. theat. 535. 1. Raii hist. 1080. syn. 284.

P. veris pallido flore humilis. Clus. hist. 1. 302.— floribus ex singularibus pediculis majoribus simplicibus. Baub. hist. 3. 497.

Sylvarum primula. Lob. ic. 508. obs. 305. 4.

Alisma sylvarum. Column. phytob. 6. 1.

Verbasculum sylvestre majus singulari flore. Baub. pin. 241.

Leaves toothed wrinkled, scapes one-flowered, border of the corolla flat.

3. Primula elatior. Great Cowslip or Oxlip.

Jacqu. misc. 1. 158. n. 2. Wither. arr. ed. 3. 234. Smith, brit. 223. engl. bot. t. 513. Sibth. oxon. n. 226. Abbot, bedf. 44. n. 252. Ait. kew. 193. Lin. spec. ed. Willd. 801. Fl. dan. t. 434.

Roth. germ. 1. 90. 2. 229. Villars dauph. 466.

P. inodora. Relb. cant. n. 157. Hoffm. germ. 67.

P. veris β. elatior. Lin. spec. 204. Reich. 1. 411. Hall. belv. n. 609.

P. vulgaris β. Huds. angl. 84.

P. pratensis inodorata lutea. Ger. 635. 1. emac. 780. 2. Raii hist. 1081. syn. 284.

P. veris major. Dod. pempt. 147. 1.

P. veris altera. Camer. epit. 884.

P. sylvestris tertia. Tabern. 220.

P. veris caulifera, pallido flore inodoro aut vix odoro. Baub. hist. 3. 496. 2.

P. veris pallido flore elatior. Clus. hist. 301. 2. Tournef. inst. 124. Dale, pharm. 206.

Verbasculum pratense vel sylvaticum inodorum. Baub. pin. 241.

Paralysis altera odorata flore pallido polyanthos. Park. parad. 244. n. 9.

Leaves toothed wrinkled contracted in the middle, scape many-flowered, border of the corolla flat.

4. Primula officinalis. Common Cowslip or Paigle.

Jacqu. misc. 1. 159. n. 3. Ait. kew. 1. 193. Wither. arr. ed. 1. 234. Curt. lond. 6. t. 15.

Sibth. oxon. n. 225. Abbot, bedf. 44. n. 151. Hoffm. germ. 67. Roth. germ. 1. 89. 2. 229.

Scop. carn. n. 205. Allion. pedem. n. 332. Desfont. atlant. 170.

P. veris. Huds. angl. 84. Smith, brit. 223. engl. bot. t. 5. Relb. cant. n. 158. Willd. 800. Villars dauph. 2. 466. Berg. phyt. 61. Bulliard. herb. 171.

P. veris α officinalis. Lin. spec. 204. Reich. 1. 411. Fl. dan. t. 433. Lin. mat. med. 57. hort. cliff. 51.

fl. suec. n. 171. Hall. belv. n. 610. Pollich pal. n. 195. Blackw. t. 226. Plenck, ic. 86.

P. elatior. Mill. dict. n. 2.

P. veris major. Ger. 635. 2. emac. 780. 1. Raii hist. 1081. syn. 284. Camer. epit. 883. Besl. exst. hyem. 4. f. 5.

P. veris odorata, flore luteo simplici. Baub. hist. 3. 495. Tournef. inst. 124.

P. veris flavo flore elatior. Clus. hist. 301. 1.

Verbasculum pratense odoratum. Baub. pin. 241. Fuchs. hist. 850.

Paralysis vulgaris pratensis flore flavo simplici odorato. Park. parad. 244. n. 8.

Alisma pratorum. Column. phytob. 11.

Leaves toothed wrinkled contracted in the middle, scape many-flowered, border of the corolla concave.

5. Primula farinosa. Bird's-eye Primrose.

Lin. spec. 205. Reich. 1. 412. Willd. 802. vir. cliff. 12. hort. cliff. 50. fl. suec. n. 172. lapp. n. 79. Jacqu. misc. 1. 159. n. 4. Ait. kew. 1. 193. Huds. angl. 84. Wither. arr. ed. 3. 235. Smith, brit. 224. engl. bot. t. 6. Curt. lond. 6. t. 14. Dicks. hort. succ. 1. 4. Fl. dan. t. 125. Gunn. norv. n. 26. Gmel. fib. 4. 83.

t. 44. f. 3. Reyg. ged. 2. 52. Hoffm. germ. 67. Roth. germ. 2. 231. Scop. carn. n. 206. Villars dauph. 2. 467. Allion. pedem. n. 334. Kniph. cent. 9. n. 80. Hall. belv. n. 623. (Aretia.)

P. veris rubro flore. Clus. pann. 340. hist. 300. 1.

Ger. 639. emac. 783. 1, 2.

P. veris minor purpurascens. Baub. hist. 3. 498. Raii hist. 1084.

Verbasculum umbellatum alpinum minus. Baub. pin. 242. Raii syn. 285.

Paralysis minor flore rubro. Park. parad. 246.

Leaves oblong toothletted waved mealy underneath, umbel erect fastigiate, border of the corolla flat.

[6. Primula longifolia. Long-leaved Bird's-eye Primrose. Curt. magaz. 392.

Leaves spatulate toothletted naked on both sides, after flowering elongated almost erect, umbel erect many-flowered.

7. Primula cortusoides. Cortusa-leaved Primrose.

Lin. spec. 206. Reich. 1. 413. Willd. 802. Jacqu. misc. 1. 159. Gmel. fib. 4. 85. t. 45.

f. 1. Curt. magaz. 399.

Leaves wrinkled lobed, scape many-flowered.

8. Primula villosa. Mountain Primrose.

Lin. syst. 193. Willd. 803. Jacqu. misc. 1. 159. austr. 5. app. t. 27. Hall. belv. n. 613. Allion. pedem. n. 337. (hirsuta.)

β. P. pubescens. Jacqu. misc. 1. 157. t. 18. f. 2.

P. villosa. Ait. kew. 1. 194. Curt. magaz. t. 14.

Auricula urfi 2. Clus. hist. 303.

Leaves flat serrulate hirsute or subvillose.

9. Primula nivalis. Snow Primrose.

Lin. spec. ed. Willd. 803. Pallas it. 3. app. n. 81. t. 9. f. 2.

Leaves lanceolate flat sharply toothed very smooth.

10. Primula longiflora. Long-flowered Primrose.

Lin. syst. 193. Willd. 803. Jacqu. misc. 1. 159. austr. 5. app. t. 46. Allion. pedem. n. 335. t. 39. f. 3. Hall. belv. n. 611.

Leaves serrate smooth, umbel nodding, tube of the corolla very long.

11. Primula glutinosa. Glutinous Primrose.

Lin. syst. 193. Willd. 803. suppl. 133. Jacqu. misc. 1. 159. austr. 5. app. t. 16. Ait. kew. 194.

Auricula urfi septima. Clus. hist. 304. Pluk. phyt. t. 149. f. 6.

Leaves ferrulate smooth glutinous, leaflets of the involucre very large.

12. Primula marginata. Silver-edged Primrose.

Curt. magaz. 191. Lin. spec. ed. Willd. 804.

Leaves obovate serrate-toothed white-edged, scape many-flowered, leaflets of the involucre shorter than the peduncle.]

13. Primula Auricula. Auricula or Bear's-ear.

Lin. spec. 205. syst. 192. Reich. 1. 412. Willd. 804. vir. cliff. 12. hort. cliff. 50. upf. 36.

Jacqu. misc. 1. 160. n. 9. austr. 5. p. 7. t. 415.

Hall. belv. n. 612. Scop. carn. n. 207. Allion. pedem.

- pedem. n. 336. Kniph. cent. 1. n. 67. Sabb. hort. 1. t. 98.*
- α. *Sanicula alpina lutea. Baub. pin. 242.*
Auricula urfi. Camer. epit. 706. Mill. dict.—prima. Clus. hist. 302.—flore luteo. Baub. hist. 3. 499. Ger. 640 1. emac. 784. 1. Raii hist. 1082. Tournef. inst. 120.—lutea. Park. parad. 238. 12—17.
Yellow Auricula.
- β. *Sanicula alpina purpurea. Baub. pin. 242.*
Auricula urfi flore purpureo. Park. parad. 235. 1. &c. Ger. 640. 2. emac. 784. 2. Raii hist. 1083.
Purple Auricula.
- γ. *Sanicula alpina flore variegato. Baub. pin. 243. Park. parad. 239. 20. & 240. 21.*
Variegated Auricula.
Leaves obovate smooth serrate, scape many-flowered about the length of the leaves.
- [14. *Primula gigantea. Tall Primrose.*
Lin. spec. ed. Willd. 805. Jacqu. misc. 1. 160. Gmel. fib. 4. 84.
Leaves rhomb-ovate serrate smooth, stem few-flowered very tall.
15. *Primula minima. Dwarf Primrose.*
Lin. spec. 205. syst. 193. Reich. 413. Willd. 805. Jacqu. misc. 1. 160. vind. 208. obs. 1. 25. t. 14. austr. t. 273. Hall. helv. n. 614. Scop. carn. n. 209. Krock. files. n. 296.
Sanicula alpina minima. Lob. ic. 871.—carnea. Baub. pin. 243.
Auricula Urfi 8 minima. Clus. hist. 1. 305.—min. flore carneo & niveo. Baub. hist. Raii hist. 1083.—fl. niveo. Ger. 642. 8. emac. 786. 7.
Leaves quite smooth and shining wedge-shaped sharply serrate at the top only, scape few-flowered, (one or two-flowered.)
16. *Primula integrifolia. Entire-leaved Primrose.*
Lin. spec. 205. syst. 193. Reich. 1. 413. Willd. 805. Jacqu. misc. 1. 160. vind. 209. obs. 1. 26. t. 15. austr. t. 327. Hall. helv. n. 615. Scop. carn. n. 208.
Sanicula alpina rubescens folio non ferrato. Baub. pin. 243. Raii hist. 1083.
Auricula urfi quarta. Clus. hist. 1. 303. t. 304.—carnei coloris, fol. minime ferratis. Baub. hist. 3. 868. Scheuch. itin. 1. 31. 2. 131.
Leaves quite entire elliptic, subcrenate-cartilaginous at the edges, umbel erect, calyxes with long tubes and very blunt.
17. *Primula carniolica. Carniolian Primrose.*
Lin. syst. 193. Willd. 806. Jacqu. misc. 1. 160. austr. 5. app. t. 4.
Leaves quite entire elliptic, umbel erect, calyxes acute very short.
18. *Primula sinmarchica. Norwegian Primrose.*
Lin. spec. ed. Willd. 806. Jacqu. misc. 1. 160.
P. norvegica. Retz. scand. n. 240. Fl. dan. t. 188.
Leaves quite entire ovate on long petioles, umbel few-flowered erect, corolla funnel-form.
19. *Primula viscosa. Viscid Primrose.*
Lin. spec. ed. Willd. 806. Allion. pedem. n. 338. t. 5. f. 1.
Leaves ovate quite entire villose-viscid, umbel erect, corollas salver-form.
20. *Primula sibirica. Siberian Primrose.*
Lin. spec. ed. Willd. 806. Jacqu. misc. 1. 161. Gmel. fib. 4. 83. t. 46. f. 1.
Leaves quite entire ovate on long petioles, umbel few-flowered nodding, corolla salver-form.

DESCRIPTIONS, &c.

1. Leaves radical, lanceolate ovate, ending in a flat petiole double the length of the leaves, unequally serrate towards the top, quite entire at bottom, acute, veined, mealy underneath, two inches long. Scape erect, round; the size of a goose quill, a foot high and more. Towards the top are two or three remote whorls, the lower six-flowered, the upper ones many-flowered. Bractes under the lower whorls lanceolate, serrate at top, an inch long; in the terminating whorl lanceolate-subulate, quite entire, all mealy underneath. Pedicels the length of the bractes, roundish, slender,

mealy. Perianth one-leaved, bell-shaped, abbreviated, mealy, deeply five-cleft: segments ovate-lanceolate, acuminate. Tube of the corolla cylindrical, club-shaped, mealy at the base, an inch long^a.—Native of mount Kurma, by rivulets^b.

2. The common Primrose has a perennial root, growing obliquely, appearing as if bit off at the end, beset with thick reddish scales which are the remains of past leaves, sending down numerous very long round whitish fibres; it has a singular smell, somewhat like that of Anise. Leaves obovate-oblong, about a hand's breadth in length, nearly upright, tapering to the base, blunt, veiny, wrinkled, smooth above, hirsute beneath, rolled back at the edge when young, slightly waved, unequally notched, the midrib whitish, terminating in a footstalk of a reddish colour, channelled on one side and keeled on the other. Scapes or peduncles numerous, the length of the leaves, upright, round, hirsute, pale green, having awl-shaped bractes at the base, after the flowering is over bending back. Flowers upright, large, sweet-scented. Corolla of a pale sulphur colour; each of the five clefts obcordate, and marked at the base with a spot of a much deeper yellow; the mouth has a faint rim round it. Filaments either within the tube or at the mouth of the corolla. Anthers oblong, somewhat three-cornered, converging. Germ superior, smooth. Style usually shorter than the tube^c. Capsule ovate, narrower upwards, smooth, opening at top with ten short recurved teeth. Receptacle globular, pedicelled, excavated, loose. Seeds about thirty, very slightly convex on one side, and obsoletely angular on the other, shagreened with raised dots, and of a blackish colour; the navel in the middle of the belly^d.

Native of most parts of Europe, in woods, coppices, hedge-rows and sheltered lanes, particularly in a clayey soil; flowering in march and april with the wood Anemone.

The leaves and root of Primrose seem to partake in some degree of the nature of those of *Asarum*, acting as strong errhines or sternutatories, when snuffed up the nose; the roots act as emetics. Gerarde reports, as from the experience of a skilful practitioner, that a drachm and half of the powder of the dried roots, taken up in autumn, purges by vomit very forcibly, but safely^e.

The flower of the wild Primrose, as every body knows, is of a pale brimstone colour; but in some parts of the country it is found of a purple hue. Its varieties are very numerous, partly wild and partly obtained from culture.

Parkinson enumerates the following:

1. The single white. 2. The single green. 3. The single green and white. 4. The double green. 5. Master Hesketh's double Primrose; which Gerarde says was found in Clapdale-wood near Settle in Yorkshire, by a learned gentleman of Lancashire, called master Thomas Hesketh, a diligent searcher of simples. 6. The ordinary double. 7. The small double.

Gerarde, besides the common, figures the double white and the green Primrose. Johnson has added a figure of Hesketh's Primrose; Mr. Curtis says he has not met with this curious variety in any of the collections about London. The following are the most striking varieties which he has cultivated:

1. The single white. 2. The paper white. 3. The red or purple of various shades. 4. The hose in hose. 5. The double yellow. 6. The deep velvet red. 7. The pale red or flesh-coloured. 8. The dingy purple or Scotch Primrose, which grows wild in Scotland, and is figured in the Flora Rustica. The double yellow is figured by Parkinson and Besser; and the double pink or lilac, a beautiful and much admired variety, is figured in Curtis's magazine. But the varieties of the Primrose, so much esteemed by florists under the name of *POLYANTHUS*, are boundless.

A fine flower of this sort should possess a graceful elegance of form, a richness of colouring, and a perfect symmetry of parts. Its properties are in most

^a Vahl. ^b Forsk. ^c Curtis, Smith. ^d Gartner.
^e Lewis.

respects the same as those of the Auricula, as to the stem or scape, peduncles or flower-stalks, and the formation of the umbel, bunch or thyrse, corruptly called the truss.

The tube of the corolla above the calyx should be short, well filled at the mouth with the anthers, and terminate fluted rather above the eye.

The eye should be round, of a bright clear yellow, and distinct from the ground colour.

The ground-colour is most admired when shaded with a light and dark rich crimson, resembling velvet, with one mark or stripe in the centre of each division of the border, bold and distinct from the edging down to the eye, where it should terminate in a fine point.

The petal (technically the pips) should be large, quite flat, and perfectly circular, excepting the small indentures between each division, which separate it into five (sometimes six) heart-like segments.

The edging should resemble a bright gold lace, bold, clear and distinct, and so nearly of the same colour as the eye and stripes as scarcely to be distinguished^m.

3. The Oxlip has the leaves contracted towards the middle almost as in the Cowslip. Scapes few, erect, longer than the leaves, many-flowered. Flowers umbelled, pedicelled, the outer ones generally nodding; like those of the Primrose in form and colour, but smallerⁿ. From this it is evidently distinguished by its many-flowered scape; as it is from the Cowslip by the flat border of the corolla. If it be a variety, it is rather of the former than the latter. Dr. Smith rather inclines to think that the Oxlip is a hybrid production or mule from a Primrose impregnated by a Cowslip; its habit, the contraction towards the middle of the leaf, and the umbellate flower-stalk, indicating (according to Linneus's ingenious idea) the father; whilst in the corolla, its form, colour and scent, it most resembles the mother^o. To many this will seem fanciful; and to others, since the Oxlip produces fertile seed, it will appear doubtful.

Oxlip is found in woods, thickets, hedges, and sometimes in pastures, but it is by no means so common as the Primrose and Cowslip. Calcareous thickets and hedges in Cambridgeshire; clayey pastures in Suffolk; Headington-wick copse, Stow-wood, and South Leigh in Oxfordshire; common in some parts of Bedfordshire; about Stilland and Shillingley-park in Suffex; near Wray-house, Sir James Wright's, adjoining to the river Rhodon, in Essex; high pastures near Little Wenlock in Shropshire. It flowers in april and may.

4. The Cowslip has a root like that of the Primrose, but smelling more powerfully of Anise. Leaves obovate-oblong, contracted suddenly towards the middle; or rather ovate with the petioled winged; shorter than those of the Primrose by nearly one half, fuller at the edge, which is somewhat folded as well as notched, stronger, of a deeper green, not running so taper at the base, covered on the under side with softer and shorter hair; the perioles smoother, whitish with scarcely any red in them. Scapes few, three or four times longer than the leaves, round, upright, pale, villose. Involucre at the base of the umbel, surrounding the peduncles, consisting of many, very small, concave, pale, acuminate leaflets. Flowers in an umbel, unequally pedicelled, hanging down, generally to one side, full yellow with an orange-coloured blotch at the base of each segment, contracted about the middle of the tube, where the stamens are inserted, paler underneath, very fragrant. Calyx five-cornered, inflated, sitting loosely about the tube of the corolla, villose; segments ovate, acute. Tube of the corolla a little longer than the calyx: border very short, concave; segments emarginate; mouth simple, without any crown^p.

Native of Europe both in moist and upland pastures, and on the borders of fields, in a clayey or

loamy soil, preferring an open situation, and flowering in april and may. It is so common in many pastures as to be an injurious weed, though respected for its elegance and use.

The leaves are sometimes eaten as a pot-herb, and in salads. They are recommended for feeding silk-worms, and may serve the same purpose as seedling Lettuces, for the young worms, before the Mulberry leaves make their appearance. But the leaves of this tree only can feed the worms to maturity, to any good purpose.

The fragrant flowers make a pleasant wine, approaching in flavour to the Muscadet wines of the South of France. It is commonly supposed to possess a somniferous quality.

These flowers have a roughish bitterish taste, which they impart with their agreeable odour and a yellow tincture, both to water and spirit. Vinous liquors impregnated with them by maceration or fermentation, and strong infusions of them drank as tea, are supposed to be mildly corroborant, antispasmodic and anodyne. An infusion of three pounds of the fresh flowers in five pints of boiling water, is made into a syrup of a fine yellow colour, agreeably impregnated with the flavour of the Cowslips^q.

These plants are here described as three distinct species. Linneus, beginning his career at a time when varieties had attracted undue notice, perhaps went too far in avoiding a multiplication of species; in the present case at least few botanists have followed him in considering the Primrose, Oxlip and Cowslip as one species. Had only the first and last existed in their pure natural state, little doubt would probably have occurred of their being distinct species; but the Oxlip partakes so much of the nature of both, that it creates a suspicion of all the three having been originally one, as Retzius (obs. 2. p. 10.) still affirms them to be, especially when we become acquainted with their great mutability, and view a number of intermediate links connecting them still more intimately. Linneus asserts, that the peduncles in the common wild Primrose spring from a scape, which being so short as to be concealed among the leaves, has not been observed; this latent scape has never occurred to me in the wild Primrose; Mr. Curtis says he has found it in a few plants. I have however met with it, pushing up a tall scape, which sustained several flowers differing in no respect from the ordinary sort except in this circumstance. This forms a connecting link between the Primrose and Oxlip. The Scotch Primrose, figured in *Flora Rustica*, t. 62. is another link in the chain, and is a step taken by nature towards the admired *Polyanthus*, of which culture has produced a variety almost infinite. Mr. Curtis informs us that wild Primroses introduced into Dr. Buxton's garden, at Maize-hill near Greenwich, produced flowers both with and without a scape, and indeed became, colour excepted, perfect *Polyanthuses*: and Willdenow says he has seen one-flowered peduncles and many-flowered scapes from the same root. I have not unfrequently found the common Primrose wild, of a dingy purple colour, and the Scotch Primrose shows a tendency in colour as well as plurality to the *Polyanthus*. Mr. Curtis relates, that in his garden the white hose in hose Primrose produces early in the spring flowers on peduncles, and afterwards on a scape, or in a thyrse; and that the Cowslip and Oxlip sometimes produce flowers on peduncles as well as on a scape. In other respects the Cowslip does not seem to vary so much as the Primrose, except in colour. I have sometimes found the wild Cowslip with the flowers of a fine red; in gardens this is not uncommon. Gerarde and Parkinson figure a variety with double flowers, which seems now to be lost; and Parkinson enumerates several others in his *Paradisus*: Mr. Curtis had a hose in hose variety with yellow and another with deep scarlet flowers. But what does all this prove, says Mr. Curtis, except that these plants, like many others, are subject to the sportings of nature? May we not say rather, that these variations

^m Maddock's Florist's Directory, p. 219.

ⁿ Smith. ^o Id. engl. bot. 513.

^p Curtis, Smith, Withering, Lyons MS. in Relh.

^q With. Engl. bot. Curtis, Lewis.

might well give occasion to Linneus to consider them all as one original species? though since they have some permanent distinctions, (which are given in the specific characters) we cannot err in taking them for two distinct species at least. Besides the striking character, says Mr. Curtis, drawn from the inflorescence, to say nothing of the leaves, how different is the corolla in size and shape, and how very different is the calyx? In their place of growth, and time of flowering there is a material difference, the Primrose loving shade and shelter, and flowering from march to may with the Wood Anemone, and being much disposed to flower again in autumn and even during winter, if the weather be not severe: the Cowslip affecting open pastures, flowering in may with the early spotted Orchis, and not manifesting any disposition to flower a second time towards the close of the year. Dr. Withering remarks, that the leaf-stalks of the Primrose, when fully grown, are longer than the leaves, in the Oxlip shorter, in the Cowslip often longer than the leaves.

The above distinctions are either insufficient or not to be depended upon to furnish specific differences. Even the inflorescence is not constant; the corolla of the Oxlip is of a middle size between the other two; the place of growth is different, but yet the Cowslip is sometimes found under hedges; april is commonly assigned as the month of flowering for all, but the Primrose appears in march and the Cowslip in april. This spring (1800) the woods were covered with Primroses in full blow on the 24th of march, and a few days after, I saw a single blossom of the Cowslip beginning to expand under a warm hedge. I have Cowslips in my garden, that constantly blow a second time in mild winters, during the months of november and december.

Linneus having united these plants in one species, had no difficulty in giving it the name of *veris*; but for those who consider them as three species, it is not so easy. *Acaulis* may tend to mislead novices at least, *veris* is too general, we have therefore applied the epithet *vulgaris* to the Primrose, following Hudson, Withering, Relhan and Smith. For the Oxlip we should have preferred *inodora*, had it not been said that the flowers are so far from inodorous, that they have a very grateful smell. *Elatior* may be a proper epithet for the Oxlip when it is compared with the Primrose; but by no means in comparison with the Cowslip, which has a still taller scape. Shakspeare adverts to this in his beautiful description of the Cowslip in his Midsummer Night's Dream, wherein he makes it subservient to the Queen of the Fairies—

“ The Cowslips tall her pensioners be.”

In allusion to the institution of tall military courtiers by Queen Elizabeth, called *Pensioners*. The epithet *veris* is improperly applied to the Cowslip, which flowers later than the Primrose. *Officinalis* is more proper, the Cowslip having been most used in medicine, though both that and the Primrose are neglected in modern practice. After all, I confess myself not very well satisfied with the trivial names.

5. Root perennial, somewhat præmorse, with numerous, long, perpendicular fibres, and sweet-scented. Leaves obovate-lanceolate, bright green, smooth and even, thickish, here and there turned back on the edges; underneath veined and powdered with white meal. Scape a hand's breadth or span in height, far exceeding the leaves, round, upright, stiff and straight, of a pale green colour and mealy. Flowers sweet-scented, in an upright umbel, having at its base a many-leaved involucre, each leaflet of which is awl-shaped, and placed at the base of each peduncle. Segments of the calyx upright, a little blunt, converging a little at their tips, of a dull green colour and mealy. Tube of the corolla longer than the calyx, contracted in the middle, but the neck somewhat enlarged, yellowish, smooth; the mouth open and yellow: border small, flat, purple; pale underneath; segments linear-obcordate. Capsule twice the length of the

calyx, brown, with the mouth five-toothed. Seeds brown.

This elegant plant is a native of many parts of Europe, especially the most northern, and also of Siberia: with us it is found in Yorkshire and Westmoreland in wet or boggy pastures or by the side of rills, flowering in july and august.

The flowers vary with different shades of purple, and they have been found entirely white; in point of size the plant is also subject to much variation; in a bog in Skirritth-wood near Ingleton, Mr. Curtis observed it a foot and half in height: in the cultivated plant he has seen it have a tendency to be viviparous, to produce one or more tufts of leaves among the flowers of the umbel. In its wild state it seeds readily, and frequently when cultivated. Towards the end of september the outer leaves fade; and the heart of the plant forms itself into a knob or button, a kind of hybernacle: in the spring it expands, and the leaves then appear wholly white and mealy; the corolla continues to envelope the germ till it has almost arrived at maturity; forming a sort of calyptra to it.

In habit this species approaches most nearly to *Androsace* and *Aretia*. In those genera however the tube of the corolla is oval, not cylindrical, and its orifice is more or less closed with glands; whereas in all the Primulas that part is open, and only slightly crenated. Nevertheless these three genera, and even *Cortusa*, might perhaps be united without any great violence to nature.

6. This bears a great affinity to *P. farinosa*, but the leaves differ in form, colour and mode of growth; when fully grown they are twice the length of those of the other: they are not mealy, the under side being as green as the upper, and they have a greater tendency to grow upright. The scape is shorter and thicker. The flowers form a similar umbel, but each is smaller than in *farinosa*, and in point of colour much less brilliant. Upon the whole, though superior in size, it is inferior to that in beauty. It flowers early in may. The original place of growth is not known.

Introduced by Mess. Grimwood and co. nurserymen at Kensington, about the year 1796. They had it from France, by Mr. Williams, nurseryman near Paris.

7. In the wrinkled appearance of its foliage this approaches the common Primrose, whilst in its inflorescence, the colour of its flowers, and solitary scape, which rises to an unusual height, it bears an affinity to the *farinosa*. In the winter it loses the leaves entirely, and forms a sort of bulbous hybernacle under ground; this circumstance is the more necessary to be known, as it subjects the plant to be thrown away as dead. It flowers in june and july; and is a native of Siberia.

Linneus remarks, that it has the leaves of *Cortusa*, with the flowers of *Aretia Vitaliana*.

Introduced by Mess. Lee and Kennedy, nurserymen at Hammersmith, in 1798 or 1799.

8. Leaves fleshy but hirsute, in the smaller variety petioled, rhomboid, toothed on the two anterior sides. Scape an inch high, sustaining one or two flowers. Bractes ovate and lanceolate. Flower equal to the whole stem or leaf, purple, with the segments cordate, longer, gashed, with a pale eye. Calyx not mealy, hirsute, bell-shaped, blunt, half the length of the tube.

The greater variety, which Clusius has figured, has scapes half a foot high, and as many as seven flowers on a single scape: the leaves are much larger, petioled, rhomboidal or ovate, almost bald, but always with large teeth in the anterior part, and with the margins ciliate.

Allioni describes his *hirsuta*; which he makes synonymous with Haller's plant described above, as having elliptic wedge-shaped leaves, hirsute all over, and somewhat viscid, bluntly toothed in the wider part; and a many-flowered umbel. Colour of the flower violet-purple, with the neck whitish and contracted: border deeply cut to the neck; segments cordate, deeply emarginate, border flat. Scape round hirsute.

* Curtis, Smith.

* Curtis magaz.

* Curtis.

* Idem.

* Engl. bot.

* Haller.

Calyx hirsute, with the segments longer than in *P. Auricula*. Tube of the corolla a little hirsute. It has nothing mealy in it. In the very high alps it is sometimes very small and one-flowered.

Native of the mountains of Carinthia and Switzerland. Allioni says the *hirsuta* begins where the *Auricula* ends, and is common in similar places in the whole chain of the Alps from monte Vesulo into Savoy, and so to Switzerland.

β. The colour of the corolla in this variety is an elegant deep red, with a yellow eye; the leaves are longer and run down into a flat petiole to the root: though they are not so villose, yet they are not without very small hairs, especially towards the edges^γ.

Mr. Curtis remarks, that with us it is so slightly villose as scarcely to deserve that epithet, that it varies in the brilliancy of its colours, and is sometimes white: he adds that Jacquin's plant does not quite agree with his. In Curtis's figure, the flowers are purple with a white eye, and the leaves are much shorter and broader than in Professor Jacquin's: but large allowances may be made in plants that are so variable.—Native of Carinthia.

P. villosa was introduced here in 1768, by Professor de Saussure^z.

9. Leaves very smooth. Scape twice as high as the leaves. Involucre small. Segments of the border in the corolla obcordate.—Native of the mountains of Dauria^z.

10. This resembles *P. farinosa*, but is much handsomer. The leaves are not mealy underneath, though paler; but they are longer. Scape higher. Bractes much longer. Flowers fewer, five or thereabouts. The calyxes have short black hairs scattered over them, and are almost cut to the bottom; they are marked with five raised lines, are not mealy, but much larger. Tube of the corolla purple, very long and slender, an inch and half in length, and standing high up above the calyx. Flower handsomer, violet-coloured not red, with narrower, semibifid segments; at the origin of each a spongy substance, forming a white spot, and all together a white eye^b.

It differs then from *P. farinosa*, in having the leaves less mealy and less deeply toothed, the scape higher, fewer flowers in the umbel with the leaves of the involucre longer, the tube of the corolla three times as long, and the segments of the border narrower and of a violet purple colour^c.

Native of the mountains of the Upper Valais, Tyrol, Carinthia, Carniola, Italy and Croatia.

11. This has the stature of *P. farinosa*. The umbel has from five to seven sessile flowers. The involucre is from five to seven-leaved, the same length with the tube of the corolla. Calyx obovate, wrinkled. Segments of the corolla obcordate, violet-coloured. It has a smell like that of *Orchis conopsea*.

Native of the higher Alps, bordering on the ice and snow in Upper Carinthia and the Tyrol^d. Introduced in 1777, by Mess. Kennedy and Lee^e.

12. In its farinaceous tendency this species accords with *P. Auricula*, but it is very unlike that in its wild state, the leaves being much narrower, the flowers larger, and of a different colour. It differs from *glutinosa* in the shortness of its involucre: from *villosa* in having leaves much narrower, perfectly smooth in respect to villi, and in the colour of the flowers, which approaches to that of Lilac; but more especially in its disposition to become mealy, particularly on the edges of the leaves, between the serratures, where the mealiness is so strong as to make the leaf appear with a white or silvery edge. It is a delicate pretty plant, with a pleasing musky smell, and flowers in march and april.

Mr. Lee, of Hammer-smith, received it from the Alps in 1781, and it has continued unaltered by culture^f.

13. Leaves fleshy, succulent, with the edges mealy, serrated, or entire according to Haller; deeply and

equally toothed all round as Allioni affirms: but Scopoli says the young leaves are entire, the adult ones serrate above the middle. Petioles leafy or winged. Leaflets of the involucre unequal, wide, lanceolate or blunt. Flowers very sweet, four or five, in an upright umbel. Calyx one third of the length of the tube of the corolla, bell-shaped, toothed, mealy, as is also the scape. Tube of the corolla gradually widening upwards, not contracted at the neck: border concave, the segments emarginate but not deeply, and not cut to the neck. The most common colours are yellow or red, but it is found also purple and variegated, with a white eye powdered with meal. Capsule spherical or nearly so, flattened a little at top, of a coriaceous-cartilaginous substance, sprinkled with meal; Haller says it is six-valved^g.

Native of the mountains of Switzerland, Austria, Styria, Carniola, Savoy and Piedmont; also about Astracan. It flowers in april and may. From Gerard's herbal it appears that the *Auricula* was cultivated here in 1597. He calls it Mountain Cowslip or Bear's-ear. Parkinson says, "we in English call them Bear's-ears, according to the Latin, or as they are named by divers women *French Cowslips*; they may also be called *Mountain Cowslips*." Ray names it *Bear's-ear*, *Oricola* or *French Cowslip*. But all these are now disused; and *Auricula* is become the general name.

The description given above is from the wild plant of the Alps. The three principal varieties only are given, whence the innumerable cultivated ones are all derived. They differ not only in the colour of the corolla, but in the number of its segments, and of the stamens; not to insist upon the difference observable in the leaves.

To show what culture can perform in this species, we may mention from Morant's Colchester^h, that Henry Stow, of Lexden near that place, a famous raiser of Auriculas, had some plants with no less than 133 blossoms upon one stem.

Gerarde figures the yellow, purple, red, scarlet, bluish-coloured, and bright red, most of which grew then in the London gardens: but there does not seem to have been any attention paid to raising varieties from seed.

Parkinson, in 1629, enumerates many varieties: 1. Purple or Murrey, with a white eye. 2. The same without any eye. 3. Tawny. 4. Deep or blood-red. 5. Violet. 6. Spaniard's bluish. 7. Scarlet or light red. 8. Rose-coloured. 9. Great White. 10. Lesser White. 11. Greatest fair Yellow. 12. Greater Yellow. 13. Great Straw-coloured. 14. Lesser Straw-coloured. 15. Lesser Yellow. 16. Deep Yellow. 17. Bluish. 18. Hair-coloured. 19. Yellow Variable. 20. Green Variable.

"Many other varieties (he adds) were to be found, with those that are curious conservers of these delights of nature, either naturally growing on mountains,—or raised from seed, as is more probable: for several varieties have been observed to be gotten by sowing of the seeds, every year lightly shewing a diversity, not observed before, either in the leaf, or in the flowers."

The raising varieties from seed was then well known, but regular canons for distinguishing a good flower were not yet established, as they probably were when the complete Florilege was published by John Rea, Gent. In the third edition of this work, printed at London in 1702, folio, we have the following Auriculas: *Purples*. 1. Fair Downham, one of the first good flowers that we had, named from the first owner, my very good friend Mr. John Downham, a reverend divine, and an industrious florist. 2. Mr. Good's purple, raised by Mr. Austen of Oxford, and given to Mr. John Good of Baliol College. 3. Mrs. Buggs her fine purple, raised by her in Battersey. 4. Mr. Whitmore's purple, raised by my worthy friend William Whitmore, of Balmer near Hodgkiss, Esq. 5. Purple Frausway. 6. Black Imperial. 7. Black Em-

^γ Jacq. misc.

^δ Haller.

^z Hort. kew.

^c Allioni.

^e Hort. kew.

^a Willdenow.

^d Linn. suppl.

^f Curtis.

^g Haller, Scopoli, Allioni.

^h P. 92.

perour. 8. Purple-striped. 9. Purple and lemon-colour striped.

Red or Scarlet-coloured. 10. Mr. Austen's Scarlet, is one of the best. Divers other excellent flowers have been raised in Oxford by Mr. Jacob Bobart, keeper of the public garden.

There are divers sorts of Reds; upon which fantastical names have been imposed—as 11. Fair Virgin. 12. Matton. 13. Alderman. 14. Mercury, and the other Planets. 15. The Cow. 16. The Red Bull, &c.

Yellows, of small esteem. Some of the Buff colours have been in good esteem, and every Florist had his *Leather-coat*,—as Tradescant's, Lances, Tuggies, Turners, Collins, Lookers, Humphries, Mera-cows, Mows, Mullars, Randols, and Rickets Beazar, all good kinds of Leather-coats: and I have raised a Leather-coat myself from seeds, not inferior to the best.

White—of small variety and esteem: the best is called Virgin's milk.]

But to enumerate all the diversities of this plant would be almost endless; for every year produces vast quantities of new flowers, differing in shape, size and colour: in the leaves also there is a great variety, so that the skilful florist can often distinguish the varieties from them.

It seldom happens that such flowers as are in great esteem at one time, continue to be regarded a few years after; still finer or larger flowers being produced from seeds, and as the names convey little, and there are no descriptions of them, it is needless to give a list of them.

[The catalogue of Messrs. Maddock, of Walworth contains near five hundred varieties. The modern names are generally from some great personage, with the raisers or florists name prefixed.

The properties of a fine *Auricula* are these:

1. The stem should be strong, upright, and of such a height as that the umbel of flowers may be above the foliage of the plant.

2. The peduncles or foot-stalks of the flowers should also be strong, and of a length proportional to the size and quantity of the flowers; which should not be less than seven in number, that the umbel may be regular and close.

3. The tube, eye, and border should be well proportioned; which they will be, if the diameter of the first be one part, of the eye three, and the whole border six parts or thereabouts.

4. The circumference of the border should be round or nearly so, or at least not what is called starry.

5. The anthers ought to be large, bold and fill the tube well; and the tube should terminate rather above the eye, which should be very white, smooth and round, without cracks, and distinct from the ground-colour.

6. The ground-colour should be bold and rich, and regular, whether it be in one uniform circle, or in bright patches; it should be distinct at the eye, and only broken at the outer part into the edging: a fine black, purple, or bright coffee-colour contrast best with the white eye; a rich blue, or bright pink is pleasing, but a glowing scarlet or deep crimson would be most desirable, if well edged with a bright green; this however can seldom be expected.

The green edge is the principal cause of the variegated appearance in this flower, and it should be in proportion to the ground-colour, that is, about one-half of each.

The darker grounds are generally covered with a white powder, which seems necessary, as well as the white eye, to guard the flower from the scorching heat of the sun's rays¹.]

All flowers that want any of the above properties, are turned out into the borders of the garden or rejected wholly by every good florist; for as there are varieties every year from seeds, the bad ones must make room for their betters; but in some the passion for new flowers so much prevails, that supposing the

¹ Maddock, 151.

old flower to be greatly preferable to a new one, the latter must take place, because it is of their own raising.

[14. This very lofty species is a native of Siberia, and varies with a stem only eighteen inches high.

15. Root round, white within, blackish without, putting out very long whitish fibres horizontally, forming very large thick tufts loaded with abundance of flowers. Leaves widening at the end, and there cut with from four to seven acuminate teeth, but quite entire at the sides, sessile, thickish, about half an inch long. Scape axillary, obsoletely triangular, smooth, erect, the length of the leaves or much shorter. Flower solitary, terminating, erect, supported by one or two linear bractes shorter than the calyx. Calyx round, almost half-five-cleft, blunt, smooth. Corolla purple: tube funnel-shaped, not contracted at the neck, commonly longer than the leaves, always longer than the calyx, sometimes twice as long, whitish and hirsute within; border of the same length, with semibifid segments. Filaments in the lower part of the tube, often at the very bottom. Capsule very blunt, shining, brown^k.

Linneus says the corolla is yellow; Haller, Scopoli, Willdenow, that it is flesh-coloured; Krockner and Jacquin that it is purple. Willdenow observes that it dries of a violet colour.

According to Haller, the root is large, the leaves very small, with a right-lined, wide, serrate top, the scape scarcely a finger's length, with two sharp narrow stipules (or bractes) and one or two inodorous flowers. It differs from the *villosa* in having shining leaves not hirsute or bent in the arc of a circle, and much smaller; the flower lanuginose within, and the segments of the calyx blunt.

Scopoli says, the capsule is roundish, flat and red at top; containing as many as sixty seeds, fastened to an ovate, peduncled receptacle.

Native of mount St. Gothard, Schneeberg, and other mountains of Austria, &c. flowering from June to September.

16. In habit and stature this agrees with *P. Auricula*. The umbel is two or three-flowered, supported by an involucre of two, three or four linear leaflets the length of the peduncles. Tube of the calyx scarcely angular. Border of the corolla violet-coloured with semibifid segments: tube simple, without any contracted neck. Stamens in the middle of the tube. It varies very much in stature; nor does it grow in such close tufts as *P. minima*^l.

Haller says, that the leaves are ciliate at the edge; the scapes an inch or two inches in height, with one or two flowers at the top; the calyx bell-shaped, coloured, subhirsute.

According to Scopoli, the length of the calyx is one third part of the diameter of the corolla; the corolla red, the diameter of the border six or seven lines, the tube of the same length with the segments; filaments white; anthers yellow; germ green at the base, in other parts red and shining; style rose-coloured, three lines in length; stigma pale green, gently inclining to one side. The flower has the smell of honey. Seeds from forty to fifty. He has found it with one flower only.

It is distinguished from the next species, by having the leaves cartilaginous at the edge, scarce apparently crenulate or ciliate when examined with a magnifier; and the calyx tubular^m.

Native of the Swiss, Pyrenean, Austrian, Styrian, and Carniolian mountains, as on Schneeberg, Etscher, Struk near Idria, Grindovitz, Gothard, Speluga, &c. flowering towards the end of May; in gardens, where it flourishes very well, it flowers in April and Mayⁿ.

17. Leaves membranaceous, blunt, subrepand, not cartilaginous at the edge. Calyxes abbreviated.—Native of Carniola, in Idria, at the foot of a hill called Kobila^o.

18. Leaves smooth; calyxes tubular, blunt.—Native of the mountains of Norway^p.

^k Jacqu. vind.

^l Jacquin.

^m Jacqu. vind. and obs.

ⁿ Willdenow.

^o Willdenow.

^p Retz. scand.

19. Root thick, at first dusky, then white, filiform, whence arise on a petiole an inch in length tongue-shaped leaves, a hand's breadth long, clammy, having a bituminous smell, finely villose, pale underneath, sinuate, quite entire, in shape resembling those of *Cynoglossum vulgare*. Flowers pale blue, six or seven in an umbel, each on its proper peduncle. Involucre of as many small leaflets as there are peduncles.

Native of the mountains of Piedmont, on rocks about the baths of Valderia^a.

20. Native of Siberia, in moist meadows, from the river Obo to the country beyond the lake Baikal.—Leaves smooth^r.]

PROPAGATION AND CULTURE.

2, 3, 4. The roots of the wild plants may be taken up and transplanted into gardens at michaelmas, that they may have strength to produce their flowers early in the spring. They delight in a strong soil, but will grow in almost any sort of earth. The Primrose should have a shady situation.

POLYANTHUS.

The Polyanthuses are all varieties of these, and have been so much increased and improved in the last century, as almost to equal the Auricula; and in some parts of England they are so much esteemed as to sell for a guinea a root, so that a great variety is continually raised, and many persons are engaged in the culture of it.

The several varieties of Polyanthuses are produced by sowing of seeds, which should be saved from such flowers as have large upright stems, producing many flowers upon a stalk, which are large, beautifully striped, open flat, and not pin-eyed. From the seeds of such flowers there is room to hope for a great variety of good sorts, but there should be no ordinary flowers stand near them, lest, by the mixture of their farina, the seeds should be degenerated.

These seeds should be sown in boxes filled with light rich earth in december, being very careful not to bury the seed too deep; for if it be only slightly covered with light earth, it will be sufficient. These boxes should be placed where they may have the benefit of the morning sun until ten of the clock, but must by no means be exposed to the heat of the day, especially when the plants begin to appear; for at that time, one whole day's sun will entirely destroy them. In the spring, if the season should prove dry, you must often refresh them with water, which should be given very moderately; and, as the heat increases, you should remove the boxes more in the shade, for the heat is very injurious to them.

By the middle of may these plants will be strong enough to plant out, at which time you should prepare some shady borders which should be made rich with neats dung, upon which you must set the plants about four inches asunder every way, observing to water them until they have taken root; after which they will require no farther care but to keep them clear from weeds, until the latter end of august following, when you should prepare some borders which are exposed to the east, with good light rich earth, into which you must transplant your Polyanthuses, placing them six inches asunder equally in rows, observing, if the season proves dry, to water them until they have taken root; in these borders your plants will flower the succeeding spring, at which time you must observe to mark such of them as are fine to preserve, and the rest may be transplanted into wildernesses, and other shady places in the garden, where, although they are not very valuable flowers, they will afford an agreeable variety.

Those which you intend to preserve, may be removed soon after they have done flowering (provided you do not intend to save seeds from them), and may be then transplanted into a fresh border of the like rich earth, allowing them the same distance as before, observing also to water them until they have taken root; after which they will require no farther care, but

only to keep them clean from weeds, and the following spring they will produce strong flowers, as their roots will be then in full vigour; so that if the kinds are good, they will be little inferior to a shew of Auriculas. These roots should be constantly removed and parted every year, and the earth of the border changed, otherwise they will degenerate, and lose the greatest part of their beauty.

If you intend to save seeds, which is the method to obtain a great variety, you must mark such of them, which, as I said before, have good properties. These should be, if possible, separated from all ordinary flowers, for if they stand surrounded with plain-coloured flowers, they will impregnate each other, whereby the seeds of the valuable flowers will not be near so good, as if the plants had been in a separate border, where no ordinary flowers grew; therefore the best way is to take out the roots of such as you do not esteem as soon as the flowers open, and plant them in another place, that there may be none left in the border, but such as you would chuse for seed.

The flowers of these should not be gathered, except such as are produced singly upon pedicels, leaving all such as grow in large bunches; and if the season should prove dry, you must now and then refresh them with water, which will cause their seed to be larger, and in greater quantity, than if they were entirely neglected. In june the seed will be ripe, which may be easily known by the pods changing brown and opening; so that you should at that time look over the plants three or four times a week, gathering each time such of the seed-vessels as are ripe, which should be laid upon a paper to dry, and may then be put up until the season of sowing.

As the plants which arise from seeds, generally flower much better than offsets, those who would have these flowers in perfection, should annually sow their seeds.

[Polyanthuses blow at the same time, and require nearly the same treatment as Auriculas, both with respect to soil and situation; they are however more impatient of heat and drought, and more partial to shade and moisture. They may be set in the same-sized pots, and in the same compost as the Auricula, only with the addition of more loam: or they may be planted on cool shady beds or borders, being very hardy, and seldom perishing in the coldest and wettest seasons, because their parent is a native of this country; but during the heats of summer they are frequently destroyed, unless proper precautions be taken^s. This dislike of heat, seems to indicate that the Polyanthus is rather the offspring of the Primrose, which requires shade, than of the Cowslip, which grows in open pastures; though Mr. Miller seems to regard it as a variety of the latter.

The Polyanthus is very liable to the depredations of snails and slugs, in the spring of the year; the plants and pots therefore should be carefully examined on all sides early in the morning. But its worst enemy is a small red spider or *Acarus*, which in summer forms its web on the under side of the leaves. These little insects, scarcely visible without a magnifying glass, cause the leaves to become yellow and spotted, and eventually destroy the plant: they multiply with such rapidity as to take possession of a whole collection, in a very short time.

Such plants as appear infected should be immediately selected from the rest, taken up, and soaked for two or three hours in a strong infusion of tobacco water, and then replanted in a fresh soil or compost, and removed to a situation at a distance from the former. But if the whole bed or border be overrun with this insect, it is best to take up all the plants, and having soaked them, to plant them elsewhere.

The bed or border should then be trenched up, and remain fallow to the next season, or be planted with another crop not liable to this calamity.

Polyanthuses may be increased by slips or offsets, taken off when the plants are fresh potted^t. For other particulars, see P. AURICULA.

^a Allioni.

^r Gmelin.

^s Maddock, 219.

^t Idem, 220.

5. The Bird's-eye feeds readily in its wild state, and also frequently when cultivated: but it is scarcely worth the pains to raise it from seed, since a strong root may be divided so as to form many plants; the best time for doing this is in the spring, soon after the leaves are expanded. Place each offset in a separate pot, filled with two parts of stiffish loam, and one part light sandy bog-earth; water and set them in the shade, under a north wall or paling, but not under trees; keep them there during summer in pans of water, but in the autumn, as the wet season comes on, take them out of the pans, and either lay the pots on their sides, or place them during winter under a common cucumber frame, to keep them from immoderate wet, which this plant cannot bear, although it be a native of boggy meadows. The next, if not the same year, these plants will blow strong; and thus they should be treated every year, for *Primulas* in general require to have their roots frequently parted.

6. This is a hardy plant of ready growth, and will succeed either in the pot or border, by guarding it from the sun in summer, and from severe frost and too much wet in winter. It is increased by parting the roots, either in september or at the beginning of march. It is very liable to be injured by the *Aphides* or *Plant-Lice*.

7. Being yet a rare plant, this must be treated with care, as was directed for the fifth sort. It may be raised from seeds, or increased by parting the roots; but it is apt to be lost, if not duly attended to.

8. This may be treated like the three former sorts, or as directed for the round-leaved *Cyclamen*.

12. This is a very delicate plant. To succeed in its cultivation, it should be placed in a pot of stiffish loam, mixed with one third rotten leaves, bog-earth, or dung, and plunged in a north border, taking care that it does not suffer for want of water in dry seasons; thus treated, it increases by its roots nearly as readily as the *Auricula*; and may be propagated by parting these in april or september^a.

The above directions will amply suffice for the increase and management of the other alpine *Primulas*.]

13. AURICULA.

In order to obtain good flowers from seeds, you must make choice of the best flowers you have, which should be exposed to the open air, that they may have the benefit of showers, without which they seldom produce good seeds: the time of their ripening is in june, which you will easily know, by their seed-vessel turning to a brown colour, and opening; you must therefore be careful lest the seeds be scattered out of the vessel, for it will not be all fit to gather at the same time.

The time for sowing this seed is commonly in august, but if it be sown any time before Christmas, it will be time enough.

The best soil for this seed is good, fresh, light, sandy mould, mixed with very rotten neats dung, or very rotten dung from the bottom of an old hot-bed: with this fill the pots, boxes or baskets in which the seeds are to be sown; and having levelled the surface very smooth, sow the seeds thereon, sifting over them a little rotten willow mould; then cover them with a net or wire, to prevent cats or birds from scratching out, or burying the seeds; in which case they remain a year in the ground before the plants appear, if they ever appear at all. Many persons never cover the seeds, but leave them on the surface, for the rain to wash them into the ground, which is often the best method. Let the boxes, &c. be placed so as to receive half the day's sun, during the winter season; but in the beginning of march, remove them where they may have only the morning sun till ten o'clock; for the young plants will now soon begin to appear, which, if exposed to one whole day's sun only, will be all destroyed.

During the summer season, in dry weather, often refresh them with water, but never give them too great a quantity at once. In july following, the plants

will be large enough to transplant, at which time you must prepare a bed, or boxes, filled with the above-mentioned soil, in which you may plant them about three inches square; and (if in beds) you must shade them every day, till they are thoroughly rooted, as also in very hot dry weather; but if they are in baskets or boxes, they may be removed to a shady place.

When the seedling *Auriculas* are planted in beds, there should be some rotten neats dung laid about ten inches under the surface, and beaten down close and smooth: this will prevent the worms from drawing the young plants out of the earth, which they generally do where this is not practised. This dung should be laid about half a foot thick, which will entirely prevent the worms getting through it until the plants are well established in the beds; and the roots of the *Auriculas* will strike down into the dung by the spring, which will make their flowers stronger than usual: these beds should be exposed to the east, and screened from the south sun.

When you have taken all your plants, which are now come up, out of your boxes or pots, level the earth gently again; for it often happens, that some of the seeds will lie in the ground two years before they appear, especially if they were covered too deep when sown, as was before observed.

The spring following many of these flowers will shew, when you may select such of them as have good properties, which should be removed each of them into a pot of the same prepared earth, and preserved until the next season, at which time you will be capable to form a judgment of the goodness of the flower; but those that produce plain-coloured or small flowers, should be taken out, and planted in borders in the out-parts of the garden, to make a shew, or gather for nosegays, &c. the others, which do not produce their flowers the same year, may be taken up, and transplanted into a fresh bed, to remain till you see how they will prove.

The manner of propagating these flowers when obtained, is from offsets, or slips, taken from the old roots in april, when the flowers are in bloom: these offsets must be planted into small pots filled with the same sort of earth as was before directed for the seedlings, and, during the summer season, should be set in a shady place, and must be often (but very gently) refreshed with water; but in the autumn and winter should be sheltered from violent rains. The spring following these young plants will produce flowers, though but weak; soon after they are past flowering, you must put them into larger pots, and the second year they will blow in perfection.

But, in order to obtain a fine bloom of these flowers, you must observe the following directions.

First, Preserve your plants from too much wet in winter, which often rots and spoils them; but let them have as much free open air as possible; nor should they be too much exposed to the sun, which is apt to forward their budding for flower too soon; and the frosty mornings, which often happen in march, thereby destroy their buds, if they are not protected therefrom. To prevent which, those who are very curious in these flowers, place their pots in autumn under a common hot-bed frame, where, in good weather, the plants may enjoy the full air, by drawing off the glasses; and in great rains, snow, or frost, the plants may be screened by covering them. Where this method is practised with judgment, the flowers will be much stronger, and the plants will increase faster than when they are exposed abroad.

Secondly, In the beginning of february, if the weather is mild, you must take off the upper part of the earth in the *Auricula* pots, as low as you can without disturbing their roots, and fill up the pots with fresh rich earth, which will greatly strengthen them for bloom; as also prepare your offsets for transplanting in april, by causing them to push out new roots.

Those plants which have strong single heads, always produce the largest clusters of flowers; therefore the curious florists pull off the offsets as soon as it can be done with safety to their growing, to encourage the
mothers

^a Curtis.

mother plants to flower the stronger; they also pinch off the flowers in autumn, where they are produced, and suffer them not to open, that the plants should not be weakened thereby.

Thirdly, You must cover your pots with mats in frosty weather, during this time of their budding for flower, lest the sharp mornings blight them, and prevent their blowing.

Fourthly, When your flower-stems begin to advance and the blossom buds grow turgid, you must protect them from hasty rains, which would wash off their white mealy farina, and greatly deface the beauty of their flowers; but at the same time observe to keep them as much uncovered as possible, otherwise their stems will be drawn up too weak to support their flowers (which is often the case when their pots are placed near walls) give them gentle waterings to strengthen them, but let none of the water fall into the center of the plant, or among the leaves.

Fifthly, when your flowers begin to open, you should remove their pots upon a stage (built with rows of shelves, one above another, and covered on the top, to preserve them from wet: this should be open to the morning sun, but sheltered from the heat of the sun in the middle of the day:) in this position they will appear to much greater advantage, than when the pots stand upon the ground; for, their flowers being low, their beauty is hid from us; whereas, when they are advanced upon shelves, we see them in a full view. In this situation they may remain until the beauty of their flowers is past, when they must be set abroad to receive the rains, and have open free air, in order to obtain seeds, which will fail if they are kept too long under shelter. When your seed is ripe, observe to gather it when it is perfectly dry, and expose it to the sun in a window upon papers, to prevent its growing mouldy, and let it remain in the pods till the season for sowing it.

[Those who are very nice in raising Auriculas, direct the compost to be made of one half rotten cow-dung two years old; one sixth fresh sound earth of an open texture; one eighth earth of rotten leaves; one twelfth coarse sea or river sand; one twenty-fourth soft decayed willow wood; one twenty-fourth peaty or moory earth; one twenty-fourth ashes of burnt vegetables, to be spread upon the surface of the other ingredients.

This compost is to be exposed to the sun and air, turned over once or twice, and passed as often through a coarse skreen or sieve: then it should be laid in a regular heap from fifteen to eighteen inches thick, and in this state remain a year, turning it over two or three times, and keeping it free from weeds.

The pots for Auriculas should be hard baked: the inner diameter of the top should be six inches and a half, of the bottom four inches, and they should be about seven inches deep, for common-sized blooming plants: but smaller plants and offsets should have smaller shallower pots, and very large plants should have larger pots in proportion; the bottom should have a small degree of concavity, and the hole should be half an inch in diameter: the rims should project about half an inch, in order to take up and remove them with greater ease and safety. The pots should be buried in wet earth, or immersed in water three or four days or a week, before they are wanted, to take off their absorbency.

Transplant or pot the Auriculas annually soon after bloom; curtailing their fibres, if grown very long, and cutting off the lower part of the main root, if too long or decayed. The offsets at this season strike freely, and become well established before winter. Examine the plant carefully, and where any unsoundness appears, cut it out entirely with a sharp pen-knife; expose the wounded part to the sun, and when it is quite dry, apply a cement of bees-wax and pitch in equal quantities, softened in the sun or before a fire. If the lower leaves be yellow or dried up, strip them off in a direction downwards. Having put the hollow shell of an oyster over the hole of the pot, fill three parts of it with compost, highest in the middle, place the plant there, with its fibres regularly distri-

buted all round; then fill the pot with the compost adding a little clean coarse sand close round the stem on the surface, and strike the bottom of the pot against the ground or table to settle the earth.

The true depth to plant an Auricula is within half an inch of the lowest leaves, because the most valuable fibres proceed from that part; and the offsets will be thereby encouraged to strike root sooner. When these have formed one or more fibres of an inch or two in length, they may, by means of a piece of hard wood, or by the fingers, be separated with safety, and planted round the sides of a small pot, filled with the same compost, till they are sufficiently grown to occupy each a separate pot: if a small hand glass be placed over each pot it will cause the fibres to grow more rapidly; but if it be long continued, it will draw up and weaken the plants.

In the beginning of may, as soon as the operation of potting is finished, the plants are to be placed in an airy, shaded situation, but not under the drip of trees. Here they are to remain till september or october, when they should be removed into shelter.

In the first favourable weather in february dive the plants of their decayed leaves; and by the middle of that month earth them up; that is, take away the superficial mould of the pots about an inch deep, and put in fresh compost, with the addition of a little loam, to give it more tenacity. This will contribute greatly to the strength of the plants, and the vigour of their bloom; at the same time it will afford a favourable opportunity to separate such offsets as appear to have sufficient fibre to be taken off at this early season. The pots with these offsets should be placed in a frame, in a sheltered situation till their roots are established.

Though frost, unless it be very rigorous, will not destroy the plants, yet it will injure them, and perhaps spoil the bloom, especially early in the spring: they should therefore be covered with mats in a severe season.

If any plant has more than one or two principal stems, it is advisable to pinch off the smallest and weakest, in order to render the blossoms of that which remains larger and more vigorous.

When the flowers (technically pips) become turgid, and begin to expand, select the plants from the rest, remove them to a calm shady corner, and suspend small hand-glasses over them.

The stage for the pots to stand on whilst in bloom should have a northern aspect, and should consist of four or five rows of shelves, rising one above another. The roof should consist of frames of glass. The tallest blowing plants should be placed behind, and the shortest in front. They must be regularly watered two or three times every week during the bloom.

In raising the Auricula from seed, if the boxes in which the seed is sown be placed on the surface of a hot-bed, in a cucumber or melon frame, the seeds will begin to vegetate in about three weeks. The earth must be kept moderately moist, by sprinkling it with a hard clothes-brush, dipped in soft water, warmed by standing in the sun. At the end of four or five weeks, when the young plants will be all come up, they must have gradually more air, and in a fortnight or three weeks the boxes should be taken out of the frame, and placed in a warm situation, though not too much exposed to the sun till towards the end of april, when they may be removed to a cooler aspect, where they can receive the sun only till nine o'clock; and in may they should be placed in the most cool and airy part of the garden; still not neglecting to keep the earth moderately moist, and to protect them from violent rains.

As soon as any of the plants show six leaves, transplant them into other boxes an inch and half or two inches asunder: and when they are grown so as to touch each other, transplant them a second time into larger boxes, at the distance of three or four inches, or into small pots, where they may remain till they blow: and then such as are very good should be marked, and the bad ones destroyed. As soon as the bloom is over, those that are marked should be planted separately in pots, and taken

taken care of till they blow again, when their merit may be more accurately ascertained. A great proportion of these seedlings will be plain-coloured (technically self;) which are of no value but as common border flowers, unless they have good properties in other respects, or are singularly beautiful or brilliant in their colours*.

PRIMULA. See *Aretia* and *Hydrangea*.

PRINCE'S FEATHER. See *Amaranthus*.

PRINCE'S WOOD. See *Cordia* and *Hamelia*.

PRINOIDES. See *Ilex*.]

PRINOS. (*Πρινος*, the name of a tree in *Theophrastus* and *Dioscorides*. Perhaps from *πρινω*, to saw.)

Lin. gen. n. 441. Reich. n. 474. Schreb. n. 594. Juss. 379.

Class. 6. 1. Hexandria Monogynia.

Nat. order of *Dumosa*. *Rhamni*, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, half-six-cleft, flat, very small, permanent.

COR. one-petalled, wheel-shaped. Tube none. Border six-parted, flat: segments ovate.

STAM. Filaments six, awl-shaped, erect, shorter than the corolla. Anthers oblong, blunt.

PIST. Germ ovate, ending in a Style shorter than the stamens, and an obtuse Stigma.

PER. Berry roundish, six-celled, much larger than the calyx.

SEEDS solitary, bony, obtuse, convex on one side, angular on the other.

Obs. It differs from *Ilex* chiefly in the number. Sometimes it excludes one sixth part in the fructification.

ESSENTIAL CHARACTER.

Cal. six-cleft. Cor. one-petalled, wheel-shaped. Berry six-seeded.

SPECIES.

1. *Prinos verticillata*. Deciduous Winter-berry.

Lin. spec. 471. Syst. 342. Reich. 2. 105. Du Roi herb. 2. 157. Gron. virg. 39. 54. Abbot, georg. t. 86.

Alcanna major latifolia dentata. Munt. phyt. 213. t. 51.

Aquifolium fol deciduis. Dubam. arb. 1. 62. t. 23.

Leaves lanceolate-ovate, pubescent underneath serrate on the whole margin, peduncles many-flowered.

2. *Prinos glabra*. Evergreen Winter-berry.

Lin. spec. 471. Reich. 2. 105. Ait. kew. 1. 478. Abbot, georg. t. 35.

Leaves lanceolate bluntish smooth on both sides, serrate at the tip.

[3. *Prinos lucida*. Shining Winter-berry.

Ait. kew. 1. 478.

Leaves elliptic acuminate even subserrate at the tip.

4. *Prinos dioica*. Dioecous Winter-berry.

Vahl, ecl. 2. 25.

Leaves oblong-ovate subserrate smooth coriaceous, peduncles axillary one or three-flowered, flowers dioecous tetrandrous.

5. *Prinos nitida*.

Vahl, ecl. 2. 26.

Leaves oblong-ovate serrate shining membranaceous, peduncles axillary one-flowered, flowers tetrandrous.

6. *Prinos montana*.

Swartz prodr. 58. descr. 622.

Leaves ovate serrate shining on both sides.

7. *Prinos sideroxyloides*.

Swartz prodr. 58. descr. 624.

Leaves roundish quite entire.]

DESCRIPTIONS, &c.

1. This rises with a shrubby stalk to the height of eight or ten feet, sending out many branches from the sides the whole length. Leaves lanceolate, about three inches long, and one inch broad in the middle, terminating in an acute point, of a deep green, veined on the under side, alternate on the branches upon slender footstalks. The flowers come out from the side of the branches, single or two or three at each joint. Berries the size of Holly, turning purple when ripe. It flowers in July, and the seeds ripen in the winter.

* Maddock's Florist's Directory, 111—151.

[According to Du Roi, it varies with a seven-cleft, and sometimes though rarely with an eight-cleft flower, having seven or eight stamens. Jussieu also says, that it has sometimes only five clefts in the flower and five stamens, and from five to eight seeds. Gronovius affirms that it is dioecous.]

Native of Virginia, and according to Mr. Miller, of other parts of North America. [Kalm observed it near Philadelphia.—It was introduced in 1736, by Peter Collinson, Esq.]

2. Leaves alternate, petioled, oblong, of a firm texture, smooth, acute, nearly resembling those of *Myrica*; there are commonly two serratures towards the tip. Peduncles axillary, small, commonly three-flowered^z.]

It is of lower growth than the preceding; the leaves are shorter, and serrate at their points only. It is a native of Canada.

[Neither Linneus nor Miller had seen the flowers. The synonyms which the former has given from Catesby, and Miller's figures belong to *Ilex vomitoria*. It was cultivated by Mr. Miller in 1759, and flowers in July and August^a.

3. This was introduced about 1778, by Mr. James Gordon, from what country is not known. It flowers in July^b.

4. Branches the thickness of a swan's quill, with a gray bark dotted here and there, round below, angular towards the tip: branchlets alternate, dusky purple, smooth, somewhat angular, compressed at the tip. Leaves frequent, alternate, two inches wide, in the male often rounder, terminated by a short point; in the female oblong ovate sometimes emarginate, all a little bent back at the edge, remotely and obsoletely serrate but quite entire towards the base, smooth on both sides, veined, scarcely shining on the upper surface, underneath pale with a few small raised dots scattered about. Petioles dusky purple, half an inch long, keeled underneath.—In the Male, peduncles axillary, about twenty, the length of the petiole, mostly three-flowered, but some one-flowered. Pedicels very short. Calyx very small, four-cleft. Petals four, oblong. Stamens four, spreading, the length of the petals. Anthers roundish. The rudiment of a germ, without either style or stigma.—In the Female, peduncles fewer, shorter, all one-flowered. The flowers a little larger. Calyx and Corolla as in the Male. Stamens four, with effete anthers. Germ oblong, blunt. Found in the island of Montserrat by Ryan.

5. Branches angular, smooth, compressed a little at the tip, dusky purple. Leaves alternate, from two to three inches in length, and often two inches wide, little acuminate, bluntish, remotely and obsoletely serrate, towards the base quite entire and often acute, very smooth on both sides, veined, shining on the upper surface, on the under paler and not dotted. Petioles half an inch long, brown. Peduncles axillary, five or six, the length of the petiole, all one-flowered, smooth, brown. Calyx four-cleft; the segments ovate. Petals four, ovate, spreading, finally reflex. Filaments four, erect, a little longer than the petals. Anthers oblong, erect. Germ roundish. Style scarcely any. Stigma acute. Berry ovate, roundish, the size of Black Pepper.

It is allied to the preceding, but differs in having the flowering-branches more slender, brown not whitish: the leaves thinner, more shining, commonly narrowed towards the base and acute: fewer peduncles, all one-flowered: the flowers twice as large and hermaphrodite. Found in Montserrat by Ryan^c.

6. Trunk twenty or thirty feet high, with an even brown bark. Branches subdivided, almost upright, round smooth. Leaves alternate, acuminate at both ends, serrate on the whole margin; serratures remote, acute-nerved, smooth, an inch and half long, stiffish, when dried of a dark livid colour. Petioles short, round, smooth. Peduncles axillary, solitary, shorter than the leaves, half an inch long, filiform, com-

^y Hort. kew.

^z Linn. spec.

^a Hort. kew.

^b Idem.

^c Vahl, eclogæ.

pressed a little, three-flowered or three-parted: pedicels one-flowered: flowers small, white. Calyx six-cleft: segments small, ovate, convex. Corolla divided almost to the base into six parts: segments ovate-lanceolate, spreading, bent back at the tip. Filaments inserted between the divisions of the corolla. Anthers roundish, bifid at the base. Germ roundish, superior. Style very short, thick, permanent. Stigma subcapitate, depressed, rolled back at the edge, subsexfid. Berry bluntly six-cornered, small, umbilicated with the stigma, black when ripe. Seed oblong, compressed, shining, black. It very much resembles *P. lucida* in the flowers and leaves; but in that species the leaves are ferrate only at the tip, paler underneath, and of a less stout consistence.

Native of Jamaica, in coppices on the highest mountains.

7. The wood of this tree is hard. Branches subdivided, round, with an ash-coloured bark, unarmed. Leaves on short petioles, alternate, nerved, veined, smooth on both sides, paler underneath, somewhat coriaceous. Peduncles axillary, longer than the petioles, four to eight clustered together, one-flowered. Flowers small, whitish. Calyx six-toothed. Corolla six-parted to the very base, so as to be in a manner six-petalled: segments obovate, spreading, permanent, with the tips erect. Filaments inserted into the base of the corolla, alternating. Anthers oblong, incurved. Germ roundish, superior. Style none. Stigma sessile, subcapitate, six-freaked. Berry crowned with the stigma pressed close. Seeds six, oblong, grooved, closely contiguous.

Native of the Caribee islands, St. Christopher's and Montserrat^d.]

PROPAGATION AND CULTURE.

1, 2. These are propagated by seeds, sown soon after they are ripe upon a bed of light earth, covering them about half an inch with the same sort of earth. The seeds which are so soon put into the ground, will many of them come up the following spring; whereas those which are kept longer out of the ground, will remain a whole year before the plants will appear, in the same manner as the Holly, Hawthorn, and some others. When the young plants come up, they may be treated in the same manner as has been directed for the American Hawthorns; these being full as hardy: but they delight in a moist soil and a shady situation. In hot land they make little progress, and rarely produce any fruit.

[PRINUS. See *Quercus*.

PRIONITIS. See *Barleria*.

PRISMATOCARPUS. See *Campanula*.]

PRIVET. See *Ligustrum*.

[— Mock. See *Phillyrea*.

PROBOSCIDEA. See *Martynia*.

PROCKIA. (So named by Browne.)

Lin. gen. n. 674. Reich. n. 729. Schreb. n. 916. Juss. 340.

Class. 13. 1. Polyandria Monogynia.

Nat. order of *Rosaceae*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* three-leaved: leaflets ovate (seldom two very small leaflets at the base.)

COR. none.

STAM. *Filaments* numerous, capillary, the length of the calyx. *Anthers* roundish.

PIST. *Germ* roundish, subquincangular. *Style* filiform, the length of the stamens. *Stigma* bluntish.

PER. *Berry* quincangular.

SEEDS very many.

ESSENTIAL CHARACTER.

Cal. three-leaved, besides (sometimes) two leaflets at the base. Cor. none. Berry five-cornered, many-seeded.

SPECIES.

1. Prockia Crucis.

Lin. spec. 745. Syst. 500. Reich. 2. 605. Vahl, symb. 3. 69. t. 64.

^d Swartz, descr.

DESCRIPTION, &c.

This is a shrub with round branches. Leaves alternate, petioled, ovate, acuminate, serrate, smooth. Stipules linear. Flowers few, terminating, alternate, pedicelled; with linear bractes.—Stipules caducous. Peduncles from one to five, axillary, one-flowered, having one or two little scales in the middle^f. Found in the island of Santa Cruz by Browne, who sent it to Linneus; and since that by Commerçon. Jussieu suspects it to be allied to *Laetia*.

The whole of this shrub is smooth; the bark of the branches is purplish. Leaves four inches long, or less, attenuated, scarcely cordate at the base, three-nerved; tender. Stipules sickle-shaped, attenuated, a quarter of an inch long, toothed on the outer side to the very base, on the inner to the middle only. Racemes at the ends of the branchlets, from three to five-flowered. Peduncles filiform. Pedicels a little thicker under the flower, when mature longer than the common peduncle. Bracte towards the base of the pedicels. Calyx three or four-leaved: leaflets ovate, acute, smooth on the outside, villose within, a little longer than the stamens. Style longer than the calyx. Berry globular, the size of a pea, mucronate with the permanent style. Seeds three-sided, shining^g.

PROSERPINACA. (An ancient name in Apuleius. Proserpina of Pliny, from Proserpine, Queen of the infernal regions, because it grows in low places, infested with frogs and newts. Gronovius. Linneus derives it à proserpendo, from its creeping.)

Lin. gen. n. 102. Reich. n. 108. Schreb. n. 134.

& p. 818. Juss. 68. Trixis. Mitch. 23.

Gært. t. 24.

Class. 3. 3. Triandria Trigynia.

Nat. order of *Inundatae*. *Hydrocharides*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* three-parted, superior: leaflets erect, acuminate, permanent.

COR. none.

STAM. *Filaments* three, awl-shaped, spreading, the length of the calyx. *Anthers* twin, oblong, acute.

PIST. *Germ* inferior, three-sided, very large. *Style* none. *Stigmas* three, pubescent, thickish, the length of the stamens.

PER. *Drupe* small, juiceless, ovate-three-sided, three-winged, crowned with the permanent closed calyx.

SEED. *Nut* somewhat bony, three-sided, three-celled: kernels oblong, fastened by a thread.

ESSENTIAL CHARACTER.

Cal. three-parted, superior. Cor. none. Drupe with a three-celled nut.

SPECIES.

1. Proserpinaca palustris.

Lin. spec. 129. Reich. 1. 245. Willd. 488. Aët. upf. 1741. p. 81.

Trixis palustris. Gært. fruct. 1. 115. Mitch. in ephem. nat. cur. 1748. n. 23.

DESCRIPTION, &c.

Root creeping. Stems a foot high, roundish. Leaves alternate, lanceolate, serrate, ending in petioles; the lower or those that are under water pinnatifid with linear segments. Flowers axillary, solitary. Fruit the same form as in *Polygonum*^h. According to Gærtner, it is a three-sided drupe, with each of the angles extended into a narrow membranaceous wing: the rind very thin, spongy-membranaceous: the shell whitish, three-celled; in each cell one oblong seed, acuminate downwards, of a pale reddish colour; fastened by a thread ascending from the base to the vertex of the seed, and fastened to the inner side of itⁱ.

Native of Virginia in marshes.

PROSOPIS. (Προσωπίς, persona s. larva, a mask.)

Lin. gen. Reich. n. 568. Schreb. n. 706. Juss. 348.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Lomentaceae*. *Leguminosae*, Juss.

^e Linn. spec.

^f Jussieu, gen.

^g Vahl.

^h Lin. spec.

ⁱ Gærtner.

GENERIC CHARACTER.

- CAL. *Perianth* one-leafed, hemispherical, slightly five-toothed.
 COR. *Petals* five, lanceolate, sessile, equal.
 STAM. *Filaments* ten, filiform, equal. *Anthers* incumbent, grooved, versatile.
 PIST. *Germ* oblong. *Style* filiform, the length of the petals. *Stigma* simple.
 PER. *Legume* oblong, linear, roundish, attenuated at both ends, jointed, smooth, pendulous.
 SEEDS many, rounded-oblong, coloured, immersed in a mealy substance.

ESSENTIAL CHARACTER.

Cal. bell-shaped, five-toothed. *Stigma* simple. *Legume* linear, many-seeded.

SPECIES.

1. *Prosopis spicigera*.

Lin. syst. 398. *Reich.* 2. 267. *mant.* 68. *Roxb. corom.* 3. 45. *t.* 63. *Burm. ind.* 102. *t.* 25. *f.* 3. (*spicata*.)

DESCRIPTION, &c.

This grows to a large tree, with a tolerably erect trunk; the bark deeply cracked, and of a dirty ash-colour: branches irregular, very numerous, forming a globular, shady head: prickles scattered over the small branches, but in some trees wanting. Leaves alternate, abruptly bipinnate, from two to three inches long; pinnae from one to four inches; when in pairs, opposite, and have a gland between; one inch and a half long. Leaflets opposite, from seven to ten pairs, obliquely lanceolate, smooth, entire, about half an inch long, and one sixth of an inch broad. Stipules none. Spikes many, terminating, or from the exterior axils, filiform, nearly erect. Bractes minute, one-flowering, falling off. Flowers numerous, small, yellow, single, approximated. Calyx inferior, five-toothed. Petals linear-lanceolate, erect, recurved at the tip, smooth. Filaments united at the base, fastened to the base of the petals, the length of the corolla. Anthers incumbent, fulvous, with a white gland at the apex of each, which falls off soon after the flower expands. Style crooked. Legume a span in length, scarcely the thickness of a goose-quill, pendulous, not inflated. Seeds many, lodged in a brown, mealy substance.

It is a native of most parts of the Coromandel coast; flowering during the cold, and beginning of the hot season.

The pod of this tree is the only part used; it is about an inch in circumference, and from six to twelve inches long; when ripe, it is brown, smooth, and contains, besides the seeds, a large quantity of a brown mealy substance, which the natives eat; it has a sweetish agreeable taste, and may be compared to the Spanish Algaraba, or Locust-tree, *Ceratonia Siliqua*.

It is called *Tshamis* by the Telingas; and *Vannimaram* by the Tamuls^k.]

PROTEA. (One of the poetical names from Proteus. So named from the great variableness in the fructification.)

Lin. gen. n. 111. *Reich. n.* 117. *Schreb. n.* 143. *Gartn. t.* 51. *Juss.* 78. *Leucadendron. Lin. gen. ed.* 6. *n.* 110. *Aulax. Berg. Lepidocarpodendron, Hypophyllocarpodendron & Conocarpodendron. Boerb.*

Class. 4. 1. Tetrandria Monogynia.

Nat. order of *Aggregatæ. Proteæ, Juss.*

GENERIC CHARACTER.

- CAL. *Perianth* common usually imbricate: scales permanent, various in form and proportion.
Perianth proper none.
 COR. *universal* uniform.
Proper one, two or four-petalled, with the petals different in figure.
 STAM. *Filaments* four, inserted into the petals below the tip. *Anthers* linear.
 PIST. *Germ* superior, awl-shaped or roundish. *Style* filiform. *Stigma* simple.
 PER. none. *Calyx* unchanged.

^k Roxburgh, corom.

SEEDS solitary, roundish.

RECEPT. common naked or villose or chaffy.

OBS. The species of this genus differ very much from each other in all the parts of fructification, but agree in the essential character of the stamens, inserted below the tip of the corolla.

P. pinifolia and *racemosa* have a one-flowered calyx.

P. parviflora has an oblong stigma, bifid at the top.

ESSENTIAL CHARACTER.

Cor. four-cleft or four-petalled. *Anthers* linear inserted into the petals below the tip. *Cal.* proper none. *Nut* one-seeded, superior.

SPECIES.

1. Pinnate: with pinnate filiform leaves.

[1. *Protea decumbens. Decumbent Protea.*

Lin. syst. 136. *ed. Willd.* 506. *Thunb. prodr.* 25. *diff. n.* 1. *t.* 1. *f.* 3.

P. procumbens. Linn. suppl. 116.

Leaves trifid filiform, stem decumbent.

2. *Protea florida.*

Lin. syst. 136. *ed. Willd.* 506. *Thunb. prodr.* 25. *diff. n.* 2. *t.* 1. *f.* 1.

Leaves trifid filiform, stem erect, heads solitary encompassed with bractes.

3. *Protea cyanoides.*

Lin. syst. 136. *ed. Willd.* 507. *Reich.* 1. 260. *mant.* 188. *Thunb. prodr.* 25. *diff. n.* 3.

Leucadendron cyanoides. Lin. spec. 137. *Berg. cap.* 27. *act. holm.* 1766. *p.* 326. *Pluk. mant.* 61. *t.* 345. *f.* 6. (*Cyanus*.)

Leaves trifid-pinnate filiform, stem erect, heads solitary naked.

4. *Protea patula.*

Lin. syst. 136. *ed. Willd.* 507. *Thunb. prodr.* 25. *diff. n.* 4.

Leaves trifid-pinnate filiform, stem erect, heads aggregate.

5. *Protea pulchella.*

Lin. syst. ed. Willd. 507. *Schrad. fert. hannov.* 1. *fasc.* 2. *p.* 15. *t.* 7.

Leaves bipinnate smooth filiform, heads terminating club-shaped aggregate leafless bracted.

6. *Protea sphærocephala.*

Lin. syst. 136. *Reich.* 1. 260. *Willd.* 508. *mant.* 188. *Thunb. prodr.* 25. *diff. n.* 5.

Leucadendron sphærocephalum. Berg. cap. 26. *act. holm.* 1766. *p.* 327.

Anethifolius frutex africanus minor, capite tomentoso. Herm. afr. 3.

Leaves bipinnate filiform, peduncles shorter than the heads, calycine scales ovate villose at the base.

7. *Protea Serraria. Cut-leaved Protea.*

Lin. syst. 136. *Reich.* 259. *Willd.* 508. *mant.* 188. *Thunb. prodr.* 25. *diff. n.* 6. *Ait. kew.* 1. 125.

Leucadendron Serraria. Lin. spec. 137. *Berg. cap.* 28. *act. holm.* 1766. *p.* 327. *Burm. afr.* 264. *t.* 99. *f.* 1. (*Serraria*.) *Pluk. mant.* 1. *t.* 329. *f.* 1. (*Abrotanoides*.) *Seba, thes.* 2. *t.* 63. *f.* 6. (*Anethifolius*.)

Leaves bipinnate filiform rough-haired, peduncles longer than the heads, calycine scales ovate-lanceolate, rough-haired.

8. *Protea triternata.*

Lin. syst. 136. *Willd.* 509. *Thunb. prodr.* 25. *diff. n.* 7.

Leaves bipinnate filiform smooth, peduncles longer than the heads, calycine scales lanceolate rough-haired.

9. *Protea glomerata.*

Lin. syst. 136. *Reich.* 1. 259. *Willd.* 509. *mant.* 187. *Thunb. prodr.* 25. *diff. n.* 8.

Leucadendron glomeratum. Lin. spec. 137.

L. elongatum. Berg. cap. 27.

Serraria fol. tenuissimis divisis, capitulis tomentosis. Burm. afr. 265. *t.* 99. *f.* 2.

Leaves bipinnate filiform, common peduncle elongated, naked, pedicels longer than the heads.

10. *Protea phyllicoides.*

Lin. syst. 137. *Willd.* 510. *Thunb. prodr.* 25. *diff. n.* 9.

Leucadendron

- Leucadendron phyllicoides. *Berg. cap. 29. act. holm.* 1766. p. 328.
Leaves bipinnate filiform, heads terminating solitary woolly.
11. Protea Lagopus.
Lin. syst. 137. Willd. 510. Thunb. prodr. 25. diff. n. 10.
Leaves aggregate filiform, heads in spikes aggregate.
12. Protea spicata. *Spiked Protea.*
Lin. syst. 137. Reich. 258. Willd. 511. mant. 187. Thunb. prodr. 25. diff. n. 11.
Leucadendron spicatum. Berg. cap. 25. act. holm. 1766. p. 326.
Leaves bipinnate filiform, heads in spikes distinct.
13. Protea Sceptrum.
Lin. syst. 137. Willd. 511. Thunb. prodr. 25. diff. n. 12.
P. Sceptrum Gustavianum. Lin. suppl. 116. Sparm. act. holm. 1777. p. 55. f. 1.
Lower leaves bipinnate, upper trifid and entire.
2. Toothed: with toothed callous leaves.
14. Protea crinita.
Lin. syst. 137. Willd. 511. Thunb. prodr. 25. diff. n. 13.
P. crinitiflora. Lin. suppl. 117.
Leucadendron oleæfolium. Berg. cap. 15. act. holm. 1766. p. 320.
Leaves five-toothed smooth, stem erect, heads two or three terminating.
15. Protea Conocarpa. *Tooth-leaved Protea.*
Lin. syst. 137. Willd. 512. Thunb. prodr. 25. diff. n. 14. Ait. kew. 1. 125.
Leucadendron Conocarpodendrum. Lin. spec. 136. Berg. act. holm. 1766. p. 321. Pluk. phyt. t. 200. f. 2.
Conocarpodendron fol. crasso, nervo lanuginoso, supra crenato ibique limbo rubro, flore aureo, cono facile deciduo. Boerb. lugdb. 2. 196. ic.
Scolymocephalus africanus latifolius lanuginosus, fol. in summitate crenatis. Herm. afr. 20. Raii dendr. 9.
Conophorus capitis bonæ spei fol. in summo dentato. Raii app. 240. Petiv. mus. 240.
Leaves five-toothed smooth, stem erect, head terminating.
16. Protea elliptica.
Lin. syst. 137. Willd. 512. Thunb. prodr. 26. diff. n. 15.
Leaves elliptic three-toothed smooth, stem erect, head terminating.
17. Protea Hypophylla.
Lin. syst. 137. Willd. 513. Thunb. prodr. 26. diff. n. 16.
P. Hypophyllocarpodendrum. Lin. mant. 191. Reich. syst. 1. 265. hort. cliff. 29.
Leucadendron Hypophyllocarpodendrum. Lin. spec. 136. Berg. cap. 16. act. holm. 1766. p. 321. Pluk. mant. t. 440. f. 3.
Conocarpodendron fol. rigido angusto apice tridentato rubro, flore aureo. Boerb. lugdb. 2. 198. ic.
Scolymocephalos fol. angustis, in summitate tridentatis. Raii dendr. 9.
Leaves three-toothed smooth directed one way, stem decumbent, head terminating.
18. Protea cucullata.
Lin. syst. 157. Reich. 1. 261. Willd. 514. Thunb. prodr. 26. diff. n. 17.
Leucadendron cucullatum. Lin. spec. 136. Berg. cap. 14. act. holm. 1766. p. 320. Pluk. phyt. t. 304. f. 6.
Hypophyllocarpodendron fol. inferioribus apice trifido rubro, superioribus penitus rubris glabris. Boerb. lugdb. 2. 206. ic.
Scolymocephalos africana, fol. angustis brevioribus, tribus in summitate denticulis, capitulis foliosis interceptis. Herm. afr. 20.
Leaves three-toothed smooth, heads lateral.
19. Protea tomentosa.
Lin. syst. 138. Willd. 514. suppl. 118. Thunb. prodr. 26. diff. n. 18.
Leaves three-toothed tomentose.
20. Protea heterophylla.
Lin. syst. 138. Willd. 515. Thunb. prodr. 26. diff. n. 19.
Leaves three-toothed and entire, stem decumbent.
3. Acerose: with filiform awl-shaped leaves.
21. Protea pinifolia. *Pine-leaved Protea.*
Lin. syst. 138. Reich. 1. 258. Willd. 515. mant. 187. Thunb. prodr. 26. diff. n. 20.
Leucadendron pinifolium. Lin. mant. 36.
Aulax pinifolia. Berg. cap. 33.
Pini foliis planta africana, cyperi capitulis. Herm. afr. 18.
Pini folio planta capensis, floribus spicatis. Petiv. scill. 47.
Leaves filiform, flowers in racemes not calyced smooth.
22. Protea racemosa. *Downy-flowered Protea.*
Lin. syst. 138. Reich. 1. 258. Willd. 515. mant. 187. hort. cliff. 496. Thunb. prodr. 26. diff. n. 21.
Leucadendron racemosum. Berg. cap. 23. act. holm. 1766. p. 325.
Leaves filiform, flowers in racemes calyced tomentose.
23. Protea incurva.
Lin. syst. 138. Willd. 516. Thunb. prodr. 26. diff. n. 22. t. 3. f. 2.
Leaves filiform incurved smooth, heads raceme-spiked tomentose.
24. Protea caudata.
Lin. syst. 138. Willd. 516. Thunb. prodr. 26. diff. n. 23. t. 2. f. 3.
Leaves filiform rough-haired, heads subsessile in spikes.
25. Protea bracteata.
Lin. syst. 138. Willd. 517. suppl. 118. Thunb. prodr. 26. diff. n. 24. t. 1. f. 2.
P. cancellata. Lin. syst. Reich. 1. 270.
Leucadendron cancellatum. Lin. spec. 134. Berg. act. holm. 1766. p. 326.
Lepidocarpodendron fol. angustissimis gramineis, fructu cancellato, femine coronato. Boerb. lugdb. 2. 193. ic.
Scolymocephalus africanus foliis rosmarini acutis. Herm. afr. 20. Raii dendr. 10.
Leaves filiform-channelled, head terminating, bractes multifid.
26. Protea comosa.
Lin. syst. 138. Willd. 517. Thunb. prodr. 26. diff. n. 25.
Lower leaves filiform, upper lanceolate, head terminating.
27. Protea purpurea.
Lin. syst. 138. Reich. 1. 269. Willd. 518. mant. 195. Thunb. prodr. 26. diff. n. 26.
Leucadendron proteoides. Lin. spec. 134. Berg. cap. 14. act. holm. 1766. p. 326.
Leaves linear recurved, heads terminating drooping, stem decumbent.
28. Protea prolifera.
Lin. syst. 138. Willd. 518. suppl. 118. Thunb. prodr. 26. diff. n. 27. t. 4. f. 5.
Leaves awl shaped appressed, stem proliferous.
29. Protea corymbosa.
Lin. syst. 139. Willd. 518. Thunb. prodr. 26. diff. n. 28. t. 2. f. 1.
P. bruniades. Lin. suppl. 117.
Leucadendron corymbosum. Berg. cap. 21. act. holm. 1766. p. 326.
Leaves linear-subulate appressed, branchlets in whorls subfastigate.
30. Protea nana.
Lin. syst. 139. Willd. 519. Thunb. prodr. 26. diff. n. 29.
P. rosacea. Lin. mant. 189. Lin. syst. Reich. 1. 261.
Leucadendron nanum. Berg. cap. 22. act. holm. 1766. p. 325.
Conophoros capensis pini folio. Raii suppl. app. 243. Petiv. gaz. t. 25. f. 7.
Leaves linear-subulate, head terminating, calyx coloured.
31. Protea lanata.
Lin. syst. 139. Willd. 519. Thunb. prodr. 26. diff. n. 30. t. 3. f. 1.
Leaves three-sided appressed, head terminating woolly.
4. Linear:

4. Linear: with linear leaves.
32. *Protea torta*.
Lin. syst. 139. *Willd.* 519. *Thunb. prodr.* 26. diff. n. 31.
 Leaves linear oblique callous.
33. *Protea alba*.
Lin. syst. 139. *Willd.* 520. *Thunb. prodr.* 26. diff. n. 32.
 Leaves linear silky tomentose.
5. Lanceolate: with elliptic and lanceolate leaves.
34. *Protea aulacea*. *Widow-wail leaved Protea*.
Lin. syst. 139. *Willd.* 520. *Thunb. prodr.* 26. diff. n. 33. t. 2. f. 2. *Ait. kew.* 1. 126.
 Leaves linear-spatulate smooth, flowers in racemes not calyced.
35. *Protea umbellata*. *Umbelled Protea*.
Lin. syst. 139. *Willd.* 520. *Thunb. prodr.* 26. diff. n. 34. *Ait. kew.* 1. 126.
 Leaves linear-spatulate smooth, heads terminating, bractes multifid.
36. *Protea linearis*. *Linear-leaved Protea*.
Lin. syst. 139. *Willd.* 521. *Thunb. prodr.* 26. diff. n. 35. t. 4. f. 2. *Ait. kew.* 1. 127.
 Leaves linear-spatulate smooth, head terminating tomentose.
37. *Protea cinerea*. *Gray Protea*.
Ait. kew. 1. 127. *Lin. spec. ed. Willd.* 521.
P. prostrata. *Thunb. prodr.* 27?
 Leaves linear-wedge-shaped silky, head terminating silky.
38. *Protea Scolymus*. *Small smooth-leaved Protea*.
Lin. syst. 139. *Willd.* 522. *Thunb. prodr.* 26. diff. n. 36.
P. scolymocephala. *Lin. syst. ed. Reich.* 1. 271.
Leucadendron scolymocephalum. *Lin. spec.* 135. *Berg. act. holm.* 1766. p. 323.
Lepidocarpodendron acaulon, &c. *Boerb. lugdb.* 2. 192. ic.
Scolymocephalus africanus, &c. *Raii hist.* 3. 10.
 Leaves lanceolate acute smooth, head terminating round smooth.
39. *Protea abyssinica*.
Lin. spec. ed. Willd. 522.
Gaguedi. *Bruce itin.* 5. app. 52. ic.
 Leaves lanceolate attenuated at the base blunt, head terminating hemispherical.
40. *Protea mellifera*. *Honey-bearing red-barked Protea*.
Lin. syst. 139. *Willd.* 522. *Thunb. prodr.* 26. diff. n. 37. *Curt. magaz.* 346.
P. repens. *Lin. mant.* 189. *syst. ed. Reich.* 1. 262.
Leucadendron repens α. *Lin. spec.* 135.
Lepidocarpodendron fol. angustis brevioribus salignis, calycis squamis elegantissime ex roseo aureo albo atro-rubro variegatis, florum plumis albis. *Boerb. lugdb.* 2. 187. ic.
Scolymocephalus africana, fol. angustis villosis, cono mellifero. *Raii hist.* 3. 9.
 Leaves lanceolate-elliptic smooth, head terminating oblong smooth.
41. *Protea repens*. *Creeping Protea*.
Lin. syst. 139. *Willd.* 523. *Thunb. prodr.* 26. diff. n. 38.
P. repens β. *Lin. syst. ed. Reich.* 1. 262.
Leucadendron repens β. *Lin. spec.* 135.
Lepidocarpodendron fol. longissimis angustissimis fructum elegantissime ex rubro flavo & albo variegatum succingentibus, radice repente. *Boerb. lugdb.* 2. 190. ic.
 Leaves lanceolate elliptic smooth, head ovate smooth, stem decumbent very short.
42. *Protea plumosa*. *Feather-flowered Protea*.
Ait. kew. 1. 127. *Lin. spec. ed. Willd.* 524.
 Leaves lanceolate-wedge-shaped hoary, head terminating oblong, petals smooth beneath, hairy with very long hairs above.
43. *Protea obliqua*. *Oblique-leaved Protea*.
Lin. syst. 140. *Willd.* 524. suppl. 117. *Thunb. prodr.* 27. diff. n. 39.
 Leaves linear-lanceolate smooth callous oblique, head cauline terminating.
44. *Protea parviflora*. *Small-flowered Protea*.
Lin. syst. 140. *Reich.* 1. 270. *Willd.* 524. mant. 195. *Thunb. prodr.* 27. diff. n. 40. t. 4. f. 1.

- Leaves elliptic obtuse callous oblique, heads smooth at the ends of the branchlets.
45. *Protea pallens*. *Pale Protea*.
Lin. syst. 140. *Reich.* 1. 267. *Willd.* 524. mant. 193. *Thunb. prodr.* 27. diff. n. 41.
P. conifera β, γ, δ, ε. *Lin. spec.* 138.
Conocarpodendron. *Boerb. lugdb.* 2. 197. ic. & 200. ic. & 203. ic. & 204. ic.
 Leaves lanceolate attenuated at the base smooth acute callous, head terminating involucred, involucre long pale.]
46. *Protea conifera*. *Cone-bearing Protea*.
Lin. spec. 138. α. *syst.* 140. *Willd.* 525. mant. 193. *Thunb. prodr.* 27. diff. n. 42.
P. saligna. *Lin. mant.* 194. *syst. ed. Reich.* 1. 267. hort. cliff. 29.
Leucadendron salignum. *Berg. cap.* 17. act. holm. 1766. p. 303.
Scolymocephalus africana fol. brevioribus, in tubercula desinentibus. *Herm. afr.* 20.
Thymelæa capitata f. *julifera* angusto salicis folio. *Pluk. mant.* 181. t. 229. f. 6.
Frutex æthiopicus conifer, fol. *Cneori*, *Salici æmulus*. *Breyn. cent.* 21. t. 9.
 Leaves lanceolate attenuated at the base smooth acute callous, head terminating involucred, involucre long acute concolor.
- [47. *Protea Levisanus*. *Branching Protea*.
Lin. syst. 140. *Reich.* 1. 268. *Willd.* 526. mant. 194. *Thunb. prodr.* 27. diff. n. 43.
P. fusca. *Lin. spec.* 1. 95.
Brunia Levisanus. *Lin. spec.* 2. 289. *Burm. afr.* 267. t. 100. f. 2.
Leucadendron Levisanus. *Berg. cap.* 20. act. holm. 1766. p. 324.
Levisanus capensis serpilli folio. *Petiv. gaz.* t. 5. f. 7.
Conocarpodendron fol. subrotundis brevissimis, &c. *Boerb. lugdb.* 2. 202. ic.
Chrysanthemum conyzoides, &c. *Pluk. mant.* t. 343. f. 9.
 Leaves obovate bluntly acuminate imbricate smooth, stem hairy, the head having a blunt longer involucre.
48. *Protea strobilina*. *Obtuse-leaved Protea*.
Lin. syst. 140. *Reich.* 1. 266. *Willd.* 527. mant. 192. *Thunb. prodr.* 27. diff. n. 44. *Schrad. fert. hanov.* 1. fasc. 1. p. 7. t. 1.
Conocarpodendron acaulon, &c. *Boerb. lugdb.* 2. 201. ic.
 Leaves elliptic-oblong retuse-callous smooth, head terminating smooth.
49. *Protea imbricata*. *Imbricate-leaved Protea*.
Lin. syst. 140. *Willd.* 527. suppl. 116. *Thunb. prodr.* 27. diff. n. 45. t. 5. f. 2.
 Leaves lanceolate smooth striated imbricate, head terminating.
50. *Protea fericea*. *Silky Protea*.
Lin. syst. 140. *Willd.* 528. suppl. 118. *Thunb. prodr.* 27. diff. n. 46.
 Leaves lanceolate silky, branches filiform, stem decumbent.
51. *Protea saligna*. *Willow-leaved Protea*.
Lin. syst. 140. *Willd.* 528. *Thunb. prodr.* 27. diff. n. 47. *Pluk. mant.* 181. t. 229. f. 4.
 Leaves lanceolate silky, stem shrubby, heads oblong involucred.]
52. *Protea argentea*. *Silvery Protea*.
Lin. spec. 137. *syst.* 141. *Reich.* 1. 268. *Willd.* 529. mant. 194. hort. cliff. 29. *Gært. fruct.* 1. 23. *Thunb. prodr.* 27. diff. n. 48.
Leucadendros africana arbor tota argentea fericea, fol. integris. *Pluk. phyt.* t. 200. f. 1.
Argyrodendros afr. fol. fericeis & argenteis. *Comm. hort.* 2. 51. t. 26. *Raii dendr.* 9.
Conocarpodendron fol. argent. feric. latissimis. *Boerb. lugdb.* 2. 195. ic.
Globularia afr. frutescens thymelææ folio lanuginoso. *Tournef. inst.* 467.
Frutex æthiopicus conifer, fol. *Cneori* lanuginosis salici æmulis. *Breyn. prodr.* 2. 49.
Arbor ferens folia argentea. *Zanon. hist. ed.* 1. 24.
 Leaves lanceolate silvery-tomentose ciliate, stem arboreous, heads globular.

6. Oblong: with oblong ovate leaves.
 [53. *Protea acaulis*. Stemless *Protea*.
Lin. syst. 141. *Reich.* 1. 270. *Willd.* 529. *Thunb.*
prodr. 27. *diff. n.* 49.
Leucadendron acaulon. *Lin. spec.* 135.
Lepidocarpodendron acaulon. *Boerb. lugdb.* 2. 191. *ic.*
Scolymocephalus africanus lauri folio & procumbens.
Raii hist. 3. 9.
Leaves oblong smooth, head globular smooth, stem decum-
bent very short.
54. *Protea myrtifolia.* Myrtle-leaved *Protea*.
Lin. syst. 141. *Willd.* 530. *Thunb. prodr.* 27.
diff. n. 50.
Leaves oblong smooth, heads terminating aggregate.
55. *Protea grandiflora.* Great-flowered *Protea*.
Lin. syst. 141. *Willd.* 530. *Thunb. prodr.* 27.
diff. n. 51.
Leaves oblong veined smooth, head hemispherical smooth,
stem arboreous.
56. *Protea glabra.* Smooth *Protea*.
Lin. syst. 141. *Willd.* 530. *Thunb. prodr.* 27.
diff. n. 52.
Leaves oblong veinless smooth, head hemispherical smooth,
stem shrubby.
57. *Protea speciosa.* Handsome *Protea*.
Lin. syst. 141. *Reich.* 264. *Willd.* 631. *mant.*
 191. *Thunb. prodr.* 27. *diff. n.* 53.
P. Lepidocarpodendron. *Lin. mant.* 190.
Leucadendron Lepid. *Lin. spec.* 134. *Berg. act.*
holm. 1766. p. 322.
Lepidocarpodendron. *Boerb. lugdb.* 2. 185. 186. 188.
 189. *ic.*
Scolymocephalus africana fol. longis glabris, cono-
sericeo, squamis rubiginea villosa crista ornatis.
Raii hist. 3. 9.
Leaves oblong smooth, head oblong, calycine scales bearded
at the tip.
58. *Protea totta.* Upright smooth *Protea*.
Lin. syst. 141. *Reich.* 1. 265. *Willd.* 532. *mant.*
 191. *Thunb. prodr.* 532. *diff. n.* 54.
Leaves ovate smooth callous, head ovate, corollas cylin-
dricall rough-haired.
59. *Protea hirta.* Hairy *Protea*.
Lin. syst. 141. *Reich.* 1. 260. *Willd.* 532. *mant.*
 188. *Thunb. prodr.* 27. *diff. n.* 55.
Leucadendron hirtum. *Lin. spec.* 136. *amoen.* 4.
afr. 3.
Lepidocarpodendron. *Boerb. lugdb.* 2. 194. *ic.* &
Hypophyllocarpodendron. *Ejusd.* 205. *ic.*
Salix conophora africana angusto obtuso folio lanugi-
nofo. *Breyn. prodr.* 372.
Leaves ovate smooth, flowers lateral.
60. *Protea pubera.* Downy-leaved *Protea*.
Lin. syst. 141. *Reich.* 1. 266. *Willd.* 533. *mant.*
 192. *Thunb. prodr.* 27. *diff. n.* 56.
Leucadendron thymæloides. *Berg. cap.* 19. *act.*
holm. 1766. p. 324.
Leaves ovate tomentose, heads terminating tomentose.
61. *Protea divaricata.* Straddling-branched *Protea*.
Lin. syst. 142. *Reich.* 1. 269. *Willd.* 533. *mant.*
 194. *Thunb. prodr.* 27. *diff. n.* 57.
Leucadendron divaricatum. *Berg. cap.* 19. *act. holm.*
 1766. p. 324.
Scolymocephalus africanus argenteus, fol. brevioribus
myrtiformibus, capitulis rarioribus. *Herm. afr.* 20.
Leaves ovate rough-haired, heads terminating, branches
divaricating.
7. Rounded: with roundish leaves.
62. *Protea spatulata.* Spatulate-leaved *Protea*.
Lin. syst. 142. *Willd.* 533. *Thunb. prodr.* 28.
diff. n. 58. *t.* 5. *f.* 3.
Leaves spatulate somewhat cowed smooth.
63. *Protea cynaroides.* Round-leaved *Protea*.
Lin. syst. 142. *Reich.* 1. 263. *Willd.* 534. *mant.*
 190. *Thunb. prodr.* 28. *diff. n.* 59.
Leucadendron cynaroides. *Lin. spec.* 135.
Lepidocarpodendron. *Boerb. lugdb.* 2. 184. *ic.* &
Conocarpodendron. *Ejusd.* 199. *ic.*
Cynaroides frutex folio subrotundo rigido. *Petiv. mus.*
 374.
Scolymocephalos africana, lato rotundo glabro folio,
cono maximo sericeo candido. *Raii hist.* 3. 9.

- Salix conophora* afr. rigido crasso folio. *Breyn. prodr.*
 373.
Leaves roundish petioled smooth.
64. *Protea cordata.* Heart-leaved *Protea*.
Lin. syst. 142. *Willd.* 534. *Thunb. prodr.* 28.
diff. n. 60. *t.* 5. *f.* 1.
Leaves cordate.

DESCRIPTIONS, &c.

These are beautiful elegant Shrubs; natives of the Cape of Good Hope. They have alternate leaves, which by their different forms have afforded seven subordinate divisions of the numerous species. Flowers in some distinct, in spikes, perhaps monoecous, some of them being abortive; but in the greater part hermaphrodite, aggregate above a common receptacle, which is naked or else covered either with hairs or small scales, surrounded with scales imbricate and forming a strobile, sometimes separating the flowers, sometimes only encircling the aggregate of flowers. Heads terminating or sometimes but rarely axillary¹.

The celebrated Boerhaave was the first who made this fine genus much known, in his catalogue of the Leyden garden published in 1720, wherein he described and figured twenty-four species, under the sesquipedalian names of *Lepidocarpodendron*, *Conocarpodendron*, and *Hypophyllocarpodendron*. Royen (in 1740) has only twenty-one species, some of Boerhaave's being only varieties. He discarded his master's long names, and adopted the more elegant ones of Linneus. Only two of these species were cultivated in the Leyden garden; the rest were known no farther than by dried specimens.] Mr. Miller had three sorts growing in the Chelsea garden, but one of them was lost in 1768. [The catalogue of the Royal botanic garden at Kew, published in 1789, enumerates twenty-four species as growing there. We owe our present more accurate knowledge of this genus to the indefatigable pains of the Chevalier Thunberg, who has described most of the species in his monograph or dissertation, from which the following descriptions will be chiefly taken.

1. Stem filiform, angular, little branched, smooth, blood-red, a foot high. Branches at the top of the stem, about four, alternate, resembling the stem. Leaves simply trifid, directed one way, erect, smooth, remote, a finger's length, longer than the internodes; pinnas in the middle of the leaf opposite, like the leaf, a little shorter than the middle lobe. Head of flowers at the end of the stem and branches, the size of a large pea. Common calyx imbricate, smooth, with ovate, acute scales. Corolla silky.

2. The whole, except the calyx, smooth. Stem round, purple, a foot high and more. Leaves scattered, glandular at the tip, the lower pinnate, the upper trifid, erect: pinnas opposite, about three pairs, gradually diminishing from an inch in length. Heads of flowers terminating, peduncled. Peduncles several, alternate, from erect spreading, one-flowered, unequal, from an inch to a hand in length. Bractes at the bottom of the peduncles, scattered, lanceolate; above aggregate, fencing the flowers, larger, oblong, all acute, quite entire, membranaceous, purplish, an inch long. Calyx imbricate; scales lanceolate, membranaceous, smooth, ciliate, especially towards the top, with long, yellowish hairs.

3. Stem round, simple or branched, smooth. Branches in a sort of whorl, like the stem, unequal. Leaves simply trifid, or sometimes twice trifid, acute, smooth, frequent, erect, an inch long and more; pinnas opposite. Head the size of a hazel nut. Common calyx imbricate, ferruginous, smooth: scales lanceolate, the upper ones ciliate, with white hairs. Corolla purplish within, all woolly without with long white hairs.

4. Stem filiform, smooth, with branches in umbels, smooth or pubescent, unequal, spreading. Leaves trifid-pinnate, sometimes bipinnate, smooth, callous-acute. Heads of flowers aggregate at the ends of the

¹ Jussieu gen.

branches, the size of a pea. Calycine scales ovate, acuminate, smooth. Corollas snow-tomentose^m.

5. This is very distinct from all the rest in its club-shaped heads, aggregate in whorls at the ends of the branches. It is a native of New Hollandⁿ; the rest grow at the Cape of Good Hope.

6. Stem round, flexuose, erect, rigid, dusky-purple, simple, above wholly covered with leaves, below naked. Leaves flexuose, smooth; pinnae about four, opposite; pinnules alternate, at top acute with rufescent glands. Heads peduncled, aggregate, almost the size of a hazel nut. Peduncles rufescent, rough-haired, one-flowered, shorter by half than the head. Calycine scales rufescent. Corolla silvery with long imbricate hairs.

7. Stem flexuose, erect, purple, smooth, two feet high and more. Branches alternate, flexuose, filiform, subfastigate. Leaves longer than the internodes: pinnae about three, opposite; pinnules alternate, glandular-acute. Heads fastigate, aggregate, the size of a pea; on villose peduncles. Common calyx many-leaved, rough-haired, very short, with lanceolate scales. Corolla rough-haired on the outside.

It varies with all the leaves smooth; with the lower leaves smooth, and the upper rough-haired; with the lower leaves rough-haired, and the upper ones very hirsute^o.

Introduced in 1786, by Mr. Francis Masson^p.

8. Stem somewhat angular, flexuose at top, simple, smooth, a foot and half high. Leaves triternate; pinnae opposite, acute, glandular at the top; pinnules alternate. Heads aggregate, the size of a large pea; on alternate, tomentose, flexuose, drooping peduncles, one-flowered and two-flowered; with a smooth bracte at the base. Corolla woolly with silvery hairs.

9. Stem round, smooth. Leaves aggregate at the top, smooth; pinnae about four, with rufescent-callous tips; pinnules two alternate. Common peduncle single; sometimes several from the top of the stem: proper peduncles at the top of the common peduncle, alternate, one or two-flowered. Bractes awl-shaped, smooth, under the peduncles. Calycine scales ovate acute, smooth. Corolla hirsute on the outside.

10. Stem round, brown, smooth, tubercled with the remains of the fallen leaves, a foot high and more, with umbelled subfastigate branches. Upper leaves rough-haired, lower smooth: pinnae about three, opposite; pinnules alternate, awl-shaped, rufescent at the tip. Head ovate, larger than a hazel nut. Calycine scales lanceolate, rough-haired on the outside, smooth within. Corolla woolly with dense gray hairs.

11. Stem round, erect, ash-coloured, below naked and smooth, at top branched. Branches in a sort of whorl, erect, rough-haired. Lower leaves smooth, upper villose: pinnae three, opposite; pinnules alternate, acute, glandular at the tip, rufescent, fastigate. Heads at the ends of the branches in spikes, which are solitary, sessile, oblong, acute, villose with very dense white hairs, erect, a finger's length: heads aggregate, four-flowered.

12. Stem round, purple, very finely tomentose, with branches four together in whorls. Leaves smooth, the upper ones silky: pinnae three, opposite: pinnules alternate, acute, with an oblong yellowish gland at the tip. Heads four-flowered. Common calyx tomentose, four-leaved. Corollas very finely tomentose at the base, bearded at the tip^q.

Introduced in 1786, by Mr. Francis Masson^r.

13. This species is singular for the diversity of leaves on the branches: the lower ones are compound, with long linear leaflets; the upper ones are almost wedge-shaped, gradually attenuated towards the insertion, erect, channelled, subcucullate about the stem, imbricate, very smooth. At the end of each branchlet is a single sessile spike, with silvery, whitish flowers^s.

14. Stem round, villose. Leaves sessile, ovate, very blunt, entire, commonly five-toothed at the top, sometimes but seldom undivided and three-toothed, the

teeth callous; smooth, villose at the base, veined. Heads aggregate, almost as big as a walnut. Calycine scales lanceolate, smooth within, very finely villose without, bearded at the tip. Corolla cylindrical, villose, purplish. It differs from *P. Conocarpa* in having more and smaller heads of flowers, the calycine scales lanceolate, long; the corollas shorter with short hairs.

15. It varies with a smooth and a villose stem; as also with seven-toothed, five-toothed, three-toothed and undivided leaves, on different trees, and often on the same branch^t.

Introduced in 1774, by Mr. Francis Masson^u.

16. Stem flexuose, villose. Leaves sometimes but seldom four-toothed. Head solitary, the size of a pear. Common calyx imbricate, tomentose. Corollas long, hirsute.

17. Stem smooth, simple. Leaves elliptic-lanceolate, blunt with a point, having callous teeth and no perceptible veins. Head solitary, the size of a walnut. Common calyx tomentose, with ovate acute scales. Corolla filiform, villose. It is distinct from all the other species, in its decumbent stem, and leaves directed one way.

18. Stem knobbed, tomentose, simple. Leaves sessile, below the middle wider and ovate, above narrower, linear, three-toothed, with callous teeth, imbricate. Heads in the axils of the upper leaves, sessile, five-flowered. Common calyx imbricate, little villose: the lower scales ovate, acute; the upper ones oblong, acuminate: corolla filiform, below pubescent, above densely villose. It is easily distinguished by its narrow lateral heads.

19. The whole plant is hoary-tomentose. Stem round, simple. Leaves linear, commonly three-toothed, very seldom five-toothed; the teeth callous. Heads solitary or two together, almost as big as a walnut. Calycine scales ovate, acute. Corolla very finely pubescent. It is easily known by its being tomentose all over. It varies with narrower and wider leaves.

20. Stem smooth, a foot high, branched at top. Branches alternate, divaricating, pubescent. Leaves oblong, attenuated below, acute, either entire or having two or three callous teeth, smooth. Heads solitary, the size of a hazel nut. Common calyx tomentose, with lanceolate scales smooth within. Corolla villose.

21. Stem two feet high, erect, with branches in whorls. Leaves slightly channelled, acute, glandular at the tip. Racemes in terminating bundles, fastigate. Bractes awl shaped. Peduncles angular, very short. Common calyx none. Corolla has four linear petals. Anthers inserted into the middle of the corolla, linear, bent round. The whole plant is smooth^x.

Introduced in 1780, by Mr. William Forsyth^y.

22. Stem smooth, three feet high, erect, branched. Leaves acute; the lower smooth, the upper silky. Racemes a finger's length. Peduncles capillary, smooth, one-flowered. Calyx one-flowered, three-leaved; leaflets ovate, acute, villose. The whole corolla hirsute with dense wool.—This is the only species hitherto known with a one-flowered calyx; by which mark it is well distinguished from *P. caudata* and *incurva*^z; species which it very much resembles at first sight^z.

Introduced in 1787, by Mr. Francis Masson^a.

23. Stem erect, with branches in whorls towards the top. Leaves scattered. Heads subsessile. Calyx four-leaved, three or four-flowered. It differs from *P. racemosa* in not having one-flowered calyxes, and in the leaves being more incurved: from *P. caudata* in the leaves being much longer and incurved, the heads in racemes and more remote^b. The younger leaves are pubescent^c.

24. Stem smooth, branched at top. Leaves erect, the lower ones glandular at top, the upper ones hirsute and imbricate. Spikes cylindrical, erect. Common

^m Thunberg.

^p Hort. kew.

ⁿ Willdenow.

^q Thunberg.

^r Linn. suppl.

^s Thunberg.

^t Hort. kew.

^u Thunberg.

^v Hort. kew.

^w Hort. kew.

^x Thunberg.

^y Thunberg.

^z Thunberg.

^a Willdenow.

^b Thunberg.

^c Hort. kew.

calyx four-leaved, two-flowered, seldom one or three-flowered. Calycine leaflets ovate, acuminate, villose, unequal. Corolla hirsute. It differs from *P. racemosa* in having sessile heads, the calyxes four-leaved and two or three-flowered, the spike of flowers long and like a strobile, the leaves shorter, and mostly directed one way, spreading at the top.

25. Stem a foot high, simple, seldom bifid, wrinkled. Leaves acute, mostly directed one way. Head solitary, the size of a walnut. Common calyx none, but the common receptacle fenced with three-sided leaves and pinnatifid bractes. Corolla cohering at bottom, four-cornered, four-cleft at top, with the border spreading, smooth, stuffed on the inside with a dense white pappus shorter than the corolla.—This species agrees with *pinifolia* and *aulacea* in having no calyx, with *umbellata* in having multifid bractes.

26. Stem erect, knobbed with fallen leaves, smooth, with branches four together in whorls and fastigate. Lower leaves blunt, incurvate-erect; upper leaves elliptic-lanceolate, blunt, with a comose point. Head solitary, the size of a walnut.

27. The whole of this is smooth. Stem very much branched, wrinkled. Branches subumbelled, pubescent. Leaves linear-subulate, grooved above, entire, imbricate, from spreading recurved. Heads solitary, the size of a pea. Common calyx imbricate, tomentose: the outer scales minute, ovate, very short; the lower lanceolate, longer than the head. Corollas ferruginous, minute.

28. Stem smooth, slender, proliferous, two feet high. Branches covered with leaves; which are subimbricate and smooth. Heads in the fork and at the tops of the branches, the size of a pea.

29. Stem erect, four feet high, with subverticillate-aggregate fastigate branches. Leaves flat above, convex underneath, sharpish, imbricate. Heads the size of a pea, solitary, at the ends of the branches and branchlets. Common calyx many-leaved, shorter than the corolla; which is yellow and minute. Nut obovate, compressed, with an acute margin, and blunt villose hollow top, and a white kernel, not opening. It varies with a tomentose calyx.

30. Stem erect, with drooping branches in threes or thereabouts. Leaves acute, subimbricate. Head solitary, the size of a plum. Common calyx imbricate; outer scales ovate, inner oblong, acute, purple, spreading. Corolla covered on the outside with a golden fleece. It is immediately known by the resemblance of the flowers to a Rose.

31. Stem filiform, weak, smooth; covered with leaves. Leaves linear, flat above, convex underneath, sharpish, imbricate. Head silky, the size of a walnut. Corolla woolly all over and bearded with silvery hairs.

32. Stem two feet high, erect, even, with branches in whorls of four, and very short branchlets also in whorls. Leaves bluntish, entire, from erect spreading. Heads at the ends of the branchlets, the size of a pea. Common calyx imbricate, very short, tomentose. Corolla silvery.

33. The whole of this is silvery tomentose. Stem round, erect, little tomentose, with umbelled branches, about six, filiform, erect, unequal. Leaves blunt, erect-imbricate. Heads in the fork and at the tips of the branches, silvery-woolly all over, fenced with leaves, the size of a pea.

34. The whole is smooth. Stem erect, little branched, three or four feet high, with branches in a sort of whorl and striated. Leaves blunt with a point. Racemes terminating, subumbelled. Peduncles wrinkled, scarcely a line in length. Bracte under each peduncle, lanceolate, channelled, white, erect, the length of the peduncle and half the flower. Common calyx none. Corolla four-petalled: petals linear, acute, channelled, equal, smooth, white. Anthers inserted into the middle of the petal, linear, spiral, white^d.

Introduced by Mr. Francis Masson in 1774^e.

35. Stem two feet high, erect. Branches at bottom

^d Thunberg.

^e Hort. kew.

few, towards the top frequent, umbelled, fastigate. Leaves as in the preceding. Heads the size of a hazel nut, solitary, fenced with leaves and bractes. Calyx none, but bractes on the common receptacle, alternate, pinnatifid. Corolla as in *P. bracteata*^f.

Introduced in 1787, by Mr. Francis Masson^g.

36. Stem erect, four feet high. Branches long, simple, leafy, smooth. Leaves sessile, blunt, callous at the base underneath, with a rufescent callus at top, a little bent back at the edge, somewhat convex and wrinkled on the upper surface, concave on the lower. Head solitary, as big as a middling-sized apple. Calycine scales wide, ovate, acute, smooth within, pubescent on the outside, densely tomentose at the base. Receptacle densely white-villose. Tube of the corolla compressed: border two-parted, the segments linear: one of them wider and trifid; the stamens and reflex stigma are inserted into these segments, before they are unfolded: the other one-third of the width and entire: both villose, shorter by half than the style.—This agrees with *P. conocarpa*, *totta*, &c. in having an imbricate calyx, shorter by half than the style^h.

Introduced by Masson in 1774ⁱ.

37. Stem smooth, two feet high, with branches in whorls. Leaves linear-spatulate, imbricate, obtuse, sessile, with a rufescent callus at the top; the lower ones smooth, the upper covered with whitish silky hairs pressed close. Heads silky, the size of a hazel nut^k.

Introduced by Masson in 1774ⁱ.

38. Stem three feet high, erect, wrinkled, with the branches in a sort of whorl. Leaves attenuated below, terminated by a gland. Heads ovate, fenced with leaves, the size of a plum. Outer calycine scales ovate, inner oblong, concave, blunt. Corolla purplish. Receptacle ferruginous-tomentose^m.

Introduced in 1780, by the Countess of Strathmoreⁿ.

39. Stem nine feet high, and three feet in diameter. Leaves hoary. Calyx hemispherical, imbricate. Corolla pubescent. Receptacle yellow-villose^o.

Native of Abyssinia, near Lamalmon^p.

As Bruce saw it, this tree was thick and stunted, with few branches. Leaves of a dead green, not unlike the Willow, alternate, sessile. Calyx of many broad scales. In the middle of a very hot day, the flowers unbend themselves more, the calyx seems to expand, and the whole flower to turn itself towards the sun, in the same manner as the Sun-flower. When the branch is cut, the flower dries almost instantaneously.

40. Stem arboreous, a fathom high, erect, branched. Leaves attenuated below, bluntish. Head ferruginous, viscid, the size of a goose's egg. Calyx imbricate, with the lowest scales minute, ovate; the upper ones oblong, the uppermost lanceolate^q.

Introduced in 1774, by Mr. Francis Masson^r.

41. Stem scarcely a hand in height, with two or three branches. Leaves at the top of the stem in clusters, often convolute, with a cartilaginous rugged margin. Head solitary, fenced with leaves, the size of a plum. Common calyx imbricate; the outer scales minute, ovate, blunt; the inner lanceolate. Corolla covered with a white pile.—This differs very widely from the preceding in having a creeping root, the stem very short, almost simple, one-flowered, the leaves linear margined, the head ovate smaller, not at all viscid^s.

42. Introduced by Masson in 1774^t.

43. Stem erect, two feet high. Branches filiform, scattered, unequal, pubescent. Leaves sessile, acute, smooth or very finely tomentose. Head solitary, the size of a plum. Outer calycine scales ovate, acute, smooth; the inner ones oblong, hairy.

44. Stem very much branched, three feet high, upright, with filiform rod-like branches, and alternate

^f Thunberg.

^g Hort. kew.

^h Thunberg.

ⁱ Bruce.

^k Hort. kew.

^l Willdenow.

^m Hort. kew.

ⁿ Thunberg.

^o Thunberg.

^p Thunberg.

^q Hort. kew.

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¹ Thunberg.

² Hort. kew.

³ Willdenow.

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branchlets towards the top of them. Leaves lanceolate, narrowed below. Heads bluntly four-cornered. Calycine scales imbricate in four rows, ovate, blunt, concave, smooth.—It varies with the stem and leaves smooth, and hoary tomentose^a.

Introduced in 1774, by Mr. Francis Maffon^x.

45. Stem erect, a foot high and more, with simple divaricating branches. Leaves sessile, scattered, subdecumbent. Bractes fencing the cone, somewhat like the leaves, concave, erect, whitish with a spreading callous top, three times as long as the cone. Cone ovate, smooth, sessile. Calycine scales ovate, sharpish, concave; the lower larger and smooth, the upper silky-tomentose. Receptacle naked. Corolla four-petalled. Petals linear, obtuse; claws white, villose, border spreading, yellowish. Anthers four, below the top of the petals, sessile, ovate, twin, yellow. Germ superior, two-lobed, smooth. Style filiform, thickened, yellowish, the length of the corolla. Stigma club-shaped, blunt, yellowish^y.

According to Maffon, this is the male of *P. conifera*^z. It was introduced by him in 1774^a.

46. Stem erect, three feet high, with branches in whorls and subdivided. Leaves terminated by a concave smooth gland. Cone tomentose ovate, the size of a pea. In *P. pallens* the branches are scattered and simple, the leaves are more lanceolate, the cone of flowers is smooth, and the bractes are coloured. But in *P. conifera*, the branches are in whorls and again subdivided, the leaves elliptic, the cone of flowers tomentose, and the floral leaves concolour. These were considered as one species by Linneus, as were also *mellifera* and *repens*^b.

It was cultivated in 1752, by Mr. Miller^c.

47. Stem shrubby, proliferous, erect, even, with subpubescent branchlets. Leaves spatulate, even, small, scattered. Flowers hemispherical, terminating and axillary, villose. Involucres equal to the floscules, very like the stem-leaves, and not longer^d.

Introduced in 1774, by Mr. Francis Maffon^e.

48. Stem erect, pubescent. Leaves sessile. Cone solitary, the size of a plum^f.

Introduced in 1774, by Mr. Francis Maffon^g.

49. Stem erect, three feet high, with two or three filiform pubescent branches. Leaves sessile, imbricate with a terminating gland, pressed close at the base, but spreading at the tip. Heads solitary, seldom two together, oblong, the size of a small walnut. Calycine scales lanceolate, acute-glandular. Corolla wholly covered on the outside with a yellowish wool.

50. Stems branched, smooth. Leaves silky-tomentose all over. Heads at the ends of the branches, seldom aggregate, somewhat drooping, the size of a small pea. Calycine scales lanceolate, smooth. Corolla yellow-tomentose.

51. Stem four feet high, erect, naked at bottom, smooth. Branches alternate, clustered, short. Leaves acute, glandular at the top, very finely silvery-tomentose. Heads at the ends of the branches, fenced with leaves, solitary, the size of a pea^h.

Introduced in 1774, by Mr. Francis Maffonⁱ.]

52. This has a strong upright stalk, covered with a purplish bark, dividing into several branches which grow erect. Leaves broad, shining, silvery, making a fine appearance, when the plant is intermixed with other exotics.

[It was cultivated here so long since as 1693; and flowers in august^k.

53. The whole plant is smooth. The stem is only about two inches in length, and seldom branched. The branches are in a sort of whorl, diffused, somewhat knobbed, wrinkled, unequal. Leaves scattered, terminating, attenuated below. Head solitary, the size of a walnut. Outer calycine scales ovate, inner oblong. Corolla hirsute.

54. Stem three feet high, erect, branched. Branches alternate or in threes, filiform, patulous, a little villose

at the top. Leaves sessile, blunt, glandular at the tip, oblique at the base. Heads at the ends of the branches and branchlets, solitary, the size of a pea. Outer calycine scales smaller, lanceolate, black at the tip; inner larger, ovate, blunt, subciliate. Corollas on the outside white-hirsute.

55. Stem a fathom high and more, branched. Leaves sessile, blunt, spreading. Head terminating, solitary, the size of the fist. Outer calycine scales ovate, gradually larger; inner oblong, blunt. Corolla tomentose-white.

This species and *P. cynaroides* are handsome with very large heads. This has lanceolate sessile leaves, with a lofty arboreous branched stem: but *P. cynaroides* has roundish petioled leaves, with a low frutescent stem scarcely branched.

56. Stem smooth all over. Leaves sessile, glandular at the tip, thick. Head terminating, solitary, the size of an apple.

57. Stem arborescent, villose, branched, erect, a fathom in height. Leaves subpetioled, acute, black at the tip. Head terminating, the size of a goose's egg. Calycine scales all smooth, bearded on the outside below the tip with long black or ferruginous hairs; the outer ones ovate, the middle oblong, the inner linear-oblong, narrower below. Corolla filiform, hirsute. It varies with narrower and broader leaves; and with a black and ferruginous beard^l.

Introduced in 1786, by Mr. Fr. Maffon^m.

58. Stem round, erect, villose. Leaves sessile, ovate-oblong, blunt, terminated by a red gland, seldom three-toothed, smooth. Head terminating, solitary, the size of a pear. Calycine scales smooth, ovate, acute, ciliate, many times shorter than the corollaⁿ.

Introduced in 1774, by Mr. Fr. Maffon^o.

59. Stem erect, villose, three feet high. Leaves sessile, terminated by an obtuse gland, very seldom ciliate and imbricate. Heads below the top, in the axils of the leaves, solitary, eight-flowered or thereabouts. Calycine scales oblong, acute, of a yellowish blood red, shining. Corollas villose, a little shorter than the calyx. Pistils twice as long as the corolla, curved, smooth^p.

Introduced in 1774, by Mr. Fr. Maffon^q.

60. Stem two feet high, villose, with branches in a sort of whorl and patulous. Leaves sessile, terminated by a blunt gland, tomentose, imbricate. Heads seldom solitary, often many aggregate, larger than a hazel nut. Calycine scales lanceolate, hirsute. Corolla woolly with villose hairs. It varies with ovate and oblong leaves^r.

Introduced in 1774, by Mr. Fr. Maffon^s.

61. Stem a foot high, flexuose, pubescent, with branches in whorls three or four together. Leaves ovate-roundish, villose, imbricate; the lower reflex. Head at the end of the branchlets, solitary, drooping, the size of a pea. Corolla silvery.

62. Stem two feet high, erect, smooth, branched; branches by two or threes. Leaves petioled, blunt, imbricate. Petiole round, shorter by half than the leaf. Heads aggregate at the ends of the branches. Calyx four-leaved, tomentose, four-flowered. Corolla woolly.

63. Stem erect, wrinkled, simple, scarcely a foot high. Leaves spreading. Petiole semicylindrical, wrinkled, smooth, an inch long. Head terminating, ovate, nearly the size of a child's head. Calycine scales gradually larger, acute, tomentose. Corolla white-tomentose^t.

Introduced in 1774, by Mr. Fr. Maffon^u.

64. Stem simple, decumbent, round, striated, a span long. Leaves alternate, sessile, roundish, nine-nerved; the lower ones larger, the upper ones gradually smaller. Head almost radical, ovate, truncate. Calycine scales gradually larger, oblong, blunt. Down fencing the seed, purplish^x.

^a Thunberg.

^z Willdenow.

^e Hort. kew.

^f Thunberg.

^x Hort. kew.

^a Hort. kew.

^d Linn. mant.

^g Hort. kew.

ⁱ Hort. kew.

^k Idem.

^y Thunberg.

^b Thunberg.

^c Hort. kew.

^h Thunberg.

^l Thunberg.

^o Hort. kew.

^r Thunberg.

^m Hort. kew.

^p Thunberg.

^s Hort. kew.

^u Hort. kew.

^x Thunberg.

ⁿ Thunberg.

^q Hort. kew.

^t Thunberg.

All these species are natives of the Cape of Good Hope, or the country immediately above it, except the fifth and thirty-ninth.]

PROPAGATION AND CULTURE.

These plants are too tender to live abroad through the winter in England, but some of them are hardy enough to live in a good green-house. In the summer these may be placed in the open air in a sheltered situation; for, if they are exposed to winds, the plants will be torn, and rendered unsightly, nor will they make any progress in their growth. In warm weather they must be frequently but sparingly watered, and in cold weather this must not be too often repeated, lest it should rot their fibres.

The fifty-second sort should be placed in an airy dry glass-case, where it may be protected from cold, and have as much light as possible, and in winter should have little water; this rises easily from seeds, which must be procured from the Cape of Good Hope, where it grows naturally. The seeds will sometimes remain in the ground six or eight months, and at other times the plants will appear in six weeks; therefore the best way is to sow the seeds in small pots filled with soft sandy loam, and plunge them into a moderate hot-bed; and, if the plants should not come up so soon as expected, the pots should remain in shelter till the following spring, when, if the seeds remain sound, the plants will come up. The pots in which the seeds are sown, should have but little wet, for moisture frequently causes them to rot. When the plants appear, they should not be too tenderly treated, nor should they have much wet; but in warm weather they must be exposed to the open air in a sheltered situation, and in winter protected from frost.

Many of the sorts may be propagated by cuttings, taken off in april, just before the plants begin to shoot. Plant them in small pots filled with light earth, plunge them into a moderate hot-bed, shade them from the sun, refresh them with water gently and sparingly. About midsummer, by which time they will have put out roots, shake them gently out of the pots, plant each in a separate small pot, filled with light earth, place them in a frame, and shade them till they have taken new root, gradually inure them to the open air, and treat them like the old plants.

[Since all the Proteas except two come from the same country, the above directions are in general sufficient. Several of them have not flowered in this country, and many do not perfect their seeds. These therefore can only be increased by cuttings; and some of the species are not propagated this way without difficulty.]

The warmth of a common greenhouse is generally sufficient for their protection; but many of them are delicate with respect to damp, and are apt to suffer if too much crowded, or over-watered, or placed in a damp part of the house.

PROTIUM. See *Amyris*.

PROVENZALIA. See *Calla*.

PRUNELLA, (or Brunella, from the German die Braune, a disorder in the jaws and throat, which this plant is said to cure.)

Lin. gen. n. 735. Reich. n. 793. Schreb. n. 990.

Brunella. Tournef. t. 84. Juss. 116.

Class. 14. 1. Didynamia Gymnospermia.

Nat. order of *Verticillata* or *Labiata*.

GENERIC CHARACTER.

CAL. Perianth one-leaved, two-lipped, shorter than the throat, permanent. Upper lip flat, wider, truncate, very slightly three-toothed. Lower lip erect, narrower, acute, semibifid.

COR. one-petalled, ringent: tube short, cylindrical: throat oblong: upper lip concave, entire, nodding: lower lip reflex, trifid, blunt; middle segment wider, emarginate, ferrate.

STAM. Filaments four, awl-shaped, forked at top; two of them a little longer than the others. Anthers simple, inserted into the filaments below the top, as it were on another branch.

PIST. Germ four-parted. Style filiform, with the stamens bending to the upper lip. Stigma bifid.

: VOL. II.

PER. none. Calyx closed, containing the seeds.

SEEDS four, subovate.

OBS. The essence of the genus consists in the forked filaments, as in *Crambe*.

ESSENTIAL CHARACTER.

Filaments forked, with an anther on one of the forks. Stigma bifid.

SPECIES.

1. *Prunella vulgaris*. Common Self-heal.

Lin. spec. 837. Reich. 3. 101. hort. cliff. 316. fl. succ. n. 540. mat. med. 154. Hudf. angl. 264. Wither. arr. ed. 3. 541. Smith, angl. 646. Curt. lond. 4. t. 42. 229. Lightf. scot. 321. Relb. cant. n. 450. Sibth. oxon. n. 540. Hall. belv. n. 277. Neck. gallob. 261. Scop. carn. n. 715. Pollich pal. n. 577. Fl. dan. t. 910. Krocki fles. n. 964. Villars dauph. 2. 396. Allion. pedem. n. 123. Ludw. est. t. 19. Kniph. cent. 5. n. 72. Sabb. hort. 3. t. 32. Fl. rust. t. 137. Park. theat. 1680. 1.

P. officinalis. Crantz. austr. 279.

Prunella. Fuchf. hist. 621. Ger. 507. 1. emac. 632. 1. Raii hist. 551. syn. 238. Petiv. brit. t. 32. f. 11.

P. flore minore vulgaris. Baub. hist. 3. 428. 2.

Brunella. Dod. pempt. 136. 1. Riv. mon. 29. 1. Blackw. t. 24.

B. major folio non dissecto. Baub. pin. 260. Mill. fig. t. 70. f. 2. Mor. hist. f. 11. t. 5. ord. 1. f. 1.

Consolida minor. Camer. epit. 703. Matth. 963.

β. *Prunella grandiflora*. Great-flowered Self-heal.

Lin. spec. 837. β. syst. 547. 1. α. Reich. 3. 101. 1. β. Pollich, pal. n. 578. Jacqu. austr. 4. 40. t. 377. Krocki fles. n. 965. Villars dauph. 2. 396. 2. Allion. pedem. n. 124. Hall. belv. n. 278. (Brunella.) Curt. magaz. 337.

P. magno flore purpureo, & alio albo. Park.

P. flore magno, folio non laciniato. Baub. hist. 3. 429. Raii hist. 552.

P. flore albo. Ger.

Brunella cœrulea magno flore. Baub. pin. 261. Mor. hist. ord. 2. f. 4.

B. flore majore. Riv. mon. 29. 2.

All the leaves ovate-oblong petioled.

2. *Prunella laciniata*. Jagged-leaved Self-heal.

Lin. spec. 837. syst. 547. Reich. 3. 101. Leers, herb. n. 470. Jacqu. austr. 4. 41. t. 378. Krock. fles. n. 966. Villars dauph. 2. 397. 3. Allion. pedem. n. 125. Hall. belv. n. 279. (Brunella.)

P. flore albo parvo, folio laciniato—flore magno purpureo, fol. lacin.—& flore magno albo, fol. lacin. Baub. hist. 3. 429. Raii hist. 551. 2. & 552. 4. Mor. hist. f. 11. t. 5. ord. 2. f. 6. 2.

Brunella folio laciniato. Baub. pin. 261. Riv. mon. t. 30.

B. 2. non vulgaris. Clus. hist. 2. 43.

β. *B. minor alba laciniata*. Baub. pin. 261. Kniph. cent. 10. n. 72.

γ. *B. verbenulæ folio, flore cœruleo*. Vaill. par. t. 5. f. 1.

Symphytum petraeum Lobelii. Dalech. 1174.

Leaves ovate-oblong petioled, the four uppermost lanceolate toothed.

3. *Prunella hyssopifolia*. Hyssop-leaved Self-heal.

Lin. spec. 837. syst. 547. Reich. 3. 102. Sauv. monsp. 141. Villars dauph. 398. Allion. pedem. n. 126.

P. angustifolia. Baub. hist. Raii hist. 552.

Brunella hyssopifolia. Baub. pin. 261.

B. angust. integra hirsutior. Mor. hist. 3. 364. f. 11. t. 5. f. 7.

Leaves lanceolate quite entire sessile, stem erect.

DESCRIPTIONS, &c.

1. Root perennial (according to Mr. Curtis, annual) very fibrous. The whole plant is thinly set with hairs; the hairs upright and white. Stem from six to twelve inches in height, upright, commonly branching from the very bottom, hairy, purplish especially towards the top. Branches in pairs at each joint, brachiate, ascending. Leaves bluntish, hairy, obsoletely toothed or repand: petioles channelled above

and hairy along the edges. Bractes reniform, acuminate, ciliate, nerved. At the top of the stem, and at the end of each branch is a subcylindrical spike of flowers, truncate at top, the largest an inch in length. Calyx somewhat longer than the bractes; upper lip dilate, three-toothed, having seven ribs; lower bifid, mucronate, each segment marked with three lines, and ferrate with short stiff hairs; the lips are purple. Corolla violet-coloured, with a white tube, and easily falls: then the lips of the calyx close together, the better to secure the germ. Seeds smooth, brown, terminated by a white point^y.

This plant varies much in size. Linneus remarks, that in open exposed situations it is short and trailing; but when drawn up among high grafs, and especially in woods, it is upright and a foot high. In the latter case it has a flexuose stem, branches little, and has very long internodes. The corolla varies to red, and to white.

Native of Europe in pastures and meadows, flowering from june to august. According to Linneus, kine, sheep and goats eat it, but horses refuse it.

Being astringent, it was formerly used in fluxes, and in gargarisms for aphthæ and inflammations of the fauces. It was considered as one of the best vulnerary herbs, but is now out of use.

β. Great-flowered Self-heal differs from the common sort in having the stems lower, the leaves more tender, and the flowers double the size^z.—The stems are scarcely a long span in height, they are erect, not branched, obsoletely quadrangular, and hirsute. Leaves either entire or very thinly toothed, narrower, on longer petioles, of a brighter green, the upper ones almost lacinate, all more hirsute. Spike looser, more ovate. Corollas an inch long, paler, or not of so deep a blue. The upper lip of the calyx is perfectly three-toothed, whereas in the common sort it has only three spinules. The bractes are wider. The root is shorter, scarcely creeping^a.

The flower is sometimes white, and it varies with lacinate leaves, which varieties differ as much from the species as the second differs from the first. A drier soil seems to render the leaves more or less cut, more hairy, and frequently the corolla white^b.

Mr. Curtis cultivated it several years without discovering it to have the least disposition to vary. In july and august, it puts forth its large showy blossoms, of a fine purple colour.

Native of Austria, Silesia, Dauphiné. Professor Jacquin found it mixed with the *laciniata*. Villars observed it on high mountains, in moist meadows, and near water.

2. Root perennial. Stems hard, small and branched, from three to six inches in height, but in one variety creeping on the ground. Leaves more or less villose, and more or less cut. Flowers not larger than those of the common sort; but more commonly white or yellow than blue or purple^c.

Native of Germany, Austria, Switzerland, Dauphiné, Piedmont, in the lower mountains, dry pastures, and by the side of cultivated grounds.

This plant is more nearly allied to the common sort, than that is to the *grandiflora*. This, like the *grandiflora*, is more hairy, the leaves more cut, and the flowers more frequently white, in the dry grounds where it is commonly found^d.

Linneus considers it as differing very little from the common sort, and as having sprung originally from that; the same structure remaining, and the fructification being entirely the same.]—There are several varieties of it: γ has narrower leaves, cut into finer segments.

[It was cultivated here in 1713, and flowers from july to september^e.

3. This differs from the common sort in having an erect stem, not an ascending one, the leaves lanceolate, sessile, quite entire, rugged, not ovate, petioled, ferrate, even; the corollas four times as large with the keel of the upper lip hairy^f.]

^y Curtis, Smith, Withering, Lightfoot.

^a Krockers.

^b Villars.

^c Idem.

^e Hort. kew.

^f Linn. syst.

^z Villars.

^d Idem.

The leaves are narrower than either of the former, and are covered on both sides with fine hairs, and have very short foot-stalks; the spikes of flowers are slender, and the corolla of a pale blue colour.

[Stem straight, firm and little branched; leaves narrow, oblong, entire, hairy; flowers large, blue or white; the upper lip is deeper, hollowed like a helmet, compressed by an eminence and villose on the outside; the lower a little concave, cut at the edge^g.

Allioni says, that he found the plants removed into the garden from the county of Nice to become less strigose, and to approach in habit to the common sort. Bellardi also made the same observation, on sowing the seeds in a garden. Hence Allioni suspects very much that it is nothing more than a variety.

We have here then either four species or one species with three varieties; for *grandiflora* differs as much and is as permanent as the others.

P. hyssopifolia is a native of the South of France and the county of Nice; and was cultivated in 1731, by Mr. Miller. It flowers from july to october^h.]

Mr. Miller enumerates four other sorts. His fifth species *P. sulphurea*, with sulphur-coloured flowers, is probably a variety of the second. The three others, *P. canadensis*, n. 4. *P. caroliniana*, n. 6. and *P. Nova Angliæ*, n. 7. are, as the names imply, natives of North America.

PROPAGATION AND CULTURE.

Sow the seeds in the autumn, soon after they are ripe; for when sown in the spring, they seldom grow till twelve months after; if they succeed at all. Thin the plants where too close, and keep them clean from weeds. They thrive best on a moist soil and in a shady situation, where they will live three or four years, but in rich land they seldom continue longer than two years.

[They may also be increased by parting the roots in autumn.

PRUNELLA. See *Cleonia*, *Dracephalum*, *Ruellia*.

PRUNIFERA. See *Laurus Persea* and *Sapindus*.]

PRUNING OF TREES. There is not any part of Gardening of more general use than that of Pruning, and yet it is very rare to see Fruit Trees skilfully managed. Almost every Gardener will pretend to be a master of this business, though there are few who rightly understand it; nor is it to be learnt by rote, but requires a strict observation of the different manners of growth of the several sorts of fruit trees, which must be differently treated, according as they are naturally disposed to produce their fruit. Some sorts produce it on the same year's wood, as Vines; others for the most part upon the former year's wood, as Peaches, Nectarines, &c. and others upon cufsons or spurs, which are produced upon wood of three, four or five to fifteen or twenty years old, as Pears, Plums, Cherries, &c. In order to the right management of Fruit Trees, there should always be provision made for a sufficient quantity of bearing wood in every part of the tree; and at the same time there should not be a superfluity of useless branches, which would exhaust its strength, and cause it to decay in a few years.

The reasons for pruning Fruit Trees are: first, to preserve them longer in a vigorous bearing state: secondly, to render them more beautiful to the eye: and thirdly, to cause the fruit to be larger and better tasted.

1. It preserves a tree longer in a healthy bearing state: for by pruning off all superfluous branches, the root is not exhausted in supplying such as are useless, and which must afterwards be cut out.

2. By skilful Pruning, a tree is rendered much more pleasing to the eye. But here I would not be understood to be an advocate for drawing a regular line along the wall, according to the shape which the tree is to be reduced to, and cutting all the branches, strong or weak, exactly to the chalked line; the absurdity of which practice will soon appear to every one who observes the difference of those branches shooting, at the succeeding spring. All therefore that I mean by rendering a tree beautiful by pruning is,

^g Villars.

^h Hort. kew.

that the branches should be all cut according to their several strengths, and nailed at equal distances, in proportion to the different sizes of their leaves and fruit, and that no part of the wall (so far as the trees are advanced) be left unfurnished with bearing wood. A tree well managed, though it does not represent any regular figure, yet will appear very beautiful to the sight, when thus dressed and nailed to the wall.

3. It is of great advantage to the fruit, for the cutting away all useless branches, and shortening all the bearing shoots according to the strength of the tree, will render the tree more capable to nourish those fruit and branches which are left remaining, so that the fruit will be much larger and better tasted. And this is the advantage which those trees against walls or espaliers have to such as are standards, and are permitted to grow as they are naturally inclined; for it is not their being trained either to a wall or espalier which renders their fruit so much better than standards, but because the roots have a less quantity of branches and fruit to nourish, and consequently their fruit will be larger and better tasted.

The reasons for Pruning being thus exhibited, the next thing is the method of performing it; but this being fully handled under the several articles of the different kinds of fruit, I shall not repeat it again in this place, and therefore shall only add some few general instructions, which are necessary to be understood, in order to the right management of fruit-trees.

There are many persons who suppose, that if their fruit-trees are but kept up to the wall or espalier during the summer season, so as not to hang in very great disorder, and in winter to get a gardener to prune them, it is sufficient, but this is a mistake; for the greatest care ought to be employed about them in the spring, when the trees are in vigorous growth, which is the only proper season to procure a quantity of good wood in the different parts of the tree, and to displace all useless branches as soon as they are produced, whereby the vigour of the tree will be entirely distributed to such branches only as are designed to remain, which will render them strong, and more capable to produce good fruit; whereas, if all the branches are permitted to remain which are produced, some of the more vigorous will attract the greatest share of the sap from the tree, whereby they will be too luxuriant for producing fruit, and the greatest part of the other shoots will be starved, and rendered so weak, as not to be able to produce any thing else but blossoms and leaves, as hath been before mentioned; so that it is impossible for a person, let him be ever so well skilled in fruit-trees, to reduce them into any tolerable order by Winter-pruning only, if they are wholly neglected in the spring.

There are others who do not entirely neglect their trees during the summer season, as those before-mentioned, but yet do little more good to them by what they call Summer-pruning; for these persons neglect their trees at the proper season, which is in april and may, when their shoots are produced, and only about midsummer go over them, nailing in all their branches, except such as are produced fore-right from the wall, which they cut out, and at the same time often shorten most of the other branches; all which is entirely wrong practice, for those branches, which are intended for bearing the succeeding year, should not be shortened during the time of their growth, which will cause them to produce one or two lateral shoots from the eyes below the place where they were stopped, which shoots will draw much of the strength from the buds of the first shoot, whereby they are often flat, and do not produce their blossoms; and, if those two lateral shoots are not entirely cut away at the Winter-pruning, they will prove injurious to the tree, as the shoots which these produce, will be what the French call water shoots; and in suffering those luxuriant shoots to remain upon the tree until midsummer before they are displaced, they will exhaust a great share of the nourishment from the other branches (as was before observed;) and, by shading the fruit all the spring season, when they are cut away, and the other

branches fastened to the wall, the fruit, by being so suddenly exposed, will receive a very great check, which will cause their skins to grow tough, and thereby render them less delicate. This is to be chiefly understood of stone fruit and Grapes, but Pears and Apples being much hardier, suffer not so much, though it is a great disadvantage to those also to be thus managed.

It must also be remarked, that Peaches, Nectarines, Apricots, Cherries, and Plums, are always in the greatest vigour, when they are the least maimed by the knife; for where these trees have large amputations, they are very subject to gum and decay; so that it is certainly the most prudent method carefully to rub off all useless buds when they are first produced, and pinch others where new shoots are wanted to supply the vacancies of the wall, by which management trees may be so ordered, as to want but little of the knife in Winter-pruning, which is the surest way to preserve these trees healthful, and is performed with less trouble than the common method.

The management of Pears and Apples is much the same with these trees in summer, but in winter they must be very differently pruned; for as Peaches and Nectarines for the most part produce their fruit upon the former year's wood, therefore they must have their branches shortened according to their strength, in order to produce new shoots for the succeeding year; so Pears, Apples, Plums, and Cherries, on the contrary, producing their fruit upon cursons or spurs, which come out of the wood of five, six, or seven years old, should not be shortened, because thereby those buds, which were naturally disposed to form these cursons or spurs, would produce wood branches, whereby the trees would be filled with wood, but never produce much fruit; and as it often happens that the blossom buds are first produced at the extremity of the last year's shoot, by shortening the branches the blossoms are cut away, which should always be carefully avoided.

There are several authors who have written on the subject of Pruning in such a prolix manner, that it is impossible for a learner to understand their meaning. These have described the several sorts of branches which are produced on fruit-trees; as wood branches, fruit branches, irregular branches, false branches, and luxuriant branches, all which they assert every person, who pretends to Pruning, should distinguish well; whereas there is nothing more in all this but a parcel of words to amuse the reader, without any real meaning; for all these are comprehended under the description already given of luxuriant or useless branches, and such as are termed useful or fruit-bearing branches; and, where due care is taken in the spring of the year to displace these useless branches (as was before directed,) there will be no such thing as irregular, false, or luxuriant branches at the Winter-pruning; therefore it is to no purpose to amuse people with a cant of words, which, when fully understood, signify just nothing at all.

But since I have explained the different methods of Pruning the several sorts of fruits under the respective articles, I shall forbear repeating it again in this place, but shall only give some general hints for the Pruning of standard fruit-trees, and so conclude.

First, you should never shorten the branches of these trees, unless it be where they are very luxuriant, and grow irregular on one side of the tree, attracting the greatest part of the sap of the tree, whereby the other parts are unfurnished with branches, or rendered very weak; in which case the branch should be shortened down as low as is necessary, in order to obtain more branches, to fill up the hollow of the trees; but this is only to be understood of Pears and Apples, which will produce shoots from wood of three, four, or more years old, whereas most sorts of stone fruit will gum and decay after such amputations.

But from hence I would not have it understood, that I would direct the reducing of these trees into an exact spherical figure, since there is nothing more detestable than to see a tree (which should be permitted to grow as it is naturally disposed, with its branches produced

produced at proportionable distances, according to the size of the fruit,) by endeavouring to make it exactly regular at its head, so crowded with small weak branches as to prevent the air from passing between them, which will render the trees incapable to produce fruit. All that I intend by this stopping of luxuriant branches, is only when one or two such happen on a young tree, where they entirely draw all the sap from the weaker branches, whereby they starve them, then it is proper to use this method, which should be done in time, before they have exhausted the roots too much.

Whenever this happens to stone fruit, which suffer much more by cutting than the former sorts, it should be remedied by stopping or pinching those shoots in the spring, before they have obtained too much vigour, which will cause them to push out side-branches, whereby the sap will be diverted from ascending too fast to the leading branch (as hath been directed for wall-trees,) but this must be done with caution.

You must also cut out all dead or decayed branches, which cause their heads to look very ragged, especially at the time when the leaves are upon the tree; these being destitute of them, have but a despicable appearance; besides, these will attract noxious particles from the air, which are injurious to the trees, therefore the sooner they are cut out the better. In doing of this you should observe to cut them close down to the place where they were produced, otherwise that part of the branch left will decay, and prove equally hurtful to the tree; for it seldom happens, when a branch begins to decay, that it does not die quite down to the place where it was produced; and, if any part is permitted to remain long uncut, does often infect some of the other parts of the tree. If the branches are large which you cut off, it will be very proper, after having smoothed the cut part exactly even with a knife, chissel, or hatchet, to put on a plaster of grafting clay, which will prevent the wet from soaking into the tree at the wounded part.

All such branches as run across each other should also be cut out, for these not only occasion a confusion in the head of the tree, but, by lying over each other, rub off their bark by their motion, and very often occasion them to canker, to the great injury of the tree; and on old trees (especially Apples) there are often young vigorous shoots from the old branches near the trunk, which grow upright into the head of the trees. These therefore should carefully be cut out every year, lest, by being permitted to grow, they fill the tree too full of wood; which should always be guarded against, since it is impossible for such trees to produce so much, or so good fruit as those, whose branches grow at a farther distance, whereby the sun and air freely pass between them in every part of the tree.

These are the general directions which are proper to be given in this place, since not only the particular methods, but also the proper seasons for Pruning all the different kinds of fruit, are fully exhibited under their several articles.

[PRUNO AFFINIS. See *Cedrela*, *Guaiaacum*, *Spiraea*.

PRUNUM. See *Averrhoa*.]

PRUNUS (of Pliny and other Latin writers. Said to be a word of Asiatic origin; the wild Plum; according to Galen, being called *προυνος* in Asia; from the Greek *προυν*, which occurs in Theophrastus.)

Lin. gen. n. 620. Reich. n. 675. Schreb. n. 849.

Tournef. t. 398. Juss. 341. Gärtn. t. 93. Ar-

meniaca. Tournef. t. 399. Juss. 341. Cerasus.

Tournef. t. 401. Juss. 340. Laurocerasus.

Tournef. t. 403. Padus, edit. pr.

Class. 12. 1. Icosandria Monogynia.

Nat. order of Pomaceæ. Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, five-cleft, deciduous: segments blunt, concave.

COR. Petals five, roundish, concave, large, spreading, inserted into the calyx by their claws.

STAM. Filaments twenty to thirty, awl-shaped, almost

the length of the corolla, inserted into the calyx. Anthers twin, short.

PIST. Germ superior, roundish. Style filiform, the length of the stamens. Stigma orbicular.

PER. Drupe roundish.

SEED. Nut roundish, compressed, with futures a little prominent.

OBS. Padus, *Laurocerasus*, Tourn. 1—6.—*Armeniaca*, Tourn. 7, 8.—*Cerasus*, Tourn. 9, 10. *Prunus*, Tourn. 11—13.

ESSENTIAL CHARACTER.

Cal. five-cleft, inferior. Pet. five. Drupe with a nut having the futures prominent.

SPECIES.

1. *Prunus Padus*. Common Bird-Cherry Tree.

Lin. spec. 677. Syst. 462. Reich. 2. 483. fl. lapp. n. 198. succ. n. 431. hort. cliff. 185. Hudf. angl. 213. Wither. arr. ed. 3. 455. Lightf. scot. 253. Smith, brit. 526. Gmel. fib. 3. 171. Du Roi barbecc. 2. 188. Crantz, austr. 1. 94. Neck. gallob. 215. Scop. carn. n. 589. Pollich pal. n. 465. Fl. dan. t. 205. Krock. fles. n. 746. Villars dauph. 3. 532. Allion. pedem. n. 1778. Plenck, ic. 381. Pallas, ross. 1. 16.

Padus avium. Mill. dict. n. 1. Hall. belv. n. 1086.

Cerasus racemosa. Matth. 234.—sylvestris, fructu non eduli. Baub. pin. 451. Tabern. 988. Duham. arb. 3.

C. avium nigra & racemosa. Ger. 1322. 9. emac. 1504. 9. Raii hist. 1549. syn. 463.

C. avium racemosa. Park. theat. 1517. 3.

C. racemosa quibusdam, aliis Padus. Baub. hist. 1. 228.

Pseudoligustrum. Dod. pempt. 777.

Flowers in pendulous racemes, leaves deciduous biglandular underneath at the base.

2. *Prunus rubra*. Cornish Bird-Cherry Tree.

Ait. kew. 2. 162.

Padus rubra. Mill. dict. n. 2. fig. t. 196. f. 2.

Cerasus racemosa sylvestris, fructu non eduli rubro. Hort. angl. 18. n. 2.

Flowers in upright racemes, leaves deciduous even biglandular at the base.

3. *Prunus virginiana*. Common American Bird-Cherry Tree.

Lin. spec. 677. Syst. 462. Reich. 2. 483. Willd. 985. arb. 238. t. 5. f. 1.

Padus virginiana. Mill. dict. n. 3. (See n. 29.)

Cerasus sylvestris, fructu nigricante in racemis longis pendulis Phytolaccae instar congestis. Gron. virg. 54. Duham. arb. 5. (See n. 29.)

C. latiore folio, fructu racemoso purpureo majore. Catesb. car. 2. t. 94. (See n. 29.)

Laurea Cerasus, five Laurus Virginiana. Park. parad. 599. t. 597. f. 6. (See n. 29.)

Flowers in racemes, leaves deciduous glandular at the base in front.

4. *Prunus canadensis*. Canadian Bird-Cherry Tree.

Lin. spec. 678. Syst. 462. Reich. 2. 484. Willd. 986.

Cerasus racemosa, foliis amygdalinis americana. Pluk. phyt. t. 58. f. 5.

Flowers in racemes, leaves deciduous without glands wide-lanceolate wrinkled pubescent on both sides.

5. *Prunus caroliniana*. Evergreen Bird-Cherry Tree.

Ait. kew. 2. 163.

Willd. spec. 987.

P. Padus carolina. Du Roi barbecc. 2. 198.

Padus caroliniana. Mill. dict. n. 6.

Flowers in racemes, leaves evergreen oblong-lanceolate serrate without glands.

6. *Prunus occidentalis*. West Indian Laurel.

Swartz prodr. 80. Ait. kew. 163.

Willd. spec. 987.

Flowers in lateral racemes, leaves perennial without glands oblong acuminate entire smooth on both sides.

7. *Prunus sphærocarpa*. Globe-fruited Laurel.

Swartz prodr. 80. Willd. spec. 987.

Myrti folio arbor, &c. Sloan. jam. 2. 79. n. 5. t. 193.

f. 1.

Flowers in axillary racemes, leaves evergreen without glands entire shining, drupes roundish.

8. *Prunus*

8. *Prunus lusitanica*. *Portugal Laurel*.
Lin. spec. 678. *fyst.* 462. *Reich.* 2. 484. *Willd.* 987. *arb.* 241.
Padus lusitanica. *Mill. dict.* n. 5. *fig.* t. 196. *f.* 1.
Lin. vir. cliff. 42. *hort. cliff.* 185. *hort. upf.* 126.
Laurocerasus lusitanica minor. *Dill. elth.* 193. t. 159.
f. 193. *Tournef. inst.* 628.
Flowers in racemes, leaves evergreen ovate-lanceolate serrate without glands.
9. *Prunus Laurocerasus*. *Common Laurel*.
Lin. spec. 678. *fyst.* 462. *Reich.* 2. 485. *Willd.* 988. *mat. med.* 124. *Woodv. med. bot. app.* 73.
t. 230. *Du Roi barbecc.* 1. 196. *Blackw. t.* 512.
Plenck, ic. 383. *Pallas roff.* 1. 17. *Willd. arb.* 242.
Padus Laurocerasus. *Mill. dict.* n. 4. *Lin. vir. cliff.* 42. *hort. cliff.* 185. *hort. upf.* 126.
Laurocerasus. *Ger. emac.* 1603. *Cam. hort.* t. 23.
Clus. hist. 1. 4. *Baub. hist.* *Raii hist.* 1549. *Tournef. inst.* 627. *Dubam. arb.* 1. t. 133.
Cerasus folio laurino. *Baub. pin.* 450.
C. trapezuntina, f. Lauro-cerasus. *Park. theat.* 1518.
f. 2. *parad.* 401. t. 399. *f.* 6.
Flowers in racemes, leaves evergreen biglandular at the back.
- [10. *Prunus elliptica*.
Lin. syst. 463. *Willd.* 986. *Thunb. jap.* 199.
Flowers in racemes, leaves elliptic serrate smooth.
11. *Prunus paniculata*.
Lin. syst. 463. *Willd.* 988. *Thunb. jap.* 200.
Flowers in spreading panicles, leaves ovate.
12. *Prunus Mahaleb*. *Perfumed Cherry Tree*.
Lin. spec. 678. *fyst.* 463. *Reich.* 2. 485. *Willd.* 988. *Jacqu. austr.* 3. 15. t. 227. *Scop. carn.* n. 588. *Pollich pal. n.* 466. *Du Roi barbecc.* 2. 182. *Krock. fles.* n. 752. *Villars dauph.* 3. 533. *Allion. pedem.* n. 1779. *Plenck, ic.* 382. *Pallas roff.* 1. 16.
Cerasus Mahaleb. *Mill. dict.* n. 4. *Lin. vir. cliff.* 43. *hort. cliff.* 487. *hort. upf.* 125. *Hall. herb. n.* 1084. *Dubam. arb.* 1. t. 55.
C. sylvestris amara, Mahaleb putata. *Baub. hist.* 1. 227. *Raii hist.* 1549. *Tournef. inst.* 627. *Garid.* 96.
Ceraso affinis. *Baub. pin.* 451.
Mahaleb. *Cam. epit.* 91. *Clus. hist.* 1. 64. *Matth.* 173.
Macaleb Gefneri. *Ger.* 1211. *emac.* 1397.
Machaleb germanicum & syriacum. *Park. theat.* 1519. n. 4, 5. t. 1518. 4, 5.
Flowers in terminating corymbs, leaves ovate.
13. *Prunus armeniaca*. *Apricock or Apricot Tree*.
Lin. spec. 679. *Reich.* 2. 485. *Willd.* 989. *hort. cliff.* 186. *upf.* 124. *Du Roi barbecc.* 2. 169. *Thunb. jap.* 200. *Plenck, ic.* 384. *Pallas roff.* 16. *Dubam. arb.* 1. 74. t. 27. *fruit.* 1. 135. t. 2.
Armeniaca. *Mill. dict.* *Blackw. t.* 281.
A. Malus. *Matth.* 242.
A. mala f. Mala præcocia priscorum. *Baub. hist.* 1. 167. *Camer. epit.* 146.
A. mala majora. *Baub. pin.* 442. *Raii hist.* 1514.
—& *nucleo dulci*. *Baub. pin.* 442. *Knorr. del.* 1. t. A. 2.
A. malus major. *Ger.* 1260. 1. *emac.* 1448. 1.
Mala Armeniaca f. præcocia. *Park. parad.* 579.
β. *A. malus minor*. *Baub. pin.* 442. *Ger.* 1260. 2. *emac.* 1448. 2. *Matth.* 243.
A. mala minora. *Baub. hist.* 1. 176. *Raii hist.* 1513.
Flowers sessile, leaves subcordate.
- [14. *Prunus sibirica*. *Siberian Apricot Tree*.
Lin. spec. 679. *Reich.* 2. 486. *Willd.* 989. *Gmel. fib.* 3. 172. *Pallas roff.* 1. 15. t. 8. *Du Roi barbecc.* 2. 170.
Armeniaca betulæ folio & facie, fructu exsucco. *Amm. ruth.* 192. n. 272. t. 30.
Flowers sessile, leaves ovate-oblong.
15. *Prunus pumila*. *Dwarf Canadian Cherry Tree*.
Lin. syst. 463. *Reich.* 2. 486. *Willd.* 990. *mant.* 75. *Du Roi barbecc.* 2. 186. *Gron. virg.* 2. 76.
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- Cerasus canadensis*. *Mill. dict.* n. 5. *fig.* 60. t. 89. *f.* 2. *Dubam. arb.* 149. n. 17.
Flowers subumbelled, leaves narrow-lanceolate.
16. *Prunus Cerasus*. *Common or Cultivated Cherry Tree*.
Lin. spec. 679. *Reich.* 2. 486. *Willd.* 991. *mat. med.* 124. *Huds. angl.* 213. *Wither. arr. ed.* 3. 455. *Smith, brit.* 526. *Blackw. t.* 449. *Du Roi barbecc.* 2. 175. *Pollich pal. n.* 467. *Krock. fles.* n. 748. *Villars dauph.* 3. 533. *Allion. pedem.* n. 1780. *Plenck, ic.* 378.
Cerasus foliis ovato-lanceolatis. *Lin. vir. cliff.* 43. *hort. upf.* 125. *Dubam. arb.* 2. t. 56.
α. *Cerasus (caproniana) sativa rotunda rubra & acida*. *Baub. pin.* 449. *Raii hist.* 1537.
C. vulgaris. *Mill. dict.* n. 1. *Ger.* 1319. 1. *emac.* 1502. *Park. theat.* 1517. 1.
The common English or Kentish Cherry Tree.
C. anglica. *Park. parad.* 571.
Cerasa acida rubella. *Baub. hist.*
β. *C. (rosea) hortensis, flore roseo*. *Baub. pin.* 450.
γ. *C. (plena) hort. pleno flore*. *Baub. pin.* 450. *Mill. fig.* 59. t. 89. *f.* 1. *Ger.* 1321. 7, 8. *emac.* 1504.
Double-flowering Cherry Tree.
C. flore pleno. *Baub. hist.* *Raii hist.* 1538.
C. flore multiplici. *Park. parad.* 402. t. 403. *f.* 1.
δ. *C. (dulcis)*. *Cerasa alba dulcia*. *Baub. pin.* 450.
ε. *Cerasa (juliana) carne tenera & aquosa*. *Baub. pin.* 450.
ζ. *C. (austera) acidissimo sanguineo succo*. *Baub. pin.* 450.
η. *C. pumila*. *Baub. pin.* 450. *hist.* 1. 223. *Raii hist.* 1539.
P. fruticosa. *Gmel. fib.* 3. 171. *Pallas, roff.* 1. 19. t. 8. B.
The Dwarf Cherry Tree:
θ. *C. (avium) racemosa hortensis*. *Baub. pin.* 450.
C. racemosa. *Raii hist.* 1539.
C. hortensis. *Mill. dict.* n. 3.
Umbels subpeduncled, leaves ovate-lanceolate smooth folded together.
17. *Prunus avium*. *Small-fruited Cherry Tree*.
Lin. spec. 680. *fyst.* 463. *Reich.* 2. 487. *Willd.* 991. *fl. suec. n.* 429. *mat. med.* 125. *Huds. angl.* 213. γ. *Wither. arr. ed.* 3. 456. *Smith, brit.* 527. δ, ε. *Lightf. scot.* 254. *Sibth. oxon. n.* 445. *Abbot, bedf.* 107. *Du Roi barbecc.* 2. 172. *Pollich pal. n.* 468. *Krock. fles.* n. 747. *Villars dauph.* 3. 534. *Allion. pedem.* n. 1781. *Ludw. est.* t. 108. *Blackw. t.* 425. *Kniph. cent.* 5. n. 73. *Regn. bot.* *Plenck, ic.* 377.
Cerasus sylvestris fructu rubro. *Baub. hist.* 1. 220. *Raii syn.* 463.
α. *C. nigra*. *Mill. dict.* n. 2. *Ger.* 1323. 11. *emac.* 1505.
Black Cherry Tree.
C. sylvestris fructu nigro. *Baub. hist.* 1. 220.
C. major ac sylv. fructu subdulci, nigro colore inficiente. *Baub. pin.* 450.
β. *Corone or Coroun Cherry*. *Mill. dict.*
Umbels sessile, leaves ovate-lanceolate pubescent underneath folded together.
- [18. *Prunus pensylvanica*. *Pennsylvanian or Upright Cherry Tree*.
Lin. syst. 463. *Willd.* 992. *suppl.* 252. *Ait. kew.* 2. 165. *Abbot, georg.* t. 45.
Umbels subsessile aggregate many-flowered at length panicle-shaped, leaves oblong-lanceolate acuminate smooth glandular at the base.
19. *Prunus nigra*. *Canadian Black Cherry Tree*.
Ait. kew. 2. 165. *Willd. spec.* 993.
Umbels sessile solitary few-flowered, leaves deciduous ovate acuminate, petioles biglandular.
20. *Prunus domestica*. *Common Plum Tree*.
Lin. spec. 680. *fyst.* 463. *Reich.* 2. 488. *Willd.* 995. *mat. med.* 125. *Woodv. med. bot.* 234. t. 85. *hort. cliff.* 186. *upf.* 124. *Smith, brit.* 527. *Wither. arr. ed.* 3. 456. *Gartn. fruct.* 2. 74. *Du Roi barbecc.* 2. 160. *Hall. herb. n.* 1079. *Krock. fles.* n. 749. *Villars dauph.* 3. 536. *Allion. pedem.* n. 1782. *Regn. bot.* *Plenck, ic.* 379. *Ger.* 1311. 1. *emac.* 1497. 1.

- Prunus communis* δ. *Huds. angl.* 212.
P. fativa. *Fuchs. hist.* 403. *Raii hist.* 1526. *Blackw. t.* 309.
P. sylvestris fructu majore. *Vaill. par.* 140.
Prunus. *Baub. pin.* 443. *Park. theat.* 1512. *Matth.* 265. *Dod. pempt.* 805.
β. *Pr. damascena.* *The Damascene, Damask or Damson Plum.*
Pruna majora dulcia & parva atro-cærulea. *Baub. pin.* 443. *n.* 23. *Blackw. t.* 305. *Knorr. del.* 1. *t. P.* 2. *Raii hist.* 1526. 1. *Park. parad.* 578.
γ. *P. hungarica.*
Pr. magna crassa subacida. *Baub. pin.* 443.
δ. *Pr. juliana.* *The St. Julian Plum.* *Mill. dict. n.* 30.
Pr. oblonga cærulea. *Baub. pin.* 443.
ε. *Pr. pertigona.* *The Perdigon Plum.* *Mill. dict. n.* 7. *The Perdigon plumme,* *Park. parad.* 576.
Pr. nigra, carne dura. *Baub. pin.* 443.
ζ. *Pr. cerea.* *White Imperial Bonum Magnum or Mogul Plum.*
Pr. coloris ceræ ex candido in luteum pallescente. *Baub. pin.* 443.
η. *Pr. acinaria.*
Pr. magna rubra rotunda. *Baub. pin.* 443.
θ. *Pr. maliformis.*
Pr. rotunda flava dulcia mali amplitudine. *Baub. pin.* 443.
ι. *Pr. augustana.*
Pr. Augusto maturescentia minora & austeriora. *Baub. pin.* 443. 10.
κ. *Pr. præcox.* *Primordian Plum.* *Mill. dict. n.* 1.
Pr. parva præcocia. *Baub. pin.* 443.
λ. *Pr. cereola.* *Verdock or Verdock.*
Pr. parva ex viridi flavescencia. *Baub. pin.* 443.
μ. *Pr. amygdalina.*
Pr. amygalina. *Baub. pin.* 443.
ν. *Pr. galatensis.*
Pruneoli albi oblongiusculi acidi. *Baub. pin.* 443.
ξ. *Pr. Brignola.* *Brignole Plum.* *Mill. dict. n.* 24.
Pr. ex flavo rufescentia mixti saporis, gratissima. *Baub. pin.* 443. *Raii hist.* 1526. 2.
Peduncles subsolitary, leaves lanceolate-ovate convoluted, branches without thorns.
21. *Prunus infirtia.* *The Bullace Plum Tree.*
Lin. spec. 680. *Reich.* 2. 489. *Willd.* 996. *amoen.* 4. 273. *Huds. angl.* 212. *Smith, brit.* 528. *Wither. arr. ed.* 3. 456. *Relb. cant. n.* 356. *Sibth. oxon. n.* 444. *Du Roi barbecc.* 2. 165. *Hall. helv. n.* 1081. *Krock. fles. n.* 750. *Villars dauph.* 3. 536.
Pr. sylvestris major. *Baub. hist.* *Raii hist.* 1528. *syn.* 462. *Dubam. arb.* 2. *t.* 41.
Pruna sylv. præcocia. *Baub. pin.* 444.
α. *P. sylv. fructu majore nigro.* *Raii syn. ed.* 2. 301. *The Black Bullace Tree.* *Mill. dict. n.* 31.
β. *P. sylv. fructu majore albo.* *Raii syn. ed.* 2. 302. *The White Bullace Tree.* *Mill. dict. n.* 32.
γ. *P. sylv. fructu rubro acerbo & ingrato.* *Raii syn. ed.* 2. 302.
Peduncles in pairs, leaves lanceolate-ovate convoluted villose underneath, branches terminated by a thorn.
22. *Prunus spinosa.* *Sloe Plum Tree or Black-thorn.*
Lin. spec. 681. *Reich.* 2. 489. *Willd.* 997. *hort. cliff.* 186. *fl. suec. n.* 432. *mat. med.* 125. *Woodv. med. bot.* 233. *t.* 84. *Huds. angl.* 212. *Wither. arr. ed.* 3. 457. *Smith, brit.* 528. *Lightf. scot.* 254. *Relb. cant. n.* 358. *Sibth. oxon. n.* 447. *Fl. dan. t.* 926. *Hall. helv. n.* 1080. *Neck. gallob.* 214. *Du Roi barbecc.* 2. 166. *Scop. carn. n.* 586. *Pollich pal. n.* 469. *Krock. fles. n.* 751. *Villars dauph.* 3. 537. *Allion. pedem. n.* 1783. *Dubam. arb.* 2. 186. *Blackw. t.* 494. *Regn. bot. Plenck, ic.* 380.
P. sylvestris. *Baub. pin.* 444. *Tabern. ic.* 992. *Trag. hist.* 1016. *Fuchs. hist.* 404. *Baub. hist.* 1. 193. *Lonic.* 1. 51. *Matth.* 266. *Dod. pempt.* 753. 2. *Lob. obs.* 595. 1. *Ger.* 1313. 1, 2. *emac.* 1497. 5. *Park. theat.* 1033. *Raii hist.* 1527. *syn.* 462.
Σποδίας. *Theophrasto.*
Spinus. *Virgilio.*
Peduncles solitary, leaves lanceolate smooth branches thorny.
23. *Prunus aspera.*
Lin. syst. 463. *Willd.* 993. *Thunb. jap.* 201. *Flowers solitary terminating, leaves ovate serrate rough.*
24. *Prunus japonica.*
Lin. syst. 463. *Willd.* 994. *Thunb. jap.* 201. *Peduncles solitary, leaves ovate acuminate smooth, branches unarmed.*
25. *Prunus glandulosa.*
Lin. syst. 463. *Willd.* 994. *Thunb. jap.* 202. *Peduncles solitary, leaves oblong glandular - serrate, branches unarmed.*
26. *Prunus incisa.*
Lin. syst. 463. *Willd.* 994. *Thunb. jap.* 202. *Peduncles solitary, leaves ovate gasb-serrate villose, branches unarmed.*
27. *Prunus tomentosa.*
Lin. syst. 464. *Willd.* 995. *Thunb. jap.* 203. *Peduncles solitary, leaves ovate tomentose underneath.*
28. *Prunus prostrata.*
Billardiere ic. syr. 1. 15. *t.* 6. *Desfont. atlant.* 395. *Willd. spec.* 997.
P. cretica montana minima humifusa, flore suaverubente. *Tournef. cor.* 43.
Amygdalus incana. *Pallas, roff.* 1. 13. *t.* 7. *Peduncles in pairs, leaves ovate unequally serrate without glands tomentose underneath, stem prostrate.*
29. *Prunus ferotina.*
Willd. spec. 986. *arb.* 239. *t.* 5. *f.* 2. *Erbh. Beitr.* 3. 20.
P. virginiana. *Mill. dict. n.* 3. *Du Roi barbecc.* 2. 191. *Flowers in loose racemes, leaves deciduous simply serrate, lowest serratures glandular.*
30. *Prunus dasycarpa.*
Willd. spec. 990. *arb.* 243. *Erbh. Beitr.* 6. *p.* 90. *Flowers sessile, leaves ovate acuminate doubly serrate, petioles glandular.*
31. *Prunus semperflorens.* *Everflowering Cherry.*
Willd. spec. 992. *arb.* 247. *Erbh. Beitr.* 7. *p.* 132. *P. ferotina.* *Roth. catalett.* 1. 58. *Cerasus fativa ætate continuo florens & frugescent.* *Dubam. arb.* 1. 178. *Du Roi barbecc.* 2. 178. *C. fructu ferotino; cum pediculo longiori foliato.* *Tournef. inst.* 626. *C. racemosa.* *Baub. hist.* 1. 223. *Flowers in racemes, calyxes serrate, leaves ovate serrate glandular at the base.*
32. *Prunus pygmæa.* *Pigmy Plum.*
Willd. spec. 993. *arb.* 248. *Umbels sessile few-flowered, leaves elliptic acute biglandular at the base smooth.*
33. *Prunus cerasifera.* *Myrobalan Plum.*
Willd. spec. 997. *arb.* 250. *Erbh. Beitr.* 4. *p.* 17. *Donn hort. cant.* 64.
P. domestica Myrobalan. *Lin. spec.* 680. *Mill. dict. n.* 17. *Park. parad.* 578. *Raii hist.* 1527. 3.
P. domest. c. *Du Roi barbecc.* 2. 164.
P. fructu rotundo nigro-purpureo dulci. *Baub. pin.* 444.
P. fr. majori rot. rubro. *Tournef. inst.* 622. *Peduncles solitary, leaves elliptic smooth, fruits pendulous on branches almost destitute of prickles.*

DESCRIPTIONS, &c.

Linneus has united the *Bird Cherry* or *Padus*, the *Apricot*, the *Cherries*, and the common and Portugal *Laurels*, with the *Plums* in the same genus *Prunus*. Mr. Miller has treated on them separately under *Padus*, *Armeniaca*, *Cerasus* and *Prunus*; uniting the *Laurels* with *Padus*. Jussieu separates *Cerasus* and *Armeniaca* from *Prunus*; and unites *Padus* and the *Laurels* with the former: making the difference to consist only in the fruit or drupe.]

1. The common *Bird Cherry* rises to the height of ten or twelve feet, and if permitted to stand, will have a trunk of nine or ten inches in diameter. The branches grow wide and scattering, and are covered with a purplish bark. Leaves ovate-lanceolate, alternate, slightly serrate. Flowers in long loose bunches from the side of the branches. Petals white, much smaller than those of the *Cherry*. Flowers ranged alternately, each on a small pedicel: they have a strong scent,

scnt, which is very disagreeable to most persons. They appear in may, and are succeeded by small roundish fruit, at first green, afterwards red, but when ripe black; inclosing a roundish furrowed stone or nut, which ripens in august.

[The flowers are in leafy racemes below the leaves. The petals are ferrate, as in the *Prunus virginiana*, not emarginate as in the Cherry¹.

According to Haller, it is a very leafy shrub, ten feet in height. Leaves soft and acuminate. Petals small, flaccid. Stamens from twenty to thirty-three. Under each flower a wide mucronate bracte. It differs from the Cherry, in having the flowers solitary, the calyx short neither reflex nor caducous, and the stone rugged.

Scopoli remarks, that the leaves are ovate and ferrate; the peduncles spreading and simple; the petals subovate; the calycine teeth reflex; the stamens not more than twenty-four; the germ smooth in the villose bottom of the calyx.

Branches round, even. Leaves alternate, petioled, obovate, acuminate, ferrate with the ferratures bent in, veined, smooth, somewhat glaucous, having an acrid smell like Rue. Stipules intrafoliaceous, in pairs, linear, subciliate, deciduous. Racemes from the base of the year's shoots, solitary, simple, nodding, many-flowered, smooth, leafy at the base. Petals ferrulate. Fruit black, having a nauseous taste^k.

Withering observes, that the calyx is finely ferrated as well as the petals, and at the bottom within is beset with numerous woolly hairs, and that the stamens are twenty-five in number.

Native of most parts of Europe, in woods and hedges; also in all the northern and temperate part of Russia and all Siberia. Common in the north of England, as about Ingleborough in Yorkshire, in woods by the Tees, at Pendeford in Staffordshire, a few miles north of Manchester. In some parts of Norfolk, as about Watton and Dereham. In a lane between Temple Mills and Epping Forest. Frequent in Scotland, in woods.

The Bird Cherry, Fowl Cherry or wild Cluster Cherry Tree, called in Scotland Hag-berry, which is commonly propagated in the nurseries as an ornamental tree or shrub, grows well in woods, groves or fields, but not in a moist soil. It bears lopping, and suffers the grass to grow under it. The fruit is nauseous, but bruised and infused in wine or brandy, it gives them an agreeable flavour. A strong decoction of the bark is used by the Finlanders to cure venereal complaints; which practice is corroborated by the testimony of M. Broerland in the Stockholm acts. He directs six ounces of the dry, or eight of the fresh bark to be boiled away in eight pints of water to four: the dose is four ounces four times a day. It cures the slighter infections alone, and combined with mercury facilitates the cure in severer stages of the disease. A decoction of the berries is sometimes given with success in the dysentery. The wood being smooth and tough, is made into handles for knives and whips. Sheep, goats and swine eat it, cows are not fond of it, horses refuse it^l. The berries are much sought after by birds, and though very nauseous are eaten by children in some places^m. In Scotland they drink an infusion of them in brandyⁿ.]

2. The Red Bird Cherry, commonly called in the nursery gardens about London the Cornish Cherry, has been confounded with the preceding, but when raised from seed it always retains a difference. It rises with a straight upright stem more than twenty feet high; the branches are shorter, and closer together than those of the first, and naturally form a regular head. The leaves are shorter and broader, and not so rough. The flowers grow in closer shorter spikes, standing more erect. The fruit is larger, and red when ripe. It flowers a little later than the first sort, namely in may and june; and the fruit ripens in august.

Mr. Miller says it grows naturally in Armenia,

¹ Linn. spec.

^k Smith.

^l Withering.

^m Raii hist. & Linn. succ.

ⁿ Lightfoot.

whence he received the seeds: [its native place, however is doubtful. It appears from Furber's catalogue, that it was cultivated here in 1724^o.]

3. This rises with a thick stem from ten to thirty feet high, dividing into many branches, which have a dark purple bark. Leaves ovate, alternate, on short foot-stalks, of a lucid green, slightly ferrate, and continuing in verdure as late in the autumn as any of the deciduous trees. The fruit is larger than that of the preceding, is black when ripe, and is soon devoured by birds. The wood is beautifully veined with black and white, and will polish well; it is therefore frequently used for cabinet work; as is also the first sort, particularly in France, where it is called *Bois de Sainte Lucie*. (See n. 29.)

[According to Linneus, this is the offspring of the common Bird Cherry, but the warts on the branches are double the size. There are two pairs of glands at the top of the petiole in front. The leaves are less netted underneath and almost smooth. The petals are orbicular, not obovate. The fruit is four times as big; not red, as Linneus says it is, but like the common sort first green, then red and finally black^p.

Parkinson calls it the Virginian Cherry Bay. It is a native of Virginia and other parts of North America, and was cultivated here in 1629, as appears from Parkinson's *Paradisus*^q. Willdenow makes the *rubra* of the Kew Catalogue a variety of this; and his own *rubra* a variety of *Prunus Padus*.

4. Branches even. Leaves less rigid than in the others, finely ferrate, green on both sides, but manifestly villose to the touch, and ending in the petiole at the base.

Native of North America^r.]

5. This seems to be rather a shrub, if we may judge from its growth here; the stalk does not rise more than three feet high, but sends out lateral branches spreading on every side, covered with a brown bark. Leaves alternate on very short foot-stalks, near two inches long and three quarters of an inch broad, with small acute indentures on their edges; they are of a lucid green, continuing their verdure all the year.

Native of South Carolina, whence the seeds were sent by the name of Bastard Mahogany, from the colour of the wood. It never flowered with Mr. Miller. [He cultivated it in 1759, and it is now found to flower in may^s.

6. Native of the West Indies^t.—Introduced from Jamaica in 1784, by Matthew Wallen, Esq.^u

7. Trunk covered with a gray smooth bark. Wood very hard and white. Leaves alternate, two inches long, one inch and a half broad near the round base, even, shining, with very few apparent veins on the surface, without any indentures on the edges, pointed, on a footstalk one third of an inch in length. Flowers white, in racemes opposite to a leaf, according to Sloane's figure.—Native of Jamaica^v, and Hispaniola^w.]

8. The Portugal Laurel rises with a strong tree-like stem to the height of twenty feet or more, sending out many branches on every side, which have a shining purplish bark. Leaves on short foot-stalks, of a lucid green, about three inches long, and an inch and half broad in the middle; they are sometimes slightly ferrate, but generally entire. The flowers are produced in long bunches from the side of the branches; they are white and shaped like those of the common Laurel. Berries oval, pulpy; at first green, then red, and when ripe very dark purple; smaller than those of the Laurel, and narrower at the end; enclosing an oval stone, like that of the Cherry, but more pointed at the top.

This shrub flowers in june, and the berries ripen in october: these should be gathered as soon as they are ripe, otherwise the birds will devour them.

The Portugal Laurel is one of the most beautiful evergreen shrubs which we have in our plantations,

^o Hort. kew.

^p Du Roi.

^q Hort. kew.

^r Linn. spec.

^s Hort. kew.

^t Swartz.

^u Hort. kew.

^v Sloane.

^w Swartz.

especially when it is planted in a loose moist soil. The branches covered with a bright purple bark, the shining evergreen leaves, and the long racemes of white flowers, all together make a fine appearance. Being rarely injured by the severest cold of our winters, there is not any shrub which better deserves our care to propagate.

It was brought to England from Portugal, but whether it is a native of that country, or was introduced from some other, is not certain. The Portuguese call it Azoureiro. [According to the Kew catalogue, it is a native of Portugal and Madeira; and was cultivated in 1722, by Mr. Thomas Fairchild, as appears from Knowlton's manuscripts.

9. The Common Laurel is a shrub sending off long spreading branches, covered with a smooth brown bark. Leaves elliptical or obovate, slightly ferrate, alternate, upon strong, short foot-stalks. Flowers on short axillary peduncles. Calyx ovate; segments reflex, pointed. Petals small, white. Filaments about eighteen. Fruit resembling a black cherry, both in its external and internal structure².

It differs from the Portugal Laurel in having the twigs and petioles green, whereas in that they are reddish brown. The leaves are of a yellowish green, whereas the green on the upper surface is very dark in the Portugal Laurel; they are also much wider in proportion and elliptical, but in the preceding they are rather lanceolate; they are both toothed about the edge, but the Common Laurel more slightly, and the serratures of this are very harsh to the touch, as if they had prickles at the end; the veins are much more prominent at the back of the leaves in the Common Laurel; in the Portugal Laurel the leaves are commonly repand along the edge; but in this they are flat except that the edge is a little bent back. The leaves in both are acuminate but end bluntly, and they generally bend down at the point. The young leaves are inclined to fold together upwards, like those of the Cherry, in the Common Laurel; but in the Portugal Laurel they are revolute, leaving a wide longitudinal hollow above: the old leaves are generally imperfect at the end, and in the Common Laurel are sometimes retuse or emarginate. The glands, which are obsolete, are placed on each side the midrib, about half an inch above the petiole.

It flowers in april, and is a native of the Levant, of Caucasus, the mountains of Persia, and the Crimea. Clusius received it at the beginning of the year 1576 from David Ungnad, then Ambassador from the Emperor of Germany at Constantinople, and afterwards President of the Council of War at Vienna, with some other rare trees and shrubs, all of which perished by the severity of the winter, and the carelessness of those who brought them, except this and a Horse Chestnut. It was sent by the name of *Trabison curmasi*, or Date of Trebisond.

Clusius relates that the plant of Laurel was almost dead when it arrived; he put it into a stove exactly as it came, in the same tub and earth; in the april following he took it out, cut off all the dead and withered branches, and set it in a shady place; in the autumn it began to shoot from the root; he then removed the living part into another tub, and took great care of it: when it was advanced in growth, he laid down the branches, which took root, and he distributed the plants among his friends and men of eminence. Such was the origin, in Europe, of a shrub now become so common every where. Clusius's plant died without flowering; but another which he gave to Aicholtz flowered in may 1583; and a few years afterwards with Joachim Camerarius at Nuremberg³.

Parkinson, in his *Paradisus*, published in 1629, says he had a plant of the Bay Cherry, as he calls it, by the friendly gift of Master James Cole a Merchant of London then lately deceased, a great lover of all rarities, who had it growing with him at his country house in Highgate, where it had flowered divers times, and borne ripe fruit also. He describes Master Cole's as a fair tree, which he defended from the bit-

terness of the weather, by casting a blanket over the top thereof every year, thereby the better to preserve it.

In the appendix to Gerarde's herbal enlarged by Johnson, published in 1633, it is said, that the Cherry Bay is now got into many of our choice English gardens, where it is well respected for the beauty of the leaves, and their lasting or continual greenness. Ray, in 1688, relates, that it was then very common in English gardens and plantations, that it flowered and fruited very well, was very patient of cold, and braved our winters even in an exposed situation; that it takes readily, is of quick growth, and in a short time becomes a tree of tolerable size^b.

Laurel leaves have a bitter styptic taste, accompanied with a flavour resembling that of bitter almonds, or other kernels of the drupaceous fruits. The flowers also manifest a similar flavour. The powdered leaves excite sneezing, though not so strongly as tobacco.

The kernel-like flavour which the fresh leaves impart being generally esteemed grateful, has caused them to be used for culinary purposes, in custards, puddings, blancmange, &c. and as the proportion of this sapid matter of the leaf to the quantity of milk is commonly inconsiderable, probably little or no bad effect may be produced. But since the poisonous quality of the Laurel is now indubitably proved, the public ought to be cautioned against its internal use.

An account in the 37th volume of the Philosophical Transactions by Dr. Madden of Dublin, of two women being poisoned by the simple distilled water of Laurel leaves, contain the first and principal proofs of the deleterious effects of this vegetable upon the human race.

In addition to this we may refer to the unfortunate case of Sir Theodosius Boughton, whose death in 1780 was occasioned by this poison: but in his case the active principle of the Laurel was concentrated by repeated distillations, and given to the quantity of an ounce.

To brute animals this poison is almost instantaneously mortal, as amply appears by the experiments of Madden, Mortimer, Nicholls, Langrish, Vater, Fontana and others. Upon human subjects its action is much less powerful.

Dr. Cullen observes, that the sedative power of *Laurocerasus* acts upon the nervous system in a different manner from Opium and other narcotic substances, whose primary action is upon the animal functions; for *Laurocerasus* does not occasion sleep, nor does it produce local inflammation, but seems to act directly upon the vital powers. Abbé Fontana supposes that this poison destroys animal life by exerting its effects upon the blood; but the experiments and observations from which he deduces this opinion are evidently inconclusive.

Though this vegetable seems to have escaped the notice of Stoerck, yet it is not without advocates for its medicinal use. Linneus informs us, that in Switzerland it is commonly and successfully used in pulmonary complaints. Langrish mentions its efficacy in agues; and as Bergius found bitter almonds to have this effect, we may from analogy conclude, that this power of *Laurocerasus* is well established. Baylies found that it possessed a remarkable power of diluting the blood, and from experience recommended it in all cases of disease supposed to proceed from too dense a state of that fluid; adducing particular instances of its efficacy in rheumatism, asthma, and schirrous affections. Nor does this author seem to have been much afraid of the deleterious quality of *Laurocerasus*, for he directs a pound of its leaves to be macerated in a pint of water, and from thirty to sixty drops of this liquor to be given three or four times a day^c.

10. Stem arboreous. Branches and branchlets alternate, knobbed, dotted with white, wrinkled, smooth. Leaves on the branchlets aggregate, scattered, on short petioles, bluntish, veined, spreading, a finger's length. Racemes few-flowered. Drupe

² Woodville.³ Clus. hist.^b Ray, hist.^c Woodville.

oblong, the size of a small grape. This tree is said to have been introduced into Japan by the Portuguese instead of the Olive.

11. Stem arboreous, wholly smooth. Branches and branchlets alternate, erect. Leaves scattered, petioled, acute, ferrate, veined, smooth, unequal, from an inch to two inches in length and more. Petioles erect, a line long. Flowers white, in a wide and very spreading panicle; in which circumstance it differs from the Mahaleb; as also in having smaller flowers, and the leaves more oblong, attenuated below, and acutely ferrate.—Native of Japan^d.

12. Leaves folded together, blunt, crenate. Stipules crenate, with brown teeth. Corymb convex. Bractes very short, very blunt, ferrate^e.

This is a low crooked tree. The wood is red, very hard, and sweet-scented. Leaves wide and pointed, approaching to those of the wild Pear. Flowers white. Fruit black, yielding a bitter purple juice, the stain of which is not easily effaced; the stone is smooth, round and a little flattened on the sides; inclosing a bitter perfumed kernel^f. Birds are very fond of this fruit. A fragrant and pleasant distilled water is made from both leaves and flowers^g.]

The wood, on account of its agreeable odour is greatly esteemed by the French for making cabinets and other furniture. This and the wood of the Bird Cherry are often confounded, and pass under the appellation of Bois de Sainte Lucie, but the Bird Cherry is the true sort. [Villars however calls the Mahaleb by this name.

Native of Germany, Switzerland, Austria, the South of France and Piedmont, Crim Tartary and every where on Caucasus.—Cultivated in 1714 by the Dutchess of Beaufort. It flowers in april and may^h. Ray calls it Rock Cherry.

Gerarde says, that “the fruit is as hard as a bead of corall, somewhat round and of a shining black colour, which the cunning French perfumers do bore through, making thereof bracelets, chains, and such like trifling toys, which they send into England smeared over with some odd sweet compound or other, and here sold unto our curious ladies and gentlewomen for rare and strange Pome- ambers, for great sums of money.”

13. The Apricock or Apricot is sufficiently distinguished by its broad roundish leaves drawn to a point at the end, smooth, glandular at the base in front, where they are sometimes slightly cordate, and unequal, that is, one side longer than the other; the edge is finely ferrate; the petiole is from half an inch to an inch in length, commonly tinged with red. Linneus remarks, that the vernant leaves are convoluted, that is, not folding flat together like those of the Cherry, but rolling upwards more or less; the leaves of many Apricot trees have a disposition to this at all times. The flowers are sessile, white tinged with the same dusky red that appears on the petioles. The fruit is round, yellow within and without, firmer than Plums and most Peaches, inclosing a smooth compressed stone, resembling that of the Plum.

Parkinson, more than a century before Linneus affirmed, that “the Apricocke is without question a kind of Plumme. And yet,” says he, “because of the excellency of the fruit, and the difference therein from all other Plummes, I have thought it meete to entreate thereof by it selfe.

“The Apricocke riseth up to a very great height, having a great stemme or body, and likewise many great armes or branches, covered with a smooth barke: the leaves are large, broad, and almost round, but pointed at the ends, and finely dented about the edges: the flowers are white, as the Plumme tree blossomes, but somewhat larger, and rounder set: the fruit is round, with a cleft on the one side, somewhat like unto a Peach, being of a yellowish colour as well on the inside as outside, of a firme or fast substance, and dry not overmoist in the eating, and very pleasant in taste, containing

“within it a broad and flat stone, somewhat round and smooth, not rugged as the Peach stone, with a pleasant sweet kernell, and is ripe almost with our first or earliest Plummes, and thereof it took the name of *Præcox*.”

It is not certain of what country this fruit-tree is a native. It undoubtedly came into Europe from some part of Asia, and by its name of *Malus Armeniaca* was supposed to originate from Armenia. Thunberg describes it as a very large, spreading, branching tree in Japan; Grosier says that it covers the barren mountains to the west of Pekin. Pallas, that it is commonly wild on the whole tract of Caucasus.

Parkinson gives us the following varieties as known in 1629.

1. The great, which some call the long Apricocke; the greatest and fairest of all the rest.
2. The smaller or small round Apricocke.
3. The white Apricocke, hath his leaves more folded together: it beareth but seldom and very few, more white, without any red when ripe.
4. The Masculine hath a finer green leaf and thinner, and beareth very seldom any store of fruit, which differeth in nothing from the first, but that it is a little more delicate.
5. The long Masculine hath his fruit growing a little longer, and differeth in nothing else.
6. The Argier is a smaller fruit than any of the others; and yellow, but as sweet and delicate as any of them; having a blackish stone within it, little bigger than a Lacine Cherry-stone; this with many other sorts John Tradescant brought with him returning from the Argier voyage; whither he went voluntary with the fleete, that went against the Pyrates in the yeare 1620.

Rea, in 1702, has only the Algier, Masculine; Long, White, Orange, and Great Roman.]

Miller has the following:

1. The Masculine Apricot.
2. The Orange.
3. The Algier.
4. The Roman.
5. The Turkey.
6. The Breda.
7. The Brussels.

1. The Masculine is the first ripe of all the Apricots; it is a small roundish fruit of a red colour towards the sun; as it ripens, the colour fades to a greenish yellow on the other side; it has a very quick high flavour. The tree is very apt to be covered with flowers, but as they come out early in the spring, they are frequently destroyed by the cold, unless the trees are covered to protect them.

2. The Orange is the next ripe; this fruit is much larger than the former, and as it ripens changes to a deep yellow colour. The flesh being dry and not high flavoured, it is better for tarts and preserving than for eating raw.

3. The Algier is the next in season; this is of an oval shape, a little compressed on the sides; it turns to a pale yellow, or straw-colour, when ripe; the flesh is high flavoured, and very full of juice.

4. The Roman is the next ripe; this is a larger fruit than the former, and not compressed so much on the sides; the colour is deeper, and the flesh is not so moist as the former.

5. The Turkey Apricot is yet larger than either of the former, and of a globular figure; the fruit turns to a deeper colour than the former; the flesh is firmer, and drier than those of the two preceding.

6. The Breda Apricot (as it is called from its being brought from thence into England) was originally brought from Africa; this is a large roundish fruit, changing to a deep yellow when ripe; the flesh is soft, full of juice, and of a deep Orange colour within side; the stone is rounder and larger than any of the other sorts: this is the best Apricot we have, and when ripened on a stand, is preferable to all other kinds.

7. The Brussels is the latest ripe of all the Apricots, for when it is planted against a wall, it is generally the beginning of august before it is ripe, unless when it

^d Thunberg.

^e Linn. spec.

^f Villars.

^g Krocke.

^h Hort. kew.

is planted to a full south aspect; which is what should not be practised, because the fruit is never well tasted which grows in a warm exposure. This fruit is of a middling size, rather inclining to an oval figure; red on the side next the sun, with many dark spots, and of a greenish yellow on the other side; the flesh is firm, and of a high flavour; the fruit often cracks before it is ripe. This is commonly preferred to the former sort by most people, but when the other is planted as a standard, the fruit is fuller of juice, and of a richer flavour than this.

[Duhamel enumerates ten varieties.

1. Abricot précoce, or hâtif musqué. t. 1. Masculine.
2. A. blanc, or A. pêche.—A variety of the foregoing.
3. A. commun. t. 2.
4. A. Angoumois. t. 3.
5. A. de Hollande, or Amande-Aveline, t. 4.
6. A. de Provence. t. 4. f. P.
7. A. de Portugal. t. 5.
8. A. violet.
9. A. Alberge.—The seeds of this will produce the same fruit, or with very little variation; and is the only one which will do so.
10. A de Nancy. t. 6.

The industry of modern gardeners is such, and the love of novelty so great, that new varieties are continually adding to our collections of fruits. Thus among Apricots, the Masculine is subdivided into the Early White and the Early Red. We have the *Temple Apricot*, ripe in the middle of august. The *Moor-Park Peach*, *Dunmore* or *Anson*, a large fruit, flat-shaped, of a deep yellow colour, and very high flavoured, &c.

The Chinese have a variety of double-blossomed Apricot-trees, which they plant on little mounts in their gardens, and have a beautiful effect in the spring. They have also dwarf trees, which are placed for ornament in their apartments, where they flower during the winter.

There is a great variety of fruiting Apricots in China: and from the wild tree, whose fruit has little pulp, but a large kernel, they extract a great quantity of oil, superior to that produced from Walnuts. The barren mountains to the west of Pekin, are covered with these trees.

The Chinese not only preserve the fruit of the Apricot both wet and dry, but make lozenges from the clarified juice, which dissolved in water, yield a cool refreshing beverage¹.

The young shoots yield a fine golden cinnamon colour to wool.

It appears from Turner's herbal, which is our earliest botanical authority, that the Apricot was cultivated here in 1562^k. But in the Remembrances for Master S. by Richard Hakluyt, 1582, it is affirmed that the Abricot was procured out of Italy by a French priest, one Wolfe, Gardiner to King Henry VIII.^l

This fruit seems to have been known in Italy in the time of Dioscorides under the name of *Præcocia*—*Ἀρμενίαν, Ρωμαϊκὴ Πραμόνια*, which is only *Præcocia* in Greek characters. The modern Greeks have corrupted it to *Ρερίμονια*, whence the Tuscan name *Bacocha*^m, and our English *Apricock*. It is not improbable that the fruit, when first introduced might be called *A Præcox*, from the Latin; and our illiterate people imagining the last syllable to be *cocks*, concluded the word to be of the plural number, and a not to be the article, but part of the word; and so pronounced it *Aprecocks*, and thence formed *Aprecock* and *Apricock*ⁿ. Bradley says, that coming from Epirus the fruits were called *Mala Epirotica*. Mortimer derives it from *apricus*. When the present orthography from the French *Abricat* was established, I cannot precisely say. I find *Apricot* so far back as Plat's Garden of Eden in 1660, but in no other old book. Mr. Evelyn, in his French Gardiner, 1658, and in his Kalendarium Hortense, follows the French orthography precisely. Mascall in 1575 has *Abricote*

and *Abricote*. Googe in 1577 has *Abricoet* and *Abricottes*. All evidently approximating to the French. None of these are original works.

Gerarde, in 1597, writes *Aprecocke* or *Abrecocke*, both with and without the final *e*, and also *Aprecox*. Parkinson in 1629 has *Apricoches*. And since that time, the prevailing orthography has been *Apricock*, till very lately. We find it so in the two Oxford catalogues of 1648 and 1658; in Plat's Garden of Eden, 1660, as well as *Apricot*; in Ray's History, 1688; in Rea's Flora, 1702. Mr. Miller himself in 1743 followed this orthography. Professor John Martyn in 1749 speaks of it as being then commonly written so; and even in 1764, Justice in his British Gardener writes *Apricock*.

14. This tree differs very little from the preceding; in particular the leaves are very much alike, except that in this they are very long-pointed at the end. The flowers are as it were calyced by the bud, which consists of imbricate testaceous scalelets, ciliate at the edge; but this is the case in our common sort of Apricot. It grows only to the height of a man, and may perhaps only be a variety from climate and situation.

Native of Transalpine Dauria in the empire of Russia, where the north side of the mountains in may, is covered with the purple flowers of *Rhododendron dauricum*; and the south side, with the white and rose-coloured flowers of this dwarf tree. The fruit is juiceless, acerb or austere acid, and easily parts in two; and contains a bitter kernel^o. Pallas says that *P. Armeniaca* has a single gland on the petiole, which this has not, and that the lowest serrature on each side is often glandular.]

15. This shrub seldom rises more than three or four feet high, and divides into many slender branches near the ground; these are covered with a reddish brown bark. Leaves long and narrow, whitish underneath and light green above. The flowers come out two or three together at each joint, the whole length of the branches, on long slender peduncles. Petals much narrower than those of the common Cherry. Fruit red, acid. It flowers in may, and the fruit ripens in july. It was sent to Mr. Miller from Paris, under the name of *Ragouminier*, as it is called in Canada, where it is a native^p. [He therefore cultivated it in 1756^q.

According to Linneus, it is a shrub of the same stature with *Amygdalus nana*; the root is creeping; the branches rod-like and purple; the leaves underneath glaucous or pale; the proper peduncles one-flowered by threes from the lateral buds^r.

16. The Common Cherry tree has ash-coloured, shining, roundish branches. Leaves petioled, ovate or ovate-lanceolate, acuminate, unequally serrate, veined; the younger ones folded together flat and more or less pubescent underneath. Stipules toothed, glandular. Umbels leafless, few-flowered, nodding. Calyx reflex. Petals white. Drupe red, acid^s.

Leaves biglandular; leafing and flowering buds distinct, the former terminating, the latter from the side of the branches; stamens more than twenty-four or near thirty. It differs from the plum in having the stone nearly globular, with the kernel of the same shape^t.

Native of Asia and Europe. It derives the Greek names *Κεραός* and *Κερασία*, the Latin *Cerasus*, and the modern names *Cherry*, *Cerifer*, &c. from a town in Pontus called Cerasus, whence Lucullus is said to have introduced it into Italy, after he had subdued Mithridates. This however must be understood of the cultivated Cherry; for the tree in its wild state was in Europe antecedent to the time of Lucullus^u.

The Cherry loves a sandy soil and an elevated situation. The gum that exudes from it is equal to Gum Arabic. Hasselquist relates, that more than one hundred men, during a siege, were kept alive for near two months, without any other sustenance, than a little of

¹ Grofier.

^k Hort. kew.

^l Voyages, 2. 161. edit. 1599. ^m Matthioli, 247. ed. 1565.

ⁿ Martyn's note in Virg. Ecl. 2. v. 51.

^o Pallas.

^p Linn. mant.

^q Mill. fig.

^r Smith.

^s Ray hist.

^t Hort. kew.

^u Scop. & Haller.

this gum taken sometimes into the mouth, and suffered gradually to dissolve. The wood is hard and tough, and used by the turner, and for making chairs, being stained to imitate mahogany. It is the original stock from which most of the cultivated sorts are derived.

Ray mentions the common Wild Cherry with a red fruit; the least wild Heart Cherry-tree, in Lancashire, Cheshire and Westmoreland; and the wild northern Cherry-tree with small late-ripe fruit, on the banks of the Tees near Bernard-castle in Durham.

The varieties of eatable Cherries enumerated by Parkinson in 1629 are the following:

1. The English Cherry, red, of a middling size, and a pleasant sweet taste, somewhat tart withall.
2. The Flanders Cherry, somewhat larger, and sweeter, and not so sour.
3. The Early Flanders, almost as soon ripe as the May Cherry, and of many false knaves sold for it.
4. The May Cherry.
5. The Arch-duke's Cherry, one of the fairest and best we have, red, a little more long than round, and somewhat pointed at the end.
6. The Ounce Cherry, or Amber: pale yellowish red; with a great broad leaf.
7. The great leaved: probably not different from the preceding.
8. The true Gascoign: late ripe, large, white spotted: a fit stock to graft May Cherries upon.
9. The Morello—(so called from the juice being like that of the *Morus* or Mulberry.)
10. The Hartlippe, so called from the place where the best of this kind are nursed up, between Sittingbourn and Chatham: this is the biggest of our English kinds.
11. The smaller Lacure or Hart Cherry: blackish when full ripe, and smaller than the next.
12. The great Lacure or Hart Cherry; twice as great the former, and of a reddish black colour, firm and reasonably sweet. Some call the White (n. 8.) the White Hart Cherry.
13. The Luke Wardes: dark red.
14. The Corone: deep red. (Not our Corone.)
15. The Urinall: long and round, reddish.
16. The Agriott (from the French *aigre*): small, deep red, late ripe: sharp, pleasant and wholesome, both fresh and dried.
17. The Biguarre: pale red spotted with white.
18. The Morocco: big, long and round, firm, having a long dark purple stalk; juice blackish, red and pleasant: perhaps not different from the Morello.
19. The Naples; thought to be the same.
20. The White Spanish: white with some redness, firm, late; stalk long and stone large.
21. Flanders cluster.
22. Wild or bird's cluster.
23. Soft-shelled: small and red, with a tender stone.
24. John Tradescant's, commonly sold for the Arch-duke's: large, deep-coloured and a little pointed.
25. Baccalaos or Newfoundland: small and pale red.
26. Long cluster: is *Prunus Padus*.
27. The Cullen (Cologn): dark red.
28. The great Hungarian Cherry of Zwarts, like the Morello, but larger, fairer, and bears more abundantly: deep red, very sweet, and measuring four inches round.
29. The Cameleon or changeable Cherry, with fruit of many forms.
30. The great Rose or double-blossomed Cherry.
31. The lesser ditto.
32. The dwarf Cherry.
33. The great bearing Cherry of Master Millen: large and red; a great bearer.
34. The long finger Cherry: long and round.

Mr. Ray's catalogue in 1688, contains:

1. The May Cherry, so called from its being ripe in the month of May.
2. The Duke Cherry.
3. The Arch-duke Cherry.
4. The Flanders Cherry.
5. The Red Heart Cherry.
6. The Bleeding Heart.

7. The Naples.
8. The Carnation.
9. The Amber.
10. The Purple.
11. The Black Orleans.
12. The common Black Cherry.
13. Luke Ward's Cherry.
14. The Cluster Cherry.
15. The Dwarf Cherry.
16. The Morello Cherry.

Rea in 1702 has the following—

1. The May.
2. The early Flanders.
3. The later Flanders.
4. The Flanders Cluster.
5. The Great bearing or preserving.
6. The Morello.
7. The Arch-duke.
8. The Carnation.
9. The Lukeward.
10. The Black Heart.
11. The Black Cherry of Orleans.
12. The Black Spanish.
13. The Bleeding Heart.
14. The Prince Royal.
15. The Portugal.
16. The King's.
17. Corone.
18. Biguar.
19. White Spanish.
20. Amber.
21. Red Heart.
22. Hungarian.
23. Ciliegi Birrieloni.
24. Dwarf.]

Mr. Miller's list contains—

1. The common or Kentish Cherry; from which he says it is supposed, most of the varieties cultivated in the English gardens have been raised; though he is very doubtful of it; the differences in the size and shape of their leaves, and in the shoots of the trees being very great.
2. The early May Cherry; which is the first ripe, and therefore a place may be given it, where there is room.
3. The May Duke. This ripens next: it is a larger fruit, and more valuable.
4. The Arch-duke comes after the May Duke, and if permitted to hang till it is ripe, is an excellent Cherry. It should not be gathered before midsummer, and may hang a fortnight longer, even near London, where it ripens a fortnight sooner than in places forty miles distant. Against a north wall, this fruit may be continued till August.
5. The Flemish.
6. The Red Heart.
7. The White Heart.
8. The Black Heart.
9. The Amber Heart.
10. The Ox Heart.
11. The Lukeward. A good bearer, and a very good fruit, of a dark colour, and will do well in standards.
12. The Carnation. Valuable for coming late: very firm and fleshy, but not the best bearer: it will ripen very well on espaliers.
13. The Hertfordshire Heart: firm and well flavoured; does not ripen earlier than the end of July or the beginning of August.
14. The Morello: generally planted against a north wall, and used for preserving; but in a better aspect, and suffered to hang till ripe, is a very good fruit for the table. On a S. W. wall the fruit will ripen perfectly by the middle of August.
15. The Bleeding Heart.
16. The large Spanish Cherry, nearly allied to the Duke, of which it seems to be only a variety, and ripens soon after it.
17. The yellow Spanish Cherry; of an oval shape and an amber colour: it ripens late, is sweet but not of a rich flavour, and is but a middling bearer.
18. The double-flowered, propagated solely for ornament.

[Other varieties are continually adding to these, differing little from the preceding, as—

19. Harrison's Duke Cherry.
20. Crown Heart Cherry.
21. Turkey, &c.

It is commonly asserted that Cherries were introduced into England in the time of Henry VIII. Mr. Gough, in his topography, says it is supposed that they were brought from Flanders into Kent by Richard Haines, fruiterer to that monarch. But we certainly had them sooner. We have no proof indeed that England was indebted to the Romans for Cherries and other fruits of warmer climates; or that they were here at the time of the Norman conquest, or during some centuries after it. A diligent and ingenious antiquary has however discovered written evidence which clearly shows, that before the middle of the 15th century, the hawkers in London were wont to expose Cherries for sale in the same manner as is now done early in the season. Lydgate, in the following lines from his poem called *Lickpenny*, cited by Mr. Warton, in the History of English Poets, vol. 2. p. 367. says

"Hot pefcode own (one) began to cry,
"Straberys rype, and cherries in the rype."

That is, remarks Mr. Warton, he cried hot peas, ripe strawberries, and cherries on a *bough* or twig: *rice* or *ris*, being properly a long branch, and the word is still so used in the west of England.

The tradition therefore respecting Haines's having originally planted Cherry-trees at Teynham, may either mean that he was the first person who reared a Cherry orchard, or that he first introduced some particular Cherry, perhaps that which we call the Flemish Cherry*, if we had it not earlier.

It is indeed extremely improbable, considering the magnificence of the times, and our intimate connection with France and Flanders, from the conquest to the destructive contentions between the houses of York and Lancaster, that we should not have imported such fruits as would bear our climate from those countries, unless they had been left us by the Romans.

The above passage from Lydgate carries the written evidence for the cultivation of Strawberries higher than that which has been given from Stow and Shakespeare. What is meant by *hot peas*? Surely not hot gray peas, which were commonly cried about London during winter even in this century; for they were in a dry state, and the poet would not have called them *pefcodes*, nor would he have joined them with strawberries and cherries. He probably intended what we now call *Hotspur* peas.]

17. The Black Cherry is supposed to be a native of England. It grows to be a large tree, fit for timber, and is frequently found growing as such in the woods. From this the only varieties which I have ever known raised by seeds, are the Black Coroun, and the small Wild Cherry; of which there are two or three varieties, differing in the size and colour of the fruit.

The wild Cherries are proper to plant in parks, because they grow to a large size and make beautiful trees. In spring, when they are in flower, they are very ornamental; the fruit is good food for birds; and the wood is very useful for turners. These trees will thrive in poor land better than most other sorts. The French often plant them for avenues to their houses, on poor land; they also cultivate them in their woods, to cut for hoops.

The stones are generally sown for raising stocks, to graft or bud other Cherries upon, being of quicker growth and of longer duration.

[Dr. Withering affirms that this tree grows best in a rich soil and on the sides of hills, unmixed with other trees; that it bears cropping, and suffers the grass to grow under it.

The garden Cherry grows only about fifteen or twenty feet high, whereas this attains forty or fifty feet in height, with a more erect and lofty head.

* Gentleman's magazine for 1786. 1. 389. sign. W. & D.

Linneus describes the leaves as having one or two glands at the top of the petiole; the umbel sessile and subtriflorous, the flowers petioled, and the involucre four-leaved: he affirms that the flowers in this are produced from the branches of the year before; but those of the preceding species from the branches of the same year.

But Linneus does not seem to have intended our wild Cherry by his *Prunus avium*, for he says the fruit is red; and he refers to the Heart Cherry of Ray as one of the varieties of it. John Bauhin however has four varieties of the wild Cherry, the small red and black, and the more fleshy of both colours; the last probably improved by culture.

The common Black Cherry is much cultivated in the Chiltern part of Buckinghamshire, and makes a beautiful appearance in the spring, when the trees are in blossom at the same time that the Beech is leafing. In Suffolk it abounds about Polstead and is commonly called the Polstead Cherry. In that county the wild Cherries are called *Merries*, from the French *Merise*. The *Corone* or *Coroun* Cherry, which is the highest improvement of this, is common in Hertfordshire and about Bergh-Apton in Norfolk.

After all, I can scarcely think that the *Prunus avium* is specifically distinct from the *Prunus Cerasus*.

The former grows to a considerable size: Mr. Evelyn mentions one that held above eighty-five feet in height; it is then fit to make chairs and stools with, cabinets, tables, especially the redder sort, which will polish well; also pipes and musical instruments. Willdenow separates not only the *Prunus avium* but also the *Cerasus pumila*, under the name of *Pr. Chama-cerasus*, that being the title which Clusius has given it. Pallas's *Pr. fruticosa* is this, or a variety of it, differing only in the size of the leaves, flowers and fruit. Jacquin has figured the Austrian tree in *ic. rar.* t. 90. and described it in *Collect.* 1. 133. Pallas says it is a shrub often scarcely two feet, but sometimes four feet in height; that however cultivated it never becomes a tree; and that the leaves are of a hardish substance; in short, that it differs from the common Cherry, as the dwarf Almond does from the common sort.

18. This has the appearance of *P. Cerasus*, but the branchlets have whitish dots scattered over them, as in *P. virginiana*. It has the leaves of *P. Cerasus* lanceolate-ovate, ferrulate, even, with two glands at the base often red. Umbels sessile. Flowers smaller than those of *P. Cerasus*^v. Willdenow has described it under the name of *P. lanceolata*.

Native of North America. Introduced in 1773, by Messrs. Kennedy and Lee. It flowers in may^z.

19. Leaves ovate, much acuminate, unequally and sharply ferrate, smooth on both sides. Umbels three or four-flowered^a.

Native of Canada. Introduced in 1773, by Messrs. Kennedy and Lee. It flowers in april and may^b.

20. The common Plum tree is of a middling size, growing to the height of fifteen or twenty feet, branching into a moderately-spreading head. Leaves on short petioles, which have one or two glands towards the end; they are slightly ferrate and smooth; when young they are convoluted or coiled, and pubescent underneath. Peduncles short, commonly solitary. Calyx erect. Petals white, obovate^c. The drupe is an oblong spheroid, swelling a little more on one side and there grooved, of a blue colour, with a bloom on it: pulp yellowish, tender. Shell bony, ovate, pointed at both ends, compressed, obscurely excavated; having two longitudinal sutures, one more gibbous, simple, acute, the other straighter, dividing, narrow, crenulate^d.

It loves a lofty exposure, and is favourable to pasturage. The bark dyes yellow. The cultivated garden Plums are all derived from this species.

It is a native of Asia and Europe; perhaps scarcely of Britain, though it is not uncommon in our hedges, but it probably originated from the seeds of some of

^v Linn. suppl.

^b Hort. kew.

^z Hort. kew.

^c Smith.

^a Willdenow.

^d Gartner.

the cultivated species: which according to Pliny came from Syria into Greece, and thence into Italy.

Plums, when sufficiently ripe, and taken in a moderate quantity, are not unwholesome: but in an immature state they are more liable to produce colicky pains, diarrhoea or cholera than any other fruit of this class. Considered medicinally, they are emollient, cooling and laxative, especially the French Prunes, imported in their dried state from Marseilles; and though the laxative power is diminished by drying, yet as they contain much of their acid, they have more effect in this way than the other dried fruits. They are peculiarly useful in costive habits, and are frequently ordered in decoction with Senna and other purgatives. It is the pulp of this fruit which is directed in the Electuarium e Senna, or Lenitive Electuary.

The varieties of garden and orchard Plums are very numerous, differing in the form, taste, colour and substance of the fruit. Parkinson's catalogue contains sixty sorts, fit, as he says, for an orchard, to be stored with good fruit: all which sorts, adds he, are to be had of my very good friend Master John Tradescante, who hath wonderfully laboured to obtain all the rarest fruits he can hear of in any place of Christendome, Turkey, yea or the whole world.

1. Amber Primordian; an indifferent fair Plum, early ripe, pale yellow, taste waterish.
2. Red Primordian; of a reasonable size, long and round, reddish on the outside, of a more dry taste, ripe with the first sorts in the beginning of august.
3. Blue Primordian; small, almost like the Damascene, subject to drop before it is ripe.
4. White Date; no very good Plum.
5. Red Date; large, long, red, pointed, late ripe, little better than the white.
6. Black Muffell; reasonably dry and well tasted.
7. Red Muffell; somewhat flat as well as round, of a good taste, ripe about the middle of august.
8. White Muffell; like the red, but somewhat smaller, and not so well tasted; colour whitish green.
9. Imperiall; large, long, reddish, waterish and late.
10. Gaunt; large, round, reddish, waterish, late.
11. Red Pescod; reasonably good.
12. White Pescod; the same, but somewhat waterish.
13. Green Pescod; reasonably big and long-pointed; ripe in the beginning of september.
14. Orange; yellowish, moist, and sweetish.
15. Morocco; like a Damson, well tasted and somewhat dry in eating.
16. Dine; late ripe, great and whitish, speckled all over.
17. Turkie; large, long, blackish, somewhat flat like the Muffell Plum; well-relished and dry.
18. Nutmeg; no bigger than a Damson, greenish yellow, ripe about Bartholomew-tide; a good Plum.
19. Perdigon; a dainty good Plum, early, blackish.—Hakluyt, in 1582, says, of later time, the plum called the *Perdigwena* was procured out of Italy, with two kinds more, by the Lord Cromwell, after his travell.
20. Verdoch; a great fine green shining Plum, fit to preserve.
21. Jenua (Genoa); the same with the White Date, n. 4.
22. Barberry (Barbary); great, early, black, well tasted.
23. Pruneola; small, white, of a fine tart taste: brought over in small round boxes, and sold at the confection-makers, cut in twaine, the stone cast away, at a very deere rate.
24. Shepway Bulleis; dark blueish brown, of a sharp taste, larger than the common, but not so good.
25. White and Black Bulleis; small and round, lesser than Damsons, sharper in taste and later ripe.
26. Flushing Bulleis; thick clustring like grapes.—The three last belong to the next species or *P. insititia*.
27. Winter Creke; latest ripe of all the sorts: plentifully about Bishop's Hatfield.
28. White Peare Plum; early, pale yellowish green.
29. Late White Peare Plum; larger and longer, greenish white, not ripe till near the end of september: both waterish Plums.

• Woodville.

30. Black Peare Plum; of a very good relish, more firm and dry than the others.
 31. Red Peare Plum; the worst of the three.
 32. White Wheate Plum; waterish and fulsome.
 33. Red Wheate Plum; like the other for taste.
 34. Bowle; flat and round, yet flatter on one side, whence the name; a very good relished black Plum.
 35. Friars; well-tasted, coming clean from the stone, black with some whitish spots.
 36. Catalonia.
 37. Don Alteza. Both very good Plums.
 38. Muscadine, Queen Mother or Cherry Plum; fair, red, of a reasonable bigness, and ripe about Bartholomew-tide.
 39. Christian or Nutmeg Plum; good for six weeks after it is gathered.
 40. Cherry Plum; see n. 38.
 41. Amber; round, yellow as wax.
 42. Apricocke Plum; good when in perfection, but apt to crack.
 43. Eason; small, red, well-tasted.
 44. Violet; small, long, blackish blue, ripe about Bartholomew-tide, a very good dry eating fruit.
 45. Grape Plum; the same with n. 26.
 46. Dennie or Cheston; the same with n. 35.
 47. Damaske Violet; the same with n. 38.
 48. Blacke Damascene; a very good dry Plum, dark blue when ripe.
 49. White Damson; not so well relished.
 50. Great Damson or Damaske; greater and sweeter.
 51. Blue Damson; well known, good.
 52. Coferer's; flat, like a Peare Plum, early ripe and black, of a very good relish.
 53. Margate; the worst of an hundred.
 54. Green Oysterly; reasonably great, whitish green, moist and sweet, reasonably good.
 55. Red Mirobalane; red, earlier ripe, and better than the next.
 56. White Mirobalane; whitish yellow, and very pleasant, especially if not over-ripe: both these had need to be plashed against a wall, or else they will hardly bear ripe fruit.
 57. Olive; very like a green Olive in colour and bigness; late ripe, but the best of the green Plums.
 58. White Diapred Plum of Malta, scarce known to any in our land but John Tradescant: very good and striped all over like Diaper.
 59. Black Diapred Plum; like the Damascene, black with spots as small as pin's points, of a very good relish.
 60. Peake; long, whitish and very good.
- Ray also gives a list of the best sorts of Plums cultivated in his time.
1. Red, blue and amber Primordian.
 2. Violet, red, blue and amber.
 3. Matchless.
 4. Black and green Damascene.
 5. Morocco.
 6. Barbary.
 7. Myrobalane, white and red.
 8. Apricock.
 9. Cinnamon.
 10. Great Mogul and Tawny.
 11. White, red and black Pear Plum.
 12. Green Osterley.
 13. Muscle, black, red, white.
 14. Catalonia.
 15. White and black Prunella.
 16. Bonum magnum.
 17. Wheaten; so called because it is ripe about wheat harvest.
 18. Cluster.
 19. Queen Mother.
 20. Marble.
 21. Imperial.
 22. Peach Plum.
 23. Peascod Plum of several colours.
 24. Date-plum, white, yellow and red.
 25. Nutmeg Plum.
 26. Turkey.
 27. Prince; last ripe.
 28. Laminas.

In Rea's catalogue there are no additions of any consequence. Bradley has sixty-five, from the French. Mons. Duhamel describes forty-eight varieties; and Mayer makes them still more numerous.]

Mr. Miller has given thirty varieties of this fruit which are cultivated in the English gardens.

1. PRUNUS (*Faunebative*, *Dubam. n. 1. t. 1.*) fructu parvo præcoci. *The white Primordian*. This is a small, longish, white Plum, of a clear yellow colour, covered over with a white flew, which easily wipes off. It is a pretty good bearer, and, for its coming very early, one tree may have a place in a large garden of fruit, but it is mealy, and has little flavour. This ripens the middle or latter end of July.
2. PRUNUS (*Damas Noir*) fructu magno crasso subacido. Tourn. *The early Damask, commonly called the Morocco Plum*. This is a middle sized Plum, of a round shape, divided with a furrow in the middle (like Peaches.) The outside is of a dark black colour, covered with a light violet bloom; the flesh is yellow, and parts from the stone. It ripens the end of July, and is esteemed for its goodness.
3. PRUNUS (*Small Damas*) fructu parvo dulci atro-cæruleo. Tourn. *The little black Damask Plum*. This is a small black Plum covered with a light violet bloom. The juice is richly sugared; the flesh parts from the stone, and it is a good bearer. Ripe the beginning of August.
4. PRUNUS (*Gros Damas*, *Dubam. n. 4.*) fructu magno dulci atro-cæruleo. Tourn. *Gros Damas Violet de Tours, i. e. great Damask Violet of Tours*. This is a pretty large Plum, inclining to an oval shape. The outside is of a dark blue covered with a violet bloom; the juice is richly sugared; the flesh is yellow, and parts from the stone. Ripe in August.
5. PRUNUS (*Orleans*) fructu rotundo atro-rubente. *The Orleans Plum*. The fruit is so well known to almost every person, that it is needless to describe it; it is a very plentiful bearer, which has occasioned its being so generally planted by those persons who supply the markets with fruit, but it is an indifferent Plum. It ripens in August.
6. PRUNUS (*Fotheringham*) fructu oblongo atro-rubente. *The Fotheringham Plum*. This fruit is somewhat long, deeply furrowed in the middle. The flesh is firm, and parts from the stone; the juice is very rich. This ripens in August.
7. PRUNUS (*Perdigron*) fructu nigro, carne durâ. Tourn. *The black Perdigron Plum*. This is a middle-sized Plum of an oval shape. The outside is of a very dark colour, covered over with a violet bloom; the flesh is firm, and full of an excellent rich juice. This is greatly esteemed by the curious. Ripe in August.
8. PRUNUS (*Perdrigon violet*, *Dubam. n. 21. t. 9.*) fructu magno è violaceo rubente suavissimo saccharato. Tourn. *The Violet or blue Perdigron Plum*. This is a large fruit, rather round than long, of a bluish red colour on the outside. The flesh is of a yellowish colour, pretty firm, and closely adheres to the stone; the juice is of an exquisite rich flavour. This ripens in August.
9. PRUNUS (*Perdrigon blanc*, *Dubam. n. 20. t. 8.*) fructu ovato ex albo flavescente. *The white Perdigron Plum*. This is a middling Plum, of an oblong figure. The outside is yellow, covered with a white bloom; the flesh is firm, and well tasted. It is a very good fruit to eat raw, or for sweetmeats, having an agreeable sweetness mixed with an acidity. It ripens the end of August.
10. PRUNUS (*Impériale*, *Dub. n. 32. t. 15.*) fructu ovato magno rubente. Tourn. *The red Imperial Plum*, sometimes called *the red Bonum Magnum*. This is a large oval-shaped fruit, of a deep red colour, covered with a fine bloom. The flesh is very dry, and very indifferent to be eaten raw, but is excellent for making sweetmeats; this is a great bearer. Ripe in September.
11. PRUNUS (*Impériale blanche*, *Dub. n. 35.*) fructu ovato magno flavescente. Tourn. *White imperial Bonum Magnum, white Holland, Mogul or Egg Plum*. This is a large oval-shaped fruit, of a yellowish colour,

powdered over with a white bloom. The flesh is firm, and adheres closely to the stone; the juice is of an acid taste, which renders it unpleasant to be eaten raw, but it is very good for baking or sweetmeats. It is a great bearer, and is ripe the middle of September.

12. PRUNUS (*Cheston*) fructu ovato cæruleo. *The Cheston Plum*. This is a middle-sized fruit of an oval figure. The outside is of a dark blue, powdered over with a violet bloom; the juice is rich, and it is a great bearer. Ripe the middle of September.
13. PRUNUS (*Apricotée*, *Dub. n. 28. t. 13.*) fructu maximo rotundo flavo & dulci. Tourn. *Prune d'Abricot, i. e. the Apricot Plum*. This is a large round fruit of a yellow colour on the outside, powdered over with a white bloom. The flesh is firm and dry, of a sweet taste, and comes clean from the stone. This ripens the end of September.
14. PRUNUS (*Maître Claud*) fructu subrotundo, ex rubro & flavo mixto. *The Maître Claud*. Although this name is applied to this fruit, yet it is not what the French so call. This is a middle-sized fruit, rather round than long, of a fine mixed colour between red and yellow. The flesh is firm, parts from the stone, and has a delicate flavour. Ripe the end of September.
15. PRUNUS (*Diaprée*) fructu rubente dulcissimo. Tourn. *Rochecorbon, or Diaprée rouge*, *Dub. n. 37. t. 20. f. 12.* This is a large round fruit, of a reddish colour, powdered over with a violet bloom; the flesh adheres closely to the stone, and is of a very high flavour. Ripe the end of August.
16. PRUNUS fructu rotundo flavescente. *La petite Reine Claude*, *Dub. n. 26.* This is a small round fruit, of a whitish yellowish colour, powdered over with a pearl-coloured bloom; the flesh is firm and thick, quits the stone, and its juice is richly sugared. Ripe the end of August.
17. PRUNUS fructu rotundo nigro purpureo majori dulci. Tourn. *Myrobalan Plum*, *Dub. n. 46. t. 20. f. 15.* This is a middle-sized fruit, of a round shape; the outside is a dark purple, powdered over with a violet bloom; the juice is very sweet. It is ripe the end of August.
18. PRUNUS fructu rotundo è viridi flavescente, carne duro suavissimo. *La grosse Reine Claude, or Dauphine*, *Dub. 25. t. 11.* At Tours it is called *Abricot vert*; at Rouen, *verte bonne*; and in other places, *Damas vert*, or *Tromp-valet*. This is one of the best Plums in England; it is of a middle size, round, and of a yellowish green colour on the outside; the flesh is firm, of a deep green colour, and parts from the stone; the juice has an exceeding rich flavour, and it is a great bearer. Ripe the middle of September. This Plum is confounded by most people in England, by the name of *Green Gage*; but this is the sort which should be chosen, although there are three or four different sorts of Plums generally sold for it, one of which is small, round, and dry; this quits the stone, and is later ripe, so not worth preserving.
19. PRUNUS fructu amygdalino. Tourn. *Rognon de Coq, i. e. Cock's Testicles*. This is an oblong fruit, deeply furrowed in the middle, so as to resemble the testicles; it is of a whitish colour on the outside, streaked with red; the flesh of it adheres firmly to the stone, and it is late ripe.
20. PRUNUS fructu rotundo flavo dulcissimo. *Drap d'Or, i. e. the Cloth of Gold Plum*, *Dubam. n. 30.* This is a middle-sized fruit, of a bright yellow colour, spotted or streaked with red on the outside; the flesh is yellow, and full of an excellent juice. It is a plentiful bearer, and ripens about the middle of September.
21. PRUNUS fructu cerei coloris. Tourn. *Sainte Catharine*, *Dubam. n. 43. t. 19.* This is a large oval-shaped fruit, somewhat flat; the outside is of an amber colour, powdered over with a whitish bloom, but the flesh is of a bright yellow colour, is dry and firm, adheres closely to the stone, and has a very agreeable sweet taste. This ripens at the end of September, and is very subject to dry upon the tree, when the autumn

autumn proves warm and dry. This makes fine sweetmeats, and is a plentiful bearer.

22. *PRUNUS fructu ovato rubente dulci. The Royal Plum. Dubam. n. 24. t. 10.* This is a large fruit of an oval shape, drawing to a point next the stalk; the outside is of a light red colour, powdered over with a whitish bloom; the flesh adheres to the stone, and has a fine sugary juice. This ripens the middle of september.
23. *PRUNUS fructu parvo ex viridi flavescente. Tourn. La Mirabelle. Dubam. n. 29. t. 14.* This is a small round fruit, of a greenish yellow on the outside; the flesh parts from the stone, is of a bright yellow colour, and has a fine sugary juice. This is a great bearer, ripens the end of august, and is excellent for sweetmeats.
24. *PRUNUS Brigonensis, fructu suavissimo. Tourn. Prune de Brignole, i. e. the Brignole Plum.* This is a large oval-shaped fruit, of a yellowish colour, mixed with red on the outside; the flesh is of a bright yellow colour, is dry, and of an excellent rich flavour. This ripens the middle of september, and is esteemed the best Plum for sweetmeats yet known.
25. *PRUNUS fructu magno è violaceo rubente serotino. Tourn. Imperatrice, i. e. the Empress. Dubam. n. 39. t. 18.* This is a large round fruit, of a violet red colour, very much powdered with a whitish bloom; the flesh is yellow, cleaves to the stone, and is of an agreeable flavour. This ripens about the beginning of october.
26. *PRUNUS fructu ovato maximo flavo. Tourn. Prune de Monsieur, i. e. Monsieur's Plum. Dubam. n. 15. t. 7.* This is sometimes called the Wentworth Plum. It is a large oval-shaped fruit, of a yellow colour both within and without, very much resembling the Bonum Magnum, but the flesh of this parts from the stone, which the other doth not. This ripens towards the latter end of september, and is very good to preserve, but the juice is too sharp to be eaten raw. It is a great bearer.
27. *PRUNUS fructu majori rotundo rubro. Tourn. Prune Cerizette, i. e. the Cherry Plum.* This fruit is commonly about the size of the Ox-heart Cherry, is round, and of a red colour; the stalk is long like that of a Cherry, which this fruit so much resembles, as not to be distinguished therefrom at some distance. The blossoms of this tree come out very early in the spring, and being tender, are very often destroyed by cold, but it affords a very agreeable prospect in the spring; for these trees are generally covered with flowers, which open about the same time as the Almonds; so that when they are intermixed therewith, they make a beautiful appearance before many other sorts put out; but by this blossoming so early, there are few years that they have much fruit.
28. *PRUNUS fructu albo oblongiusculo acido. Tourn. The white Pear Plum.* This is a good fruit for preserving, but is very unpleasant if eaten raw; it is very late ripe, and seldom planted in gardens, unless for stocks to bud some tender sorts of Peaches upon, for which purpose it is esteemed the best amongst all the sorts of Plums.
29. *PRUNUS Mytellinum. Park. The Muscle Plum.* This is an oblong flat Plum, of a dark red colour; the stone is large, and the flesh but very thin and not well tasted, so that its chief use is for stocks, as the former.
30. *PRUNUS fructu parvo violaceo. The St. Julian Plum.* This is a small fruit, of a dark violet colour, powdered over with a mealy bloom; the flesh adheres closely to the stone, and in a fine autumn will dry upon the tree. The chief use of this Plum is for stocks, to bud the more generous kinds of Plums and Peaches upon; as also for the Bruxelles Apricot, which will not thrive so well upon any other stock.
- [Mr. Miller makes no mention of—
31. The Green Gage, unless he intends it by n. 18. It is the finest eating Plum we have, especially when it is tinged with purple, is ripe in august and september, and ripens very well on standards or espaliers.

32. Blue Gage; ripe in september. A middle sized; roundish, blueish Plum, of a rich flavour.
33. Wentworth; large, oval, yellowish, acid and parting from the stone, used chiefly for tarts and sweetmeats; like n. 10 and 11.
34. Damascene, vulgarly Damson; small, roundish, dark blue, a great bearer; in orchards for the kitchen: ripe in september.

Ornamental varieties are the Double-blossomed; the Gold-striped; the Silver-striped; and the stoneless Plum.

21. The Bullace tree grows twelve or fifteen feet high or more. The branches are generally thorny. Leaves on short petioles, ovate attenuated at the base, ferrate, villosé underneath. Calyx almost upright. Petals white, obovate. Drupe roundish^f.

Linneus remarks, that the stipules are narrow, fringed, sharp, cloven at the base; or down to the base, according to Withering; who also observes, that the outer skin of the calyx may be pulled off, adhering to the peduncle, and appearing like an outer cup.

The fruit is acid, but so tempered by sweetness and roughness as not to be unpleasant, especially after it is mellowed by frost. A conserve is prepared by mixing the pulp with thrice its weight of sugar. The bark of the roots and branches is considerably styptic. An infusion of the flowers, sweetened with sugar, is a mild purgative, not improper for children^g.

Native of Germany, Switzerland, France and England, in hedges; flowering in april.

It varies with black, and white, or rather wax-coloured fruit; and also, as Mr Dale says, with a red, bitter, unpleasant fruit, in the hedges of Essex and Suffolk.

22. Root creeping. Stem shrubby, crooked, six or eight feet high, covered with a dark-coloured bark. Branches many, irregularly divaricating, ending in a thorn. Leaves on short petioles, obovate-lanceolate, minutely ferrate; the ferratures terminated by an excretory duct, the terminating one blunter and shorter. Stipules linear, ferrate-toothed, discoloured at the points. Flowers large, white, solitary on short peduncles, coming out before the leaf in march or april. Calyx spreading. Filaments from twenty to thirty, with orange-coloured anthers. Dr. Stokes remarks, that there are sometimes two styles. Drupe roundish, black with a blue exudation or bloom^h.—Native of Europe in hedges and coppices.

The Black-thorn is not so well adapted to hedges as the White-thorn, because it spreads its roots wide, and encroaches upon the pasturage; but it is excellent for dead fences, and to lay in covered drains. The wood is hard and tough, and is formed into teeth for rakes, and into walking sticks. From some effects, says Dr. Withering, which I have repeatedly observed to follow a wound from the thorns, I have reason to believe there is something poisonous in them, particularly in autumn. The tender leaves dried are sometimes used as a substitute for tea, and is the best substitute that has yet been tried. The bark powdered, in doses of two drams, will cure some agues. Letters marked upon linnen or woollen, with the juice of the fruit, will not wash out. Bruised and put into wine, it communicates a beautiful red colour, and a pleasant subacid roughnessⁱ. The juice is said to enter largely into the manufacture of Red Port Wine; and I have known the leaves gathered in considerable quantities to mix with the Chinese Tea.

The Sloe is so harshly sharp and austere as not to be eatable till it is mellowed by frost: its juice is extremely viscid, so that the fruit requires the addition of a little water, in order to admit of expression. The juice obtained from the unripe fruit, and inspissated to dryness by a gentle heat, is the German Acacia, and has been usually sold in the shops for the Egyptian Acacia, from which it differs in being harder, heavier, darker-coloured, of a sharper taste, and more

^f Smith.

^h Woodville, Smith, Linn.

^g Withering.

ⁱ Withering.

especially in giving out its astringency to rectified spirit.

Sloes have been employed for their styptic powers from the time of Dioscorides. They have been recommended in diarrhoeas and hæmorrhages, and as gargles in swellings of the tonsils and uvula. Dr. Cullen considers them as the most powerful of the acerb fruits, and as agreeable and useful astringents; but he thinks the conserve, as directed by the College, contains a larger proportion of sugar than is necessary.

The flowers, with their calyxes, are moderately purgative, the dose is an ounce infused in water, or rather whey^k.

23. Branches and branchlets round, dotted. Leaves alternate, petioled, acuminate, veined, rugged on both sides, pale underneath, spreading, two inches long. Petiole very short, grooved. Flowers on the extreme branchlets. Drupe the size of Pepper, globular or ovate with a permanent style, blue, smooth. Nut or stone three-sided, hard, ovate, sharpish. Kernel whitish. Fruit eatable. The upper surface of the leaf is so hard that it is used in polishing in Japan, where it is a native.

24. Stem shrubby, wholly smooth. Branches and branchlets alternate, round, ash-coloured, wrinkled, erect. Leaves alternate, petioled, veined, spreading, an inch long. Stipules in pairs, leafy above, bristle-shaped, the length of the petiole. Peduncle below the branchlets, one-flowered, short. Drupe the size of a pea.—Native of Japan.

25. Stem shrubby, smooth in all parts. Branches round, striated, ash-coloured, with the branchlets gradually filiform. Leaves scattered, petioled, oblong, spreading, netted-veined underneath. Petioles several times shorter than the leaves. Flowers scattered, solitary. Peduncles pendulous, the length of the leaves. Calyx subcampanulate. Corolla flesh-coloured.

It differs from *P. pumila* in having the leaves acute very finely ferrate and of the same colour on both sides; not obtuse almost entire and glaucous:—from *P. incisa* by its smooth ferrate leaves with the ferratures glandular.—Native of Japan.

26. Stem arboreous, slim, weak, a fathom in height. Branches and branchlets alternate, flexuose, smooth, ash-coloured, spreading. Leaves from the ends of the branches several, acute, short in flowering time, but afterwards becoming longer. Petioles shorter by half than the leaves. Flowers from the tops of the branchlets, flesh-coloured. Peduncles capillary, smooth, double the length of the leaves. Calyx cylindrical, widening at top, smooth, ferruginous, shorter by half than the corolla. It differs from *P. insititia* in its solitary peduncles, unarmed branches, and gash-ferrate leaves:—from *P. spinosa* by its ovate hairy gash-ferrate leaves and unarmed branches.—Native of Japan.

27. Stem arboreous: branches smooth erect: branchlets alternate spreading tomentose. Leaves alternate, acute, ferrate, veined, villose above, spreading, about an inch in length. Petioles tomentose, half a line long. Flowers peduncled. Drupe the size of a pea.—Native of Japan^l.

28. Stems frutescent, procumbent, very much branched. Leaves acuminate to both ends, on short petioles. Stipules in pairs, narrow-lanceolate or bristle-shaped. Flowers commonly in pairs, axillary, subsessile, pale purple rose-coloured or white. Drupe small, ovate, red with very little pulp: nut or stone ovate with the futures scarcely prominent^m: which distinguishes it from the Almond, to whose habit it approaches.

Native of the mountains of Crete; on mount Libanus at the height of one thousand fathoms; and if the *Amygalus incana* of Pallas be the same with this, it is found also on Caucasus, about Ksaurisi and Tessis. Desfontaines observed it on mount Atlas.

29. According to Willdenow, this is *Padus virginiana* of Miller's Dictionary, and *Prunus virginiana*

of Du Roi: he says it is easily distinguished, although the leaves vary much in form, by the midrib being bearded underneath towards the base.

Native of North America. See Miller's description, and the synonyms of Gronovius, Catesby, &c. under n. 3.

30. This resembles *Prunus fibrica*, but differs in having the leaves doubly ferrate, and the petioles glandular. It is commonly known in the gardens under the French name of *Abricot noir*. Supposed to be a native of the Levant.

31. This is probably a mule preserving its difference in gardens.

32. This is a shrub without thorns, three or four feet high. Leaves attenuated at the base, sharply ferrate, the last tooth having a gland on each side. Flowers four or five together clustered in an umbel, and of the same size with those of the Black-thorn. Fruit as large as a great pea, black, with very little pulp.—Native of North Americaⁿ.

33. This has been generally considered as a variety of *Prunus domestica* or the common Plum. The branches are very smooth but somewhat thorny; the leaves are convoluted; the peduncles very slender and smooth; the calyx reflex; the drupe subglobular, dark purple or red and sweet^o.—Native of North America.]

PROPAGATION AND CULTURE.

1, 2, 29. The two first sorts and the twenty-ninth are easily propagated either by seeds or layers. Sow the seeds in the autumn upon a bed or border of good ground, in the same way as Cherry-stones designed for stocks. Treat the plants also in the same manner; planting them out in a nursery, where they may stand two years to get strength; and then transplant them to the places where they are to remain. They are usually intermixed with other flowering-trees and shrubs in ornamental plantations.

For layers, the young shoots should be laid down in the autumn: these will have good roots in twelve months, when they may be separated from the old plants, and transplanted into a nursery for a year or two, to get strength, and may then be removed to the places where they are to grow.

5. Plant this in a warm situation, and shelter it from severe frost, whilst young: when it has acquired strength, it will thrive very well in the open ground in sheltered situations. It may be propagated in the same manner as the Portugal Laurel from the berries; and if the branches are laid down, they will take root.

8. The Portugal Laurel may be propagated in the same way as the common Laurel, by cuttings, layers, or seeds. If the cuttings are planted at the same season, and in the same way as will be directed for the common Laurel, they will take root very freely; or if the young branches are laid in the autumn, they will take root in one year, and may then be removed into a nursery, where they may grow a year or two to get strength, and then be transplanted where they are to remain.

But although both these methods are very expeditious for the propagating those plants, yet I would recommend the raising them from the berries, especially where they are designed for tall standards; for the plants which are propagated by cuttings and layers, put out more lateral branches and become bushy, but are not so well inclined to grow upright, as those which come from seeds: and as there are now many trees in the English gardens which produce plenty of berries every year, if they are guarded from birds till they are ripe, there may be a supply of them sufficient to raise plants enough without propagating them any other way. These berries must be sown in the autumn, and treated in the same way as the common Laurel.

This tree delights in a gentle loamy soil, which is not too wet nor over dry, though it will grow upon almost any soil: but the plants do not make so great progress, nor appear so beautiful, when planted in a

^k Woodville.

^l Thunberg.

^m Billard. & Desfont.

ⁿ Willdenow.

^o Ehrhart.

very dry soil, or in ground that is over wet. The time of transplanting them is the same as for the common Laurel.

This is much hardier than that; for in the severe frost of the year 1740, when great numbers of Laurels were entirely killed, and most of them lost their verdure, this remained unhurt: and as it grows to a considerable size, and the dark-green leaves make a fine mixture with the elegant spikes of white flowers, it is one of the most valuable evergreens we have.

[In several winters since 1740, the Portugal Laurels have suffered severely. In 1784, during the month of december, all those which stood in sunny aspects not only lost their foliage, but were cut to the ground, though they afterwards revived. Many Portugal Laurels also round London were cut to the ground by the frost in january 1776.]

9. The Laurel may be easily propagated by seeds or by planting of the cuttings; the best time for doing the latter is in september, as soon as the autumnal rains fall to moisten the ground; the cuttings must be the same year's shoots, and if they have a small part of the former year's wood to their bottom, they will more certainly succeed, and form better roots. These should be planted in a soft loamy soil about six inches deep, pressing the earth close to them. If these are properly planted, and the ground is good, there will few of the cuttings fail; and if they are kept clean from weeds the following summer, they will have made good shoots by the following autumn, when they may be transplanted into a nursery, where they may grow two years to get strength; and then should be removed to the places where they are to remain. These plants were formerly kept in pots and tubs, and preserved in green-houses in winter; but afterward they were planted against warm walls, to preserve them, being frequently injured by severe frost. After this the plants were trained into pyramids and globes, and constantly kept sheered; by which the broad leaves were generally cut in the middle, which rendered the plants very unsightly. Of late years they have been more properly disposed in gardens, by planting them to border woods, and the sides of wilderness quarters; for which purpose we have but few plants so well adapted, for it will grow under the drip of trees, in shade or sun; and the branches will spread to the ground, so as to form a thicket; and the leaves being large, and having a fine glossy green colour, they set off the woods and other plantations in winter, when the other trees have cast their leaves; and in summer they make a good contrast with the green of the other trees. These trees are sometimes injured in very severe winters, especially where they stand single and are much exposed; but where they grow in thickets, and are screened by other trees, they are seldom much hurt; for in those places it is only the young tender shoots which are injured, and there will be new shoots produced immediately below these to supply their place, so that in one year the damage will be repaired. But whenever such severe winters happen, these trees should not be cut or pruned till after the following midsummer; by which time it will appear what branches are dead, which may then be cut away, to the places where the new shoots are produced; for by hastily cutting these trees in the spring, the drying winds have free ingress to the branches, whereby the shoots suffer as much, if not more, than they had done by the frost.

These trees are also very ornamental, when they are mixed with other evergreen trees, in forming of thickets, or to shut out the appearance of disagreeable objects; for the leaves being very large, make a very good blind, and are equally useful for screening from winds; so that when they are planted between flowering-shrubs, they may be trained so as to fill up the vacancies in the middle of such plantations; and will answer the purpose of screening in the winter, and shutting out the view through the shrubs in all seasons: there are also many other purposes to which this tree may be applied, so as to render it very ornamental.

In warmer countries this tree will grow to a great

size, so that in some parts of Italy there are large woods of them; but we cannot hope to have them grow to so large stems in England; for should these trees be pruned up, in order to form them into stems, the frost would then become much more hurtful to them than in the manner they usually grow, with their branches to the ground: however, if the trees are planted pretty close together in large thickets, and permitted to grow rude, they will defend each other from the frost, and they will grow to a considerable height: an instance of which is now in that noble plantation of evergreen trees, made by his Grace the Duke of Bedford at Wooburn-abbey, where there is a considerable hill covered entirely with Laurels; and in the other parts of the same plantation, there are great numbers of these intermixed with the other evergreen trees, where they are already grown to a considerable size, and make a noble appearance.

There are some persons who propagate these trees from their berries, which is certainly the best way to obtain good plants; for those which come from seeds have a disposition to an upright growth, whereas almost all those which are raised from cuttings or layers, incline more to an horizontal growth, and produce a greater number of lateral branches. When any person is desirous to propagate this tree by seeds, the berries must be guarded from the birds, otherwise they will devour them before they are perfectly ripe, which is seldom earlier than the latter end of september, or the beginning of october, for they should hang until the outer pulp is quite black: When these berries are gathered, they should be sown soon after; for when they are kept out of the ground till spring, they frequently miscarry; and there will be no hazard in sowing them in the autumn, provided they are put in a dry soil; and if the winter should prove severe, the bed in which they are sown should be covered with rotten tan, straw, Peas-haulm, or any light covering, to prevent the frost from penetrating of the ground. The best way will be to sow the berries in rows at about six inches distance, and one inch asunder in the rows; if drills are made about three inches deep, and the berries scattered in them, and the earth drawn over them, it will be a very good method. The following spring the plants will appear, when they should be kept clean from weeds; and if the season should prove dry, if they are duly watered, the plants will make so good a progress as to be fit for transplanting the following autumn, when they should be carefully taken up, and planted in a nursery, placing them in rows at three feet asunder, and the plants one foot distance in the rows. In this nursery they may remain two years, by which time they will be fit to transplant where they are designed to remain.

The best season for transplanting these plants is in the autumn, as soon as the rain has prepared the ground for planting; for although they often grow when removed in the spring, yet those do not take so well, nor make so good progress as those which are removed in the autumn, especially if the plants are taken from a light soil, which generally falls away from their roots; but if they are taken up with balls of earth to their roots, and removed but a small distance, there will be no danger of transplanting them in the spring, provided it is done before they begin to shoot; for as the plants will shoot very early in the spring, so if they are removed after they have shot, the shoots will decay, and many times the plants entirely fail.

There are some persons who have grafted the Laurel upon Cherry stocks, with design to enlarge the trees, but although they will take very well upon each other, yet they seldom make much progress when either the Laurel is grafted on the Cherry, or the Cherry upon the Laurel; so that it is only a thing of curiosity, attended with no real use: and I would recommend to persons who have this curiosity, to graft the Laurel upon the Cornish Cherry, rather than any other sort of stock, because the graft will unite better with this; and as it is a regular tree and grows large, so it will better answer the purpose of producing large trees.

[In propagating the Laurel from cuttings, the under leaves should be stripped off. The cuttings may be set thick. The weather should be rainy or at least cloudy when this work is done; and the beds should be under a north wall, or else well shaded. If the weather will permit the cuttings to be planted in august, they will the more certainly take root before winter; but they should remain undisturbed till the spring twelvemonth following, when they should be carefully taken out, and planted in the nursery^a.

To raise the Laurel from seeds, in the beginning of winter, soon after they are ripe, sow them in a shady border of fresh loose mould, in beds three feet and a half broad, with alleys of eighteen inches, covering them an inch and half or two inches deep. About the middle of april, if the weather be dry and not frosty, water them frequently in the morning, and continue this during the summer months on evenings. The succeeding spring remove them to the nursery, in rows two feet asunder, and nine or ten inches in the row. In two years, if the ground be good, and they have been taken good care of, they will be fit to remove finally^a.

The seed-beds may be hooped over, that they may be covered occasionally with mats when the frost is severe.

When a large plantation of Laurels is intended, the work of transplanting may be done at any time during the winter, when the weather will permit; but october is the best season. The ground must be well worked and cleaned, and the trees planted in holes a yard asunder. When they begin to touch, still let them remain unthinned two or three years longer, to draw one another up. Thin them sparingly at first, only taking out a weakly plant here and there, to make room for the vigorous shooting of the others; lest the cold, entering the plantation too much at once, should retard its growth, if not wholly destroy it.

12. Perfumed Cherry is often propagated by grafting upon any sort of Cherry stock.]

13. APRICOTS. Most people train these trees up to stems of six or seven feet high, or bud them upon stocks of that height; but this is a practice I would not recommend to the public, because the higher the heads of these trees are, the more they are exposed to the cutting winds in the spring, which too frequently destroy the blossoms: and the fruit is also more liable to be blown down in summer, especially if there should happen to be much wind at the time when the fruit is ripe; which by falling from a great height, will be bruised and spoiled; therefore I prefer half standards, of about two and a half, or three feet in the stem, to those which are much taller; or to plant them as dwarfs against an espalier, where, if they are skilfully managed, they will produce a large quantity of good fruit; and the trees in espalier may be more conveniently covered in the spring, when the season proves bad, whereby there will be a greater certainty of fruit every year.

These fruits are all propagated by budding them on Plum-stocks, and will readily take upon almost any sort of Plum, provided the stock be free and thriving (except the Brussels kind, which is usually budded on a sort of stock, commonly called the St. Julian, which better suits this tree, as being generally planted for standards, than any other sort of Plum will.) The manner of raising the stocks, and budding these trees, is treated of under their particular articles, to which I refer the reader, and shall proceed to their planting and management.

These trees are all except the two last sorts (planted against walls, and should have an east or west aspect; for if they are planted full south, the great heat causes them to be mealy before they are eatable.

The borders near these walls should be six or eight feet wide, at least, and if it were more, the better; but I would never advise the making of them so deep as is the general custom, for if the earth be two feet deep, or two and a half at most, it is enough.

If the ground is a wet cold loam or clay, the borders should be raised as much above the level of the surface as it will admit, laying some stones or rubbish in the bottom, to prevent the roots from running downwards; but if you plant upon a chalk or gravel, it will be better to raise the borders to a proper thickness, with good loamy earth, than to sink the borders by removing the chalk or gravel; for although these are removed the whole breadth of the border, which we may allow to be eight feet, and this trench filled with good earth, yet the roots of the trees will in a few years extend this length, and then meeting with the chalk or gravel, they will receive a check whereby their leaves will fall off early in the season, and the fruit will be small, dry, and ill-flavoured, and the shoots of the trees will be weak. But where the borders are raised above either to their full height, the roots will not strike down into the gravel or chalk, but rather extend themselves near the surface, where they will meet with better soil: and as the trees are of long duration, and old trees are not only more fruitful than young, but the fruit is also better flavoured, the providing for their continuance is desirable.

The soil I would in general advise to be used for these, and all other sorts of fruit-trees, is fresh untried earth, from a pasture ground, taken about ten inches deep, with the turf and laid to rot and mellow at least twelve months before it is used, mixing a little rotten dung with it; this must be often turned, to sweeten and imbibe the nitrous particles of the air.

When the former soil of the border is taken away, this fresh earth should be carried in the place; and if the borders are filled with it two months before the trees are planted, the ground will be better settled, and not so liable to sink after the trees are planted: in filling the borders, the ground should be raised four or five inches above the level they are designed, to allow for the settling.

The borders being thus prepared, make choice of such trees as are but of one year's growth from budding; and if the soil is dry, or of a middling temper, october is the best season for planting, especially having at that time a greater choice of trees from the nurseries, before they have been picked and drawn over by other people. The manner of preparing these trees for planting being the same in common with other fruit trees, I shall refer the reader to the article of PEACHES, where he will find it largely treated of. At the time of planting no part of the head of the trees should be cut off, unless there are any strong foreright shoots which will not come to the wall, which may be taken quite away.

The trees being thus prepared, you must mark out the distances they are to stand, which in a good strong soil, or against a low wall, should be twenty feet or more; but in a moderate one, eighteen feet is a good reasonable distance; then make a hole where each tree is to stand, and place its stem about four inches from the wall, inclining the head thereto; and after having fixed the tree in the ground, nail the branches to the wall, to prevent their shaking, and cover the surface of the ground round the root with rotten dung, to keep out the frost: in this state let it remain till the end of february or the beginning of march, when if the weather is good, you must unnailed the branches of your trees, so as not to disturb their roots; and, being provided with a sharp knife, put your foot close to the stem of the tree; and having placed your left-hand to the bottom of the tree, to prevent its being disturbed, with your right-hand cut off the head of the tree, if it has but one stem; or where it may have two or more shoots, each of them must be shortened, to about four or five eyes above the bud, so that the sloping side may be toward the wall.

In the spring, if the weather proves dry, it will be necessary to give the trees a gentle refreshing with water; in the doing of which, if they be watered with a rose to the watering-pot all over their heads, it will greatly help them; and also lay some turf, in the manner directed for Apples, or some other mulch, round their roots, to prevent their drying during the summer

summer season; and in the spring, as new branches are produced, observe to nail them to the wall in a horizontal position; and such shoots as are produced fore-right, must be entirely displaced. This must be repeated as often as is necessary, to prevent their hanging from the wall, but by no means stop any of the shoots in summer.

At michaelmas, when the trees have done growing, their branches should be unnailed, and shorten them in proportion to their strength; a vigorous branch may be left eight or nine inches long, but a weak one should not be left above five or six. I suppose many persons will wonder at this direction, especially having allowed such a distance between the trees, as believing, by this management, the wall will never be filled; but my reason for it is, that I would have no part of the wall left unfurnished with bearing wood; which must be the case, if the branches are left to a greater length at first; for it seldom happens, that more buds than two or three upon each branch shoot; and these are, for the most part, such as are at or near the extreme part of the last year's wood; so that all the lower parts of the shoots become naked, nor will they ever after produce shoots; and this is the reason we see so many trees which have their bearing wood situated only in the extreme part of the tree.

When you have shortened the shoots, be sure to nail them as horizontally as possible, for upon this it is that the future good of the tree chiefly depends.

The second summer observe, as in the first, to displace all fore-right shoots as they are produced, nailing in the other close to the wall horizontally, so that the middle of the tree may be kept open; and never shorten any of the shoots in summer, unless to furnish branches to fill vacant places on the wall; and never do this later than the end of april, for reasons given in the article of Peaches. At michaelmas shorten these shoots, as was directed for the first year; the strong ones may be left nine or ten inches, and the weak ones six or seven at most.

The following year's management will be nearly the same with this, but only observe, that Apricots produce their blossom buds, not only upon the last year's wood, but also upon the cufsons, or spurs, which are produced from the two year's wood; a great care should therefore be had in the summer management, not to hurt or displace these: observe also to shorten the branches at the winter pruning, so as to furnish fresh wood in every part of the tree; and be sure to cut out entirely all luxuriant branches, or displace them as soon as they are produced; which, if left to grow, would exhaust the nourishment from the bearing branches, which in my opinion, cannot be too strong, provided they are kindly; for the more vigorous the tree is, the more likely it is to resist the injuries of the weather; though we often see trees brought to so weak a condition, as to be able only faintly to blow their blossoms, and then most of the bearing branches have died; which has given occasion to the owner to imagine it was the effect of a blight, when, in reality, it was only for want of right management. And, I am fully persuaded, half the blights we hear complained of, proceed from nothing else but this.

These few rules, well executed, together with a little observation and care, will be sufficient; to pretend to prescribe particular directions for all the different accidents, or manner of treating fruits, would be impossible; but I believe the reader will find what has been said, if duly attended to, will answer his design; for, without diligent observation, there can be no such thing as a skilful manager, let him have ever so many or good instructions laid down to him.

The Brussels and Breda Apricots, being, for the most part, planted for standards, will require very little pruning or management; only observe to take out all dead wood, or such branches as cross each other; this must be done early in autumn, or in the spring, after the cold weather is past, that the part may not canker where the incision is made.

15. The dwarf Canadian Cherry tree is easily propagated by laying down the branches early in the spring. They will take root by the following autumn,

when they may be taken off, and either planted in a nursery to get strength, or to the places where they are designed to remain. It may also be propagated by sowing the stones in the same manner as the common Cherry.

16. All the sorts of Cherries which are usually cultivated in fruit-gardens, are propagated by budding or grafting the several kinds into stocks of the black or wild red Cherries, which are strong shooters, and of a longer duration than any of the garden kinds. The stones of the wild Cherries are sown in a bed of light sandy earth in autumn; or are preserved in sand till spring, and then sowed. The young stocks should remain in the nursery beds till the second autumn after sowing; at which time prepare an open spot of good fresh earth, well worked. In october plant out the young stocks at three feet distance row from row; and about a foot asunder in the rows; being careful in taking them up from their seed-beds, to loosen their roots well with a spade, to prevent their breaking. Prune their roots; and if they are inclinable to root downwards, shorten the tap root, but do not prune their tops.

The second year after planting out, if they take to growing well, they will be fit to bud, if they are intended for dwarfs; but if they are for standards they will not be tall enough till the fourth year, for they should be budded or grafted near six feet from the ground, otherwise the graft will not advance much in height; so that it will be impossible to make a good tree from such as are grafted low, unless the graft be trained upwards.

The usual way with the nursery-gardeners is, to bud their stocks in summer, and such of them as miscarry they graft the succeeding spring. Those trees where the buds have taken, must be headed off the beginning of march about six inches above the bud; and when the bud has shot in summer, if there be any apprehension of its being blown out by the winds, it must be fastened with bafs or other soft tying to that part of the stock which was left above the bud. The autumn following these trees will be fit to remove; but if the ground be not ready to receive them, they may remain two years before they are transplanted; in doing which observe not to head them, for this very often is immediate death to them; but if they survive, they seldom recover in five or six years.

If these trees are intended for a wall, plant dwarfs between the standards; but the latter, as the former fill the walls, must be cut away, to make room for them. But never plant standard Cherries over other fruits; for there is no sort of fruit that will prosper well under the drip of Cherries.

When these trees are taken up from the nursery, shorten the roots, and cut off all the bruised parts, as also the small fibres, which would dry, grow mouldy, and be a great prejudice to the new fibres in their coming forth; cut off likewise the dead part of the stock which was left above the bud, close down to the back part of it, that the stock may be covered by the bud. If these trees are designed for a wall, place the bud directly from the wall, that the back part of the stock which was cut may be hid from sight. The soil that Cherries thrive best in is a fresh hazel loam: if it be a dry gravel they will not live many years, and will be perpetually blighted in the spring.

The sorts commonly planted against walls are the Early May and May Duke, which should have a south aspect. The Hearts and common Duke will thrive on a west wall, and in order to continue the Duke later in the season, they are frequently placed against north and north-west walls, where they succeed very well. The Morello, which is chiefly planted for preserving, is commonly put on a north wall. The Hearts are all ill bearers, for which reason they are seldom planted against walls; but probably if they were grafted on the Bird Cherry, and managed properly, that defect might be remedied; for it is said that this stock will render Cherries very fruitful; and having the same effect on Cherries as the Paradise stock has on Apples, they may be kept in less compass: at least it is an experiment well worth the trial.

Cherry

Cherry trees planted against a wall, should be at least twenty or twenty-four feet asunder, with a standard tree between each dwarf: for these trees will extend themselves as far as, or farther than Apricots, and many other sorts of fruit.

In pruning Cherries, the shoots should never be shortened, for most of them produce their fruit buds at their extreme part, which by shortening are cut off, and this often occasions the death of the shoot: their branches should therefore be trained in at full length horizontally, observing in may, where there is a vacancy in the wall, to stop some strong adjoining branches, which will occasion their putting out two or more shoots; by which means, at that season of the year, there may always be a supply of wood for covering the wall; at the same time displace all fore-right shoots by the hand, for if they are suffered to grow till winter, they will not only deprive the bearing branches of their proper supply of nourishment, but when they are cut out, they occasion the tree to gum in that part; for Cherries bear the knife worse than any other sort of fruit-trees; but be careful not to rub off the sides or spurs which are produced upon the two or three years old wood; for it is upon these that the greatest part of the fruit is produced, and they will continue fruitful for several years. It is for want of duly observing this caution that Cherry-trees are often so unfruitful, especially the Morello, which shoots the weaker, the more it is cut.

Cherry-trees are also planted for Orchards in many parts of England, particularly in Kent. The usual distance allowed for them is forty feet square, at which space they are less subject to blight than when they are planted closer; and the ground may be tilled between them almost as well as if it were entirely clear, especially whilst the trees are young; and the often stirring the ground, provided the roots be not disturbed, will greatly help the trees; but when they are grown so big as to overshadow the ground, the drip of their leaves will not suffer many things to thrive under them.

The best sorts for an Orchard, are the common Red or Kentish, the Duke and the Lukeward, all which are plentiful bearers.

Some persons graft the Duke and other sorts of Cherries upon the Morello, which is but a weak shooter, in order to check the luxuriant growth of their trees, which will succeed for three or four years; but they are not of long duration, nor will they make shoots above six or eight inches long; being closely covered with blossoms, they may produce some fruit in a small compass; but such experiments are unfit for general use, and proper only to satisfy curiosity; and it is much better to allow the trees a greater share of room against the walls, when one tree so planted, and properly managed, will produce more fruit than twenty of these trees, or twice that number, when they are planted too close, though they are grafted upon the Black Cherry, or any other free stock.

The double-flowering Cherry is propagated by budding or grafting on the Black or Wild Cherry stock; and the trees are very proper to intermix with flowering trees of the second growth. The flowers are as large and double as a Cinnamon Rose, and being produced in large bunches on every part of the tree, render it one of the most beautiful trees of the spring. Some of the flowers, which are less double, often produce fruit, which the very double flowers do not.

17. The Black Cherry is seldom grafted or budded, but is generally sown for stocks; where persons however are curious to have the best flavoured of this sort of fruit, they should be grafted from such trees as produce the best. [They are always trained as standards, the Coroun for the orchard, and the small wild black and red for plantations in parks, &c.]

20. PLUMS. All the varieties are propagated by budding or grafting upon stocks of the Muscle, white Pear, St. Julian, Bonum Magnum, or any of the free-shooting Plums. For the manner of raising these stocks, see NURSERY.—Budding is much preferable to grafting for Plum-trees, because they are very apt to gum, wherever large wounds are made on them.

The trees should not be more than one year's growth from the bud when they are transplanted, for if they are older they are very subject to canker; or if they take well to the ground, commonly produce only two or three luxuriant branches.

The manner of preparing the ground (if for walls) is the same as for Peaches; as is also pruning the roots and planting, therefore I shall forbear repeating it again. The distance which these trees should be planted at, must not be less than twenty-four feet against high walls; and if the wall is low, they should be placed thirty feet asunder.

Plums should have a middling soil, neither too wet and heavy, nor over light and dry, in either of which extremes they seldom do so well; and those sorts which are planted against walls, should have an east or south-east aspect, which is more kindly to these fruits than a full south aspect, on which they are subject to shrivel, and be very dry; and many sorts will be extreme mealy, if exposed too much to the heat of the sun; but most sorts will ripen extremely well on espaliers, if rightly managed.

There are some persons who plant Plums for standards, in which method some of the ordinary sorts will bear very well; but then the fruit will not be near so fair as those produced on espaliers, and will be more in danger of being bruised or blown down by strong winds. The distance of placing them for espaliers must be the same as against walls, as must also their pruning and management; so that whatever may be hereafter mentioned for one, should be likewise understood for both.

Plums do not only produce their fruit upon the last year's wood, but also upon cufsons or spurs, which come out of wood that is many years old; so that there is not a necessity of shortening the branches, in order to obtain new shoots annually, in every part of the tree (as in Peaches, Nectarines, &c. hath been directed) since the more these trees are pruned, the more luxuriant they grow, until the strength of them is exhausted, and then they gum and spoil; therefore the safest method to manage these trees is, to lay in their shoots horizontally, as they are produced, at equal distances, in proportion to the length of their leaves; and where there is not a sufficient quantity of branches to fill up the vacancies of the tree, there the shoots may be pinched the beginning of may (in the manner as hath been directed for Peaches, &c.) which will cause them to produce some lateral branches to supply those places; and during the growing season, all fore-right shoots should be displaced, and such as are to remain must be regularly trained in to the wall or espalier, which will not only render them beautiful, but also give to each part of the trees an equal advantage of sun and air; and hereby the fruit will be always kept in a ductile growing state, which they seldom are, when overshadowed with shoots some part of the season, and then suddenly exposed to the air, by taking off, or training those branches in their proper position.

With thus carefully going over these trees in the growing season, there will be but little work to do to them in winter; for when the branches are shortened, the fruit is cut away, and the number of shoots increased; for whenever a branch is shortened, there are commonly two or more shoots produced from the eyes immediately below the cut; so that by thus unskilfully pruning, many persons crowd their trees with branches, and thereby render what little fruit the trees produce, very small and ill-tasted; which is very commonly found in too many gardens, where the manager, perhaps, thinks himself a complete master of his business; for nothing is more common than to see every branch of a fruit-tree pass the discipline of the knife, however disagreeable it be to several sorts of fruits. And it is common to see these trees planted at the distance of fourteen or sixteen feet, so that the walls are in a few years covered with branches; and then all the shoots are cut and mangled with the knife, so as to appear like a stumped hedge, and produce little fruit; therefore the only way to have Plum-trees in good order,

is to give them room, and extend their branches at full length.

Those few rules before laid down, will be sufficient, if due observation be joined therewith, to instruct any person in the right management of these sorts of fruit-trees.

21. [The Bullace is raised from the stones; but its varieties can be continued with certainty only by grafting or budding them upon any Plum or Bullace stocks.

The stones may be sown in autumn in beds, two inches deep; keep them clean, and when they are two years old, plant them in rows from two to three feet asunder, and train them to a single stem.

Graft or bud these, when they are of a proper height, in the same manner as other Plums. When they have formed heads, transplant them where they are to remain, any time from october to march, placing them eighteen or twenty feet asunder.

22. The Black-thorn, though very useful to the husbandman, is also noxious to him, by incroaching on his pasturage. If they be felled above ground, the stubs are in the way of the scythe and the bite of cattle, and the thicket is presently renewed.

If Black-thorns be grubbed up by the roots, every fibril left in the soil produces a fresh plant; so that unless great caution is observed in taking all these out, instead of being lessened by this tedious and expensive operation, their number will be increased.

But if they be cut off level with the surface, the scythe has free sweep, and the young shoots are removed with ease and certainty.

If the ground be mown for hay, the same stroke which cuts the herbage takes off the shoots.

If pastured; cattle and sheep, provided they have no woodland left to browse among, will gnaw them to the quick. It is however always advisable in this case to sweep the ground over with the scythe in the course of the summer, to remove the remains which may have escaped the bite of the animals.

The second year the shoots will rise weak, and the roots themselves seldom survive the third year.

In a very few years more the roots will be found entirely rotten.

If a thicket or border, where the sward is nearly lost, be treated in this manner, rubbish of every kind should be raked off, a few grass-seeds scattered on, and the surface run over with a roller, as a preparation for the scythe.

This mode of extirpation is applicable not only to the Black-thorn, but to every tree and shrub to which it has been applied, the Furze and Bramble excepted.

Where headlands or borders are grubbed, they should be planted with Potatoes or some other cleansing crop, that is well hoed, till the Black-thorns or other shrubs and hedge-weeds are totally eradicated, before they are laid down to grass. Thus pursued grubbing more effectually answers the purpose than mowing.

PRUNUS. See *Amygdalus*, *Camocladia*, *Coccoloba*, *Cordia*, *Mimusops*, *Spondias*.]

PSEUDO ACACIA. See *Piscidia* and *Robinia*.

[—] ACMEILLA. See *Spilanthus*.

— ACORUS. See *Iris*.

— AMBROSIA. See *Cochlearia Coronopus*.

— APOCYNUM. See *Bignonia*.

— ASPHODELUS. See *Anthericum*.

— CAPSICUM. See *Solanum*.

— CHAMÆPITYS. See *Dracocephalum* and *Teucrium*.

— CHINA. See *Senecio* and *Smilax*.

— COSTUS. See *Parthenium*.

— CYPERUS. See *Carex* and *Schoenus*.

— CYTISUS. See *Vella*.]

— DICTAMNUS. See *Marrubium*.

[—] DIGITALIS. See *Dracocephalum*.

— FUMARIA. See *Fumaria*.

— GELSEMINUM. See *Bignonia*.

— GNAPHALIUM. See *Micropus*.

* Marshall's Yorkshire, 1. 315.

PSEUDO HELICHRYSUM. See *Baccharis*, *Erigeron*, *Inula*, and *Iva*.

— HELLEBORUS. See *Helleborus*.

— LIMODORUM. See *Orchis abortiva*.

— LOTUS. See *Diospyros*.

— LYSIMACHIUM. See *Epilobium* and *Veronica*.

— MARRUBIUM. See *Lycopus*.

— MELANTHIUM. See *Agrostemma*.

— NARCISSUS. See *Anthericum* and *Narcissus*.

— NARDUS. See *Lavandula*.

— ORCHIS. See *Ophrys* and *Satyrion*.

— PLATANUS. See *Acer*.

— PSIDIUM. See *Eugenia*.

— RUBIA. See *Crucianella*.

— RUTA. See *Ruta*.

— SANTALUM. See *Cesalpinia*.

— STACHYS. See *Stachys*.

— SYCOMORUS. See *Melia*.

— VALERIANA. See *Valeriana*.]

PSIDIUM. (So named by Linneus from *Ψιδας* of Hippocrates.)

Lin. gen. n. 615. Reich. n. 670. Schreb. n. 841.

Juss. 324. Guajava. Tournef. t. 443. Gertn.

t. 38. Decaspermum. Forst. 37. Nelitris.

Gertn. t. 27.

Class. 12. 1. Icosandria Monogynia.

Nat. order of *Hesperideæ*. Myrti, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leaved, bell-shaped, five-cleft, permanent: segments ovate.

COR. Petals five, ovate, concave, spreading, inserted into the calyx.

STAM. Filaments numerous, shorter than the corolla, inserted into the calyx. Anthers small.

PIST. Germ roundish, inferior. Style awl-shaped, very long. Stigma simple.

PER. Berry oval, very large, crowned with the calyx, one or many-celled.

SEEDS numerous, very small, nestling.

ESSENTIAL CHARACTER.

Cal. five-cleft superior. Pet. five. Berry one-celled, many-seeded.

SPECIES.

1. *Psidium pyrifera*. White Guava.

Lin. spec. 672. Juss. 460. Reich. 2. 473. Willd.

957. hort. cliff. 148. fl. zeyl. n. 192. Jacq.

obs. 2. 6. Brown. jam. 238. Lour. cochinch.

309. edit. Willd. 378.

Guayava. Park. theat. 1634. Ger. emac. app. 1612.

Raii hist. 1455.

Guajava foliorum angulis quadrangulis, fructu oblongo.

Trew Ebert. t. 43.

G. alba dulcis. Comm. hort. 1. 121. t. 63. Mer.

surin. t. 19.

Guajavos fructu pallido dulci. Burm. zeyl. 112.

Cujavus domestica. Rumph. amb. 140. 1. 47.

Pela. Rheed. mal. 3. 31. t. 34.

Malo puniceo affinis pomifera, flore pentapet. albo,

fructu esculento majore albo. Sloan. jam. 2. 463.

Leaves elliptic pubescent underneath, peduncles one-flowered.

[2. *Psidium pumilum*. Dwarf Guava.

Lin. spec. ed. Willd. 957. Vahl symb. 2. 56.

P. angustifolium. Lamarck, encycl. 3. 16.

P. caninum. Lour. cochinch. 310? ed. Willd. 379?

Cujavillus. Rumph. amb. 1. 145. t. 49.

Leaves lanceolate acute tomentose underneath, peduncles one-flowered.

3. *Psidium aromaticum*. Aromatic Guava.

Lin. spec. ed. Willd. 957. Aubl. guian. 1. 485.

t. 191.

Leaves oblong acuminate smooth, peduncles one-flowered.

4. *Psidium grandiflorum*. Great-flowered Guava.

Lin. spec. ed. Willd. 958. Aubl. guian. 1. 483.

t. 190.

Leaves ovate acuminate smooth, peduncles one-flowered bracted.

5. *Psidium Decaspermum*.

Lin. syst. 461. Willd. 958. suppl. 252. Forst.

prodr. n. 219.

Decaspermum fruticosum. Forst. gen. n. 37.

Nelitris Jambosella. Gært. fruct. 1. 135.

Leaves ovate acuminate pubescent, peduncles one-flowered bracted.]

6. *Psidium pomiferum*. Red Guava.

Lin. spec. 672. Syst. 461. Reich. 2. 474. Willd.

958. Jacqu. obs. 2. 7. Lour. cochinch. 310. ed. Willd. 379.

Guajava alba acida, fructu rotundiore. Pluk. phyt. t. 193. f. 4.

Guajaba pomifera indica, pomis rotundis. Baub. pin. 437.

Cujavus agreftis. Rumph. amb. 1. 142. t. 48. Mer. surin. t. 57.

Malacca pela. Rheed. mal. 3. 33. t. 35. Burm. ind. 113.

Leaves oblong-lanceolate pubescent underneath, peduncles three-flowered.

[7. *Psidium guinense*. African Guava.

Lin. spec. ed. Willd. 958. Swartz, prodr. 77. descr. 881.

Leaves ovate quite entire tomentose underneath, peduncles three-flowered.

8. *Psidium montanum*. Mountain Guava.

Lin. spec. ed. Willd. 959. Swartz, prodr. 77. descr. 879. Brown. jam. 239.

Leaves oblong acuminate crenulate shining, peduncles many-flowered.

DESCRIPTIONS, &c.

1. In its wild state the White Guava tree grows to the height of seven or eight, sometimes of twelve feet. In gardens in the West Indies, where the soil is good, it equals a middle-sized Apple tree, the trunk being six feet in height, and a foot and half in circumference. Bark smoothish, of a yellowish brown colour, with large ash-coloured spots. Wood very hard and tough, used for ox-yokes and the like purposes, and well adapted for fuel. Branches numerous, the young ones four-cornered. Leaves blunt, entire, smoothish, on short petioles, two or three inches long, opposite. Peduncles solitary, short, supporting a white sweet-smelling flower. Fruit smooth, having a peculiar smell, yellow sulphureous or whitish on the outside, roundish or more oblong, the size of a hen's egg or bigger, according to the soil: the rind is a line or two in thickness, brittle and fleshy; pulp rather firm, full of bony seeds, flesh-coloured, sweet, aromatic and pleasant. This fruit is eaten with avidity, not only by the natives, but by Europeans; with those who are not accustomed to it, the Guava is apt to occasion a slight flux; but Jacquin affirms that when he has been thirsty on a journey, he has eaten of it to satiety without suffering any harm. It is eaten raw in the desert, but the seeds are scarcely separable. It is also preserved with sugar^a.

Loureiro says that the berry is two inches in diameter, commonly egg-shaped, but sometimes roundish, seldom pear-shaped; the rind even and pale, the pulp fleshy, white or red.

Native both of the West and East Indies, Cochinchina and the southern provinces of China; becoming a large tree when cultivated, but in its wild state much smaller and of an irregular growth, with the trunk and branches distorted. In the Caribbee islands it frequently overruns the pastures, and one tree in a garden will suffice to fill the whole; for the seeds pass through the body of men and animals, without losing their vegetative quality^c.

Cultivated here in 1656, by Mr. John Tradescant, junior^d.

2. This has exactly the appearance of the preceding, but is five times smaller in all its parts. It is a shrub of two feet in height, with four-cornered branches having an ash-coloured villus on them. Leaves opposite, an inch long, quite entire, smooth above, villose underneath, sessile or on very short petioles. Peduncles from the extremities of the branchlets, in pairs, short, villose. Leaflets of the calyx lanceolate, blunt, leathery, villose within. Fruit glo-

bular, the size of a hazel nut, subvillose.—Native of the island of Ceylon^e.

Willdenow suspects that *P. caninum* of Loureiro may be the same with this; since they agree in general, except that he describes the leaves as subserrate. He calls it *canina*, because dogs are delighted with it in the same manner as cats are with Valerian.—Native of China about Canton.

Loureiro has two other species, natives of Cochinchina, in woods. 1. *P. nigrum*; a middle-sized tree, with distorted, spreading branches. Leaves ovate-lanceolate, slightly serrate, smooth on both sides, scattered, without any nerves or ribs, dark green, shining. Flowers white, on many-flowered terminating peduncles. Berries black, very small, round, crowned, one-celled, many-seeded. 2. *P. rubrum*; a middle-sized tree with spreading branches. Leaves oblong, blunt, quite entire, smooth, opposite, on short petioles. Flowers white, many, sessile, heaped together, axillary. Calyx tubular, oblong, four-toothed, superior. Petals four, small, unequal. Berry calycine, oblong, red, one-celled, many-seeded, crowned, eatable, small. It seems to belong to this genus, though it has one-fifth part less in the calyx and corolla.

3. This is a tree of moderate size, with a trunk of about five feet in height, and branching at the top in a scattered manner; the smaller branches are tetragonal and leafy; the leaves oblong-ovate, sharp-pointed, smooth, perfectly entire, and standing on short footstalks: the flowers solitary, opposite, and rising from the bosoms of very short leaves near the bases of the smaller branches: they are white and are either tetrapetalous or pentapetalous. The fruit is aromatic, and eatable; a spherical berry, of a yellow colour, crowned with the toothlets of the calyx, and quadrilocular. The bruised leaves have the smell of Balm.—It is a native of Cayenne and Guiana, growing in woods, and flowering in the month of October.

4. This also is a middle-sized tree, with a trunk ten feet high, branching in an irregular manner from the top; the smaller branches are quadrangular, and leafy; the leaves opposite, smooth, quite entire, somewhat footstalked, and ovate-acuminate; they are more than four inches long, and about two and a half broad. The flowers spring from the young branches, and stand singly at the bosom of each leaf, except those towards the top of the branches: their footstalks are slender, and about two inches long: the petals are white, waved at the borders, and generally five in number: they have a very agreeable odour, and are succeeded by smooth yellow berries, having four cells, filled with small seeds, enveloped in a succulent pulp.—It grows in the woods of Cayenne, flowering in December and bearing fruit in February^f.

5. This is a smooth shrub. Leaves petioled small quite entire veined, not marked with lines. Peduncles axillary, half as short again as the leaves, silky. One bracte or two, oblong. Flowers small, white. Calyxes silky. Capsule or berry small, globular, torulose, crowned with the permanent calyx^g.

Gärtner describes the fruit as a subglobular berry, obsoletely torulose, fleshy, one-celled, crowned by the five-toothed calyx, ending below in a very long peduncle, near the base of the fruit, accompanied by two, linear-acuminate, opposite, minute stipules. Seeds placed in a ring in a double row; in the upper row eight, in the lower twelve or more, all oblong, on one side convex, thick, bowed; on the other straight, compressed into a wedge-form angle: in other parts somewhat bony, and of a pale testaceous colour.

It differs from Guajava only in having all the seeds inverted, instead of being in every position; in their being straightish and not kidney-form; and in there being no partition whatever.—Native of Otaheite, and the other Society Isles.]

6. The common red Guava has a pretty thick trunk, twenty feet in height, covered with a smooth bark, and dividing into many angular branches towards the top. Leaves two inches and a half long, and

^a Jacquin.

^c Loureiro and Jacquin.

^d Hort. kew.

^e Vahl.

^f Aublet.

^g Linn. suppl.

one inch and a half broad in the middle, rounded at both ends, having a strong midrib and many veins running towards the sides, of a light green colour, opposite on very short foot-stalks. Peduncles axillary, an inch and half long. Petals large and white. Fruit shaped like a Pomegranate, crowned, when ripe having an agreeable odour.

[According to Jacquin it agrees in habit with the first species, and differs principally in being of a paler colour both in the rind and pulp, and having an acid flavour or none at all. The form is the same. It is not so common; and is scarcely ever eaten. In Martinico it is called *Goyavier de Cayenne*; the first species *Goyavier du pays*.

Loureiro describes it as a distorted and very branching shrub, four feet high. Leaves quite entire, small, wrinkled, rugged, sessile, opposite, with oblique, parallel ribs. Flowers white, small, scattered, from one to three on longish peduncles. Berry an inch in diameter or less, subglobular, smooth, within white or red.

Native both of the West and East Indies, China and CochinChina in woods. In the latter countries, according to Loureiro, the fruit is eatable, but bad, neither taste nor smell being pleasant. The root and young leaves are astringent, and esteemed useful in curing fluxes, and strengthening the stomach.

Introduced here in 1692, by the Dutchess of Beaufort^a.

7. Native of Prince's island on the coast of Guinea, and cultivated in Domingo^b.

8. This is one of the largest trees in the woods of Jamaica, growing frequently to the height of sixty or seventy feet, with a proportioned thickness: it is an excellent timber wood, of a dark colour and curled grain; works easily, and takes a fine polish. It makes very beautiful walking-sticks^c.]

PROPAGATION AND CULTURE.

These plants are propagated by seeds, which must be procured from the countries where they naturally grow; if these are brought over in the entire fruit, gathered full ripe, the seeds will more certainly succeed; these should be sown in pots filled with rich kitchen-garden earth, and plunged into a hot-bed of tanners-bark, giving them water from time to time as the earth dries; in about six weeks the plants will appear (if the seeds are good) and must have free air admitted to them in proportion to the warmth of the season; when the plants have obtained strength enough to be removed, they should be each planted in a small pot, filled with the like rich earth, and plunged into a fresh hot-bed, shading them from the sun until they have taken new root; then they should have a large share of free air admitted to them every day in warm weather, to prevent their drawing up weak; they must also be frequently refreshed with water in summer. When the plants have filled these small pots with their roots, they should be shaken out and their roots pared, then put into larger pots filled with the same sort of earth, and plunged into the hot-bed again, where they should remain till autumn, when they must be plunged into the tan-bed in the stove: during the winter they should have a moderate warmth, and not too much water, and in summer they will require plenty of wet, and in hot weather a great share of air; with this management the plants will produce flowers and fruit the third year, and may be continued a long time.

PSORALEA, (ψωραλειος, scabiosus; the calyx and great part of the plant being dotted with tubercles.)

Lin. gen. n. 894. Reich. n. 967. Schreb. n. 1210.

Roy. lugdb. 372. Gertn. t. 145. Juss. 355.

Dalea edit. prior.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leafed, dotted with tubercles, five-cleft: segments acute, equal, permanent; the lowest double the length of the others.

^a Hort. kew.

^b Swartz.

^c Browne.

COR. papilionaceus, five-petalled. Standard roundish; emarginate, rising. Wings crescent-shaped, blunt, small. Keel two-petalled, crescent-shaped, blunt.

STAM. Filaments diadelphous, (one single and bristle-shaped, nine united) ascending. Anthers roundish.

PIST. Germ linear. Style awl-shaped, ascending, the length of the filaments. Stigma blunt.

PER. Legume the length of the calyx, compressed, ascending, acuminate.

SEED single, kidney-form.

OBS. It is singular in this genus, that the calyx, as also the whole plant, is dotted with tubercles, and the petals marked with coloured veins.

ESSENTIAL CHARACTER.

Calyx besprinkled with callous dots, the same length with the Legume, which has only one seed in it.

SPECIES.

[1. Pforalea rotundifolia. Round-leaved Pforalea.

Lin. syst. 685. suppl. 338.

Leaves simple ovate quite entire, heads and bractes villose.]

2. Pforalea pinnata. Winged-leaved Pforalea.

Lin. spec. 1074. syst. 685. Reich. 3. 540. hort. upf. 225. Berg. cap. 218. Weig. obs. 331.

Dorychnium caule fruticoso, fol. pinnatis, foliolis linearibus. Lin. hort. cliff. 370.

Spartium africanum. Riv. tetr. 5.

Genista affinis arbor africana monospermos, flore cæruleo, fol. pinnatis. Herm. lugdb. 272. t. 273.

Leaves pinnate linear, flowers axillary.

[3. Pforalea aculeata. Prickly Pforalea.

Lin. spec. 1074. syst. 685. Reich. 3. 540. mant. 450.

Genista Spartium africanum trifolium, flor. cæruleis, fol. minimis in spinulam desinentibus. Raii dendr. 104.

Leaves ternate, leaflets wedge-form recurved mucronate, flowers axillary solitary approximating.

4. Pforalea bracteata. Oval-spiked Pforalea.

Lin. syst. 685. Reich. 3. 541. mant. 264. Berg. cap. 224.

Ononis trifoliata. Lin. syst. 2. 479.

Trifolium fruticans. Lin. spec. 1085. hort. cliff. 373.

Fabric. helmst. 2. 305. Comm. hort. 2. 211. t. 106.

Leaves ternate obovate recurve-mucronate, spikes ovate.

5. Pforalea spicata. Long-spiked Pforalea.

Lin. syst. 685. Reich. 3. 541. mant. 264.

Leaves ternate oblong blunt, spikes cylindric.

6. Pforalea angustifolia. Narrow-leaved Pforalea.

L'Herit. stirp. nov. 2. t. 45. Ait. kew. 3. 79.

Leaves ternate linear, peduncles axillary solitary or trine few-flowered.

7. Pforalea axillaris. Axillary Pforalea.

Lin. syst. 686. suppl. 338.

Leaves ternate, leaflets lanceolate, peduncles axillary, one-flowered.

8. Pforalea Stachydis.

Lin. syst. 686. suppl. 338.

Leaves ternate petioled, leaflets oblong mucronate, spikes terminating interrupted, calyxes villose.

9. Pforalea aphylla. Leafless Pforalea.

Lin. spec. 1074. Reich. 3. 542. mant. 450. amoen. 6. afr. 34.

P. decidua. Berg. cap. 220.

Genista Spartium cæruleum capitis bonæ spei. Breyin. cent. t. 25.

Leaves none, stipules mucronate very short, subimbricate towards the flowers.

10. Pforalea tenuifolia. Fine-leaved Pforalea.

Lin. spec. 1074. syst. 686. Reich. 3. 542.

Lower leaves ternate, upper simple lanceolate-subulate.

11. Pforalea capitata. Headed Pforalea.

Lin. syst. 686. suppl. 339.

Leaves ternate and simple linear, head terminating.

12. Pforalea hirta. Hairy Pforalea.

Lin. spec. 1074. syst. 686. Reich. 3. 542. amoen. 6. afr. 35.

Leaves ternate, leaflets obovate recurve-mucronate, flowers tern spiked, calyxes tomentose.

13. Pforalea decumbens. Trailing Pforalea.

Ait. kew. 3. 80.

Leaves ternate, leaflets wedge-lanceolate with a recurved point, flowers axillary.

14. Pforalea

14. *Pforalea repens*. *Creeping Pforalea*.
Lin. syst. 686. *Reich.* 3. 542. *mant.* 265. *Berg.*
cap. 224.
Leaves ternate obovate emarginate, stem creeping, flowers
subumbelled.
15. *Pforalea bituminosa*. *Bituminous Pforalea*.
Lin. spec. 1075. *syst.* 686. *Reich.* 3. 543. *hort.*
upf. 225. *Gärtn. fruct.* 2. 308. *Berg. cap.* 221.
Fabric. helmst. 307. *Kniph. cent.* 2. n. 63.
Desfont. atlant. 191. *Villars dauph.* 3. 476.
Allion. pedem. n. 1262.
Trifolium capitulis subrotundis, calycibus ventricosis,
caule arborescente. *Lin. hort. cliff.* 373.
T. bitumen redolens. *Baub. pin.* 327. *Tournef. inst.*
404. Shaw specim. n. 599.
T. bituminosum. *Dod. pempt.* 566. *Tabern. ic.* 519.
Ger. 1019. *emac.* 1187. *Park. theat.* 716. *Raii*
hist. 943. *Best. eyf. æstiv.* 10. t. 11. f. 1, 2. *Riv.*
tetr. t. 14.
T. asphaltite. *Matth.* 834. *Camer. epit.* 581. *Dalech.*
hist. 504.
T. asphaltum. *Lob. ic.* 2. 30. *adv.* 380.
T. asphaltites f. bituminosum. *Baub. hist.* 2. 366.
β. T. bitumen redolens angustifolium. *Boerb. lugdb.*
2. 32.
Pforalea angustifolia. *Mill. dict. n.* 9.
All the leaves ternate, leaflets lanceolate, petioles even,
flowers in heads.
- [16. *Pforalea glandulosa*. *Striped-flowered Pforalea*.
Lin. spec. 1075. *syst.* 686. *Reich.* 3. 543. *Gouan.*
illustr. 50. *Arduin. spec.* 24. t. 8. *Regn. bot.*
Barbæ jovis triphylla, flore ex albo & cæruleo.
Fenill. peru. 7. t. 3.
All the leaves ternate, leaflets lanceolate, petioles rugged,
flowers in spikes.
17. *Pforalea palæstina*. *Palestine or herbaceous Pforalea*.
Lin. syst. 686. *Reich.* 3. 543. *Jacqu. hort.* 2. 86.
t. 184. Gouan illustr. 51.
All the leaves ternate, leaflets ovate, petioles pubescent,
flowers in heads.
18. *Pforalea americana*. *American Pforalea*.
Lin. spec. 1075. *syst.* 686. *Reich.* 3. 544.
Trifolium americanum. *Lob. ic.* 2. 31. *Dod. pempt.*
567. Baub. pin. 327. *Park. theat.* 717. f. 4.
Leaves ternate, leaflets ovate tooth-angular, spikes la-
teral.
19. *Pforalea tetragonoloba*.
Lin. syst. 686. *Reich.* 3. 544. *mant.* 104.
Leaves ternate toothed, stem flexuose, spikes lateral, le-
gumes strict quadrangular.
20. *Pforalea coryli folia*. *Hazel-nut-leaved Pforalea*.
Lin. spec. 1075. *Reich.* 3. 545. *hort. upf.* 225.
Burm. ind. t. 49. f. 2. Jussieu act. 1744. p. 382.
Vahl symb. 1. 65.
Loto affinis coryli folio. *Dodart act.* 4. t. 289. *Pluk.*
phyt. t. 96. f. 5.
Leaves simple ovate somewhat toothed, spikes ovate.
- [21. *Pforalea pentaphylla*. *Five-leaved Pforalea*.
Lin. spec. 1076. *syst.* 686. *Reich.* 3. 545. *hort.*
upf. 225. *Jussieu act.* 1744. p. 381. t. 17.
Leaves digitate-quinque, leaflets unequal.
22. *Pforalea prostrata*. *Prostrate Pforalea*.
Lin. spec. 1076. *Reich.* 3. 545. *amoen.* 6. *af.* 36.
Leaves superdecompound digitate linear.
23. *Pforalea Dalea*. *Annual Pforalea*.
Lin. spec. 1076. *Reich.* 3. 545.
P. annua. *Mill. dict. n.* 6.
Dalea. *Lin. hort. cliff.* 363. t. 22.
Barba Jovis amer. annua humilis ramosissima, flor.
cæruleis spicatis. *Houst. MSS.*
Leaves pinnate, spikes cylindrical terminating.
- [24. *Pforalea enneaphylla*. *Nine-leaved Pforalea*.
Lin. spec. 1076. *syst.* 686. *Reich.* 3. 545. *mant.*
450. Fabric. helmst. 308. *Jacqu. amer. pict.*
101.
P. carthagenensis. *Jacqu. amer.* 206.
Leaves pinnate, spikes axillary.
25. *Pforalea lævigata*. *Polished Pforalea*.
Lin. syst. 687. *suppl.* 339.
Leaves pinnate, stipules solid subacute very minute.
26. *Pforalea leporina*. *Downy-spiked Pforalea*.
Ait. kew. 3. 81.

- P. Lagopus.* *Cavan. hisp.* 59. n. 94. t. 86.
Leaves pinnate oblong-linear very numerous, spikes with-
out bractes villose lanceolate.
27. *Pforalea foliolosa*. *Leafy Pforalea*.
Ait. kew. 3. 82.
Leaves pinnate oblong numerous, spikes terminating bracted
globular-ovate, calyxes compressed.
28. *Pforalea reclinata*. *Reclining Pforalea*.
Cavan. hisp. 60. n. 95. t. 87.
Stem procumbent, leaves pinnate, flowers in close spikes,
keel longer than the other petals.]
- Species from Miller.*
29. *Pforalea hirta*.
Mill. dict. n. 2.
Barba Jovis americana frutescens, foliis subrotundis,
floribus spicatis purpureis. *Houst. MSS.*
Leaves ternate, leaflets ovate, stem shrubby hairy, flowers
in terminating spikes.
30. *Pforalea procumbens*.
Mill. dict. n. 3.
Barba Jovis malabarica annua procumbens argentea,
floribus minimis purpureis, edit. prior.
Leaves pinnate silvery, stems procumbent, flowers ax-
illary.
31. *Pforalea scandens*. *Climbing Pforalea*.
Mill. dict. n. 4.
Barba Jovis americana scandens, flor. cæruleis ad alas
foliorum conglomeratis. *Houst. MSS.*
Leaves pinnate, stem branched climbing, flowers axillary
sessile.
32. *Pforalea capitata*. *Headed Pforalea*.
Mill. dict. n. 5.
Barba Jovis amer. frutescens hirsuta, flor. cæruleis
conglomeratis. *Houst. MSS.*
Leaves ternate, stem very branching shrubby, flowers in
heads peduncled axillary.
33. *Pforalea humilis*. *Humble Pforalea*.
Mill. dict. n. 7.
Barba Jovis amer. humilis rotundifolia & villosa, flore
vario. *Houst. MSS.*
Leaves pinnate with rounder villose leaflets, flowers in
axillary and terminating heads, stem shrubby.

DESCRIPTIONS, &c.

[1. Native of the Cape of Good Hope; found there by Thunberg^d.]

2. This rises with a soft shrubby stalk, four or five feet high, dividing into several branches. Leaves of a deep green colour, composed of three or four pairs of very narrow leaflets, terminated by an odd one, standing upon short foot-stalks, and coming out without order on every side of the branches. The flowers sit very close to the branches, and are often in clusters: the standard, which is erect and reflexed at the top, is of a fine blue; the wings are pale, and the keel white.

[According to the observation of Linneus; the peduncles are axillary, solitary, glumeless and hirsute.]

It flowers during great part of the summer, and the seeds ripen in autumn. It grows naturally at the Cape of Good Hope; whence Mr. Miller frequently received the seeds: [but it was cultivated in 1690, in the Royal Garden at Hampton Court^e.]

3. This is a shrub with angular branches, and lateral solitary flowers without bractes.

Native of the Cape of Good Hope, by ditches^f. Introduced in 1774, by Mr. Francis Masson. It flowers in June and July^g.

4. Stem shrubby, determinately branched, with round pubescent branches. Leaves sessile: leaflets even, dotted, pointed at the end with a patulous spine. Stipules chaffy, lanceolate, acuminate, ciliate. Spikes terminating, solitary, subvillose, peduncled. Flowers separated by ovate acuminate ciliate bractes, almost the length of the flowers. Corolla violet-coloured, with a white keel having a violet spot in front. Calyxes hairy, with linear teeth; except the lowest tooth, which is ovate and larger.

^d Linn. suppl.^e Hort. kew.^f Linn. mant.^g Hort. kew.

Native of the Cape of Good Hope^a. Cultivated in 1731, by Mr. Miller. It flowers in June and July¹.

5. Stem shrubby, with alternate round erect pubescent branches. Leaves on very short petioles. Leaflets dotted, obsoletely pubescent, sometimes having a minute weak point; the middle one longer than the other two. Stipules narrow, scarcely longer than the petiole. Spikes longer, sessile, solitary. Flowers blue, separated by linear scarious bractes, scarcely the length of the calyx. Calyxes pubescent, with short, almost equal, awl-shaped, blunt teeth.

Native of the Cape of Good Hope^k. Introduced in 1774, by Mr. Francis Masson. It flowers in July¹.

6. Native of the Cape of Good Hope, where it was found by Mr. Masson, and introduced in 1774. It flowers from May to August^m.

7. This is singular with its filiform one-flowered peduncles.—Native of the Cape of Good Hope, where it was found by Thunberg.

8. Stem hirsute. Calyx brown, extremely villose. Corolla ferruginous.—Native of the Cape of Good Hopeⁿ.

9. This is a shrub with lateral subterminating flowers. Leaves linear-lanceolate, deciduous.—Native of the Cape of Good Hope^o.

10. Peduncles axillary, solitary, glumose. In others the peduncles are lateral, clustered and capillary; the length of the leaves. Bractes two, bristle-shaped, in the middle of the peduncle.—Native of the Cape of Good Hope^p.

11. Branches striated. Leaves petioled, a finger's length, with scarcely conspicuous dots very closely clustered scattered over them on both sides: the uppermost simple. Head of flowers roundish, surrounded commonly with three simple linear leaves. Standard dotted like the leaves.

Native of the Cape of Good Hope, where it was found by Thunberg^q.

12. This is a shrub, with rough-haired rigid branches. Leaves petioled: leaflets subpetioled, subpubescent. Flowers at the ends of the branches: calyxes pubescent; corollas violet-coloured.—Native of the Cape of Good Hope^r.

Cultivated in 1713, by the Dutchess of Beaufort. It flowers most part of the summer^s.

13. Native of the Cape of Good Hope, where it was found by Mr. Francis Masson, who introduced it in 1774. It flowers in April and May^t.

14. Stems rooting, somewhat woody, much branching and very long. Leaves petioled: leaflets obovate, dotted, blunt, naked, sessile: petioles the length of the leaflets. Stipules minute, ovate, acute. Umbels sessile, unequal, lateral and terminating. Flowers blue.—Native of the Cape of Good Hope^u.]

15. Root perennial, but the stalk not of long duration, seldom lasting more than two years: it rises about two feet high, sending out two or three slender branches. Leaflets about two inches long, and one inch and a quarter broad, on long foot-stalks. The leaves, if handled, emit a strong scent of bitumen. The heads of flowers are on axillary peduncles seven or eight inches long. The corollas are blue.

[Stem suffruticose. Spikes roundish. The tenth stamen distinct, as in *P. glandulosa* and *americana*. It varies with lanceolate and ovate leaves^x.

Calyx striated, with the segments acuminate, of the same length with the corolla. Standard oblong, purple; wings shorter, distant, almost white; keel yet shorter, bifid, purple at top. The flowers smell like Black Currants.

Legume small, with an ovate belly ending in a long acuminate beak; the lower part the length of the tube of the calyx, compressed like a lens; above hispid with rigid diverging bristles, below sprinkled with brown-chestnut dots on an ochre ground; very thin, adhering so close to the seed, that it cannot be

^a Linn. mant. & syst.

^k Linn. mant. & syst.

^m Idem. ⁿ Linn. suppl.

^p Linn. spec. & syst.

^q Linn. amoen. & syst.

^r Linn. mant.

¹ Hort. kew.

¹ Hort. kew.

^o Linn. mant. & Bergius.

^q Linn. suppl.

^s Hort. kew.

^t Idem.

^x Linn.

separated but by scraping it off: beak half as long again as the belly, membranaceous, compressed like a leaf, sabre-shaped, straw-coloured, apt to fall off. Seed obovate-reniform, lenticular, smooth, dark coloured and shining^y.

Native of Italy, Sicily, the South of France and Barbary.—It was cultivated here in 1570, as appears from Lobel; and flowers most part of the summer^z. Gerarde says, in English it is called *Claver gentle*, *Pitch Trefoil*, *stinking Trefoil*, and *Treacle Claver*.]

β. The leaves of this are much longer and narrower, and are rounded at their base; the stalks are shrubby, and of longer duration; the heads of flowers are smaller, and the leaves have not so strong an odour.

It grows naturally in Sicily, and also in Jamaica, from both which countries Mr. Miller received the seeds; from which he propagated this and the preceding many years, and never found them to vary.

[16. Stem suffruticose. It resembles *P. americana*; but the elongated spikes are almost racemed, with very small bractes, not the length of the calyx. It has the smell of Rue^a.

The two inner leaflets are less and subsessile, the end one is larger on a long petiole. The common petiole is a little longer than the larger leaflet; that and both surfaces of the leaves have glands scattered over them. Stipules very small, bristle-shaped. On the lower leaves the leaflets are blunt; but on the upper ones they are acute, narrower and a little longer. Peduncles equal to the leaves or a little longer, full of glands. Flowers from twelve to twenty-six, some alternate, others two or three together, on very short pedicels. Calyxes glandular, twice as big as in *P. corylifolia*, and only half the size of those in *P. bituminosa*. Corollas small, with the wings and keel white, and the standard blue. Bractes none; but the pedicels supported on a little prominent callus^b.

Native of Peru, Spain and the islands of Majorca and Minorca.—Introduced about 1770. It flowers from May to August^c.

17. Stem herbaceous, leaves hairy. Petioles with many streaks. Stipules patulous. Heads depressed. Bractes ash-coloured. Flowers violet-coloured, large^d.

Stem flexuose, two feet high, striated, with joints an inch from each other, hairy, hoary-ash-coloured. Branches short, spreading. Leaflets of the lower leaves suborbicular, especially the odd one, and somewhat hispid; those of the upper leaves lanceolate, acuminate at both ends: petioles from an inch to an inch and half in length, more hoary with hairs towards the top. Stipules setaceous-subulate, hirsute, longer and narrower than in *P. bituminosa*, although the plant itself be smaller. Peduncles twice as long as the leaves, rigid, hirsute. Flowers from nine to twelve in a head. Bractes ovate, concave, palmate-trifid, acuminate. Calyxes five-cleft to the middle, ventricose, and more widened than in *P. bituminosa*. Corollas blue. Legume ovate, hirsute, shorter than the calyx, terminated by a long straight ensiform dagger-point, exceeding the calyx^e.

Native of the Levant. Introduced in 1771, by Joseph Nicholas de Jacquin, M. D. It flowers most part of the summer^f.

18. Stems diffused, herbaceous, with glandular dots scattered over them. Leaflets roundish, very blunt, obsoletely toothed or angular, sprinkled with glandular dots; the middle one larger and petioled. Spikes axillary, oblong, on peduncles the length of the leaves^g.

Native of Madeira. Cultivated here in 1640, as appears from Parkinson^h; who says, that because it flowers late, it often misses to give good seed, whereby we are often to seek for it again. Linneus relates that he had not seen it in the European gardens.

19. Stem herbaceous, erect, flexuose, angular, the thickness of a quill. Leaves the size of Melilot or

^y Gærtner.

^z Gouan.

^a Gouan.

^z Hort. kew.

^c Hort. kew.

^d Hort. kew.

^e Hort. kew.

^f Hort. kew.

^a Linn. spec. & syst.

^d Linn. syst.

^z Linn. spec.

larger: leaflets ovate, acuminate, thinly and deeply ferrate, or slightly toothed, scarcely pubescent on both sides; the odd leaflet petioled. Stipules bristle-shaped. Racemes axillary, erect, peduncled, the length of the leaves. Bractes bristle-shaped, commonly longer than the flower. Flowers alternate, on very short pedicels, a little larger than those of *Indigofera*, having an acute keel without the lateral horns of that plant. Legumes large, the length of the leaves, compressed, with each suture membranaceous-angular on both sides, terminating in an elongated point. Seeds four or five. Perhaps it may be a species of *Indigofera*. Found in Arabia by Forskahl, and at Surat by Brad¹.]

20. This is an annual plant. The stalks rise two feet high, and have at each joint one leaf about two inches long, and an inch and a half broad, having one strong midrib, from which come out several veins, that run towards the top of the leaf. The flowers are produced on long slender axillary peduncles, are collected into small round heads, and are of a pale flesh colour. It grows naturally in India, and flowers here in July; the seeds ripen in autumn. [It was cultivated in 1752 by Mr. Miller^k.

The upper leaves are sometimes ternate, both in Forskahl's and Koenig's specimens. And in the plants that rose from Koenig's seeds, some had simple leaves only, others had both them and ternate leaves¹.

21. Little is known of this species; nor is it certain whether it be a native of Mexico or Malabar.

22. This recedes in habit from the other species. Stems decumbent, filiform. Stipules erect. The middle leaflet is trifid; the partial ones pinnate; the leaflets linear; the peduncles axillary, the racemes roundish, and the flowers yellow^m.—Native of the Cape of Good Hope.]

23. This is an annual plant, with a very branching herbaceous stalk, rising a foot and half high, spreading wide on every side. Leaves composed of five or six pairs of narrow wedge-shaped leaflets, terminated by an odd one. The flowers are collected in close oblong spikes at the ends of the branches; they are small and of a bright blue colour. Discovered by Dr. Houstoun at Vera Cruz in New Spain.

[Linneus remarks that the leaflets have glandular dots scattered over them underneath; and that the spike of flowers is close, as in Plantain.

Cultivated by Mr. Miller before 1733.

24. This is an upright slender shrub, five feet high, with few pliant branches. Leaves alternate, one or two inches long: leaflets at most five, obovate or oval, emarginate, smooth, petioled, opposite, four or five lines long, with little bags on the back that appear like dots, as in *Hypericum perforatum*, containing a gummy juice of an unpleasant smell: if rubbed, they stain the fingers of a yellow colour, which can hardly be washed out, and tinge water of a very beautiful clear yellow, gradually becoming deeper. Spikes dense, solitary, on short peduncles almost the length of the leaves. Flowers small, red, sessile, with the calyx not dotted. All the ten filaments are united. This plant seems nearly to unite Psoralea with Ebenus.

Native of New Spain, about Carthage, in copices; flowering in May and the following monthsⁿ.

Introduced in 1772, by Mons. Richard^o. In the Kew catalogue it is said to be an annual, a native of the West Indies, and to flower here in July and August.

25. This is a shrub with even striated purple branches. Leaflets lanceolate, even, seven, scarce apparently dotted underneath. Stipules none, but a scarcely visible sharpish tubercle on each side instead of it. Flowers purple, not striated. Pollen golden shining. It differs from *P. pinnata* in having the leaves not half a palm in length, linear, acuminate, pubescent, dark-spotted; the stipules not chaffy; the branches not pubescent; the calyxes not brown; the corollas not striated.

Native of the Cape of Good Hope, where it was found by Thunberg^p.

¹ Linn. mant.

^m Linn. amoen.

^k Hort. kew.

ⁿ Jacquin.

^p Linn. suppl.

¹ Vahl.

^o Hort. kew.

26. Root annual. Stem smooth, striated. Leaves scattered unequally pinnate. A single leaf has often thirty pairs of leaflets, on very short pedicels, quite entire, bluntish with a short point, smooth, dotted underneath, scarcely half an inch in length. Spikes axillary, solitary, cylindrical, scarcely two inches long; on peduncles a finger's length, having frequently a small pinnate leaf on them. Calyx rough with long villose hairs, three lines in length. Corolla blue with a white base: standard ovate, entire; wings ovate, a little longer; keel of the same length with the wings: claws of all the petals filiform, a little shorter than the calyx, subconnate. Filaments united into a sheath, cloven above, and longer than the calyx. Germ ovate, compressed a little, bearded at top with long villose hairs. Style on one side of the germ, erect, filiform, a little longer than the stamens. Legume turbinate-roundish, compressed, membranaceous, pellucid, a line in diameter, somewhat hairy. Seed smooth, brown-ash-coloured^q.

Cavanilles's description of his *P. Lagopus* agrees with the above so exactly, that there can be no doubt of their being the same plant.

The stems, according to him, are four feet high, with branches scattered alternately. Leaves alternate, with from thirty-three to thirty-seven pinnules, which are ovate-oblong: common petioles round, turgid at the base. Stipules inserted into the petiole, very short, awl-shaped, brown, deciduous. Flowers in very close terminating spikes. Calyx turbinate, smooth at bottom, half-five-cleft; segments awl-shaped, dotted with brown, hairy. Corolla violet-coloured, with the petals approximating: standard concave, with a long capillary claw; wings and keel, as four ovate petals, fastened, not to the bottom of the calyx, but to the tube of stamens, by short claws. Tube of the stamens whitish, surrounding the germ at the base, afterwards supporting the wings and keel, finally ending in ten straight filaments. Legume very small, ovate-reniform.

Native of Mexico. Its common name is *Terciope-lillo*. Cavanilles saw it in flower, in the royal garden near Madrid in November^r.—It was introduced here by Benjamin Bewick, Esq. in 1780, and flowers in October and November^s.

27. Stem round, smooth, having ferruginous glands scattered over it, branched. Leaves scattered, unequally pinnate. Each leaf has from ten to fourteen pairs of leaflets, on very short petioles, oblong, acute, smooth, two lines in length. Spikes many-flowered, scarcely half an inch in length. Under each flower is an ovate concave bracte, the length of the calyx; which is pitcher-shaped, compressed, somewhat villose, two lines long. Corolla purple, pale at the base: standard roundish, acute; wings oblong, longer than the standard; keel the length of the wings. Filaments united into a sheath cloven at top. Germ ovate, compressed, pubescent. Style filiform, longer than the stamens. Legume roundish, obliquely acuminate, compressed, pubescent. Seed compressed. It is an annual plant; and was introduced in 1786, by Benjamin Bewick, Esq. but from what country is unknown. It flowers in October and November^t.

28. Stems round, hardish, branched, annual, scarcely a foot in length. Leaves scattered, unequally pinnate, with from seven to thirteen pinnules, which are subsessile, lanceolate, glaucous underneath, sparingly villose, with brown protuberant dots. Stipules fastened to the petiole, villose, bristle-shaped. Spike of flowers an inch long, very villose; each flower sessile, supported by a bracte which from bowed becomes erect, villose, variegated with brown dots. Calyx very small, tubular, half-five-cleft; segments awl-shaped, hairy, dotted. Corolla pale violet, a little longer than the calyx: standard ovate, plaited, with a white spot on each side, near the capillary claw; wings ovate, crescent-shaped below, shorter than the standard; keel longer than the standard, two-petalled, ovate. Filaments all united; anthers roundish, brown. Germ

^q Hort. kew.

^r Cavan. hisp.

^s Hort. kew.

^t Idem.

ovate, villose at top. It is distinguished from the other species by the keel being longer than the petals.

Native of Mexico. Introduced into the royal garden near Madrid^u.]

29. Stem three or four feet high, sending out a few side branches. Leaflets hairy, on slender foot-stalks. Corollas purplish. Discovered by Dr. Houstoun at Vera Cruz, and cultivated by Mr. Miller before 1733.

30. This is an annual plant with trailing stalks about eight inches long. Leaflets three or four pairs besides the odd one, narrow, silvery. Flowers small, purple, in small clusters.—Native of Malabar.

31. Stems slender, shrubby, climbing to the height of six or seven feet. Leaflets three pairs besides the odd one, small, ovate, obtuse. Flowers small, bright blue, in small clusters. Discovered by Dr. Houstoun at Campeachy.

32. Stem seven or eight feet high, sending out many long slender branches on every side. Leaflets small and wedge-shaped. Flowers in small close heads, on pretty long peduncles. Corollas blue. Discovered by Dr. Houstoun at Campeachy.

33. This has an upright stem five or six feet high, with a few side branches. Leaflets three or four pairs, small, roundish, hairy. Flowers yellow and red intermixed, in small heads. Found by Dr. Houstoun at Vera Cruz.

PROPAGATION AND CULTURE.

2. This is easily propagated by seeds sown upon a moderate hot-bed. When the plants come up, they should have much air, and little heat. When of a size to remove, plant them in separate small pots, filled with light earth. Plunge them into the bed, shade them from the sun till they have taken new root, and gradually inure them to the open air; into which remove them about the end of may, and keep them abroad till october; then place them in the greenhouse. It may also be increased by cuttings, planted during any of the summer months, on a bed of light earth, covering them close with bell or hand-glasses, shading them, and gently refreshing them with water as the ground dries: when they have taken root, harden them gradually, transplant them into small pots, and treat them like the seedling plants.

15. This is also propagated by seeds, which should be sown on a bed of light earth in april: in may the plants will come up, when they should be kept clean from weeds, and as soon as they are fit to remove, transplant them. It will live through a favourable winter, in a warm dry border; but it is generally sheltered in a green-house or glass case.

20. Sow the seeds upon a hot-bed in the spring: when the plants are fit to remove, plant them in separate small pots filled with light earth, plunge them into a moderate hot-bed of tanner's bark, and shade them till they have taken new root; after which admit air to them freely in warm weather, and water them gently as often as they require it. When the plants have filled the pots with their roots, remove them into larger, and at the beginning of july remove them into an airy glass case, where they may be defended from cold, but have free air in warm weather; with this care the plants will flower and ripen their seeds.

23. 24. 26. 27. 28. 29 to 33. Sow the seeds on a hot-bed, and treat them, when they come up, in the same way as other plants from hot countries. Keep those sorts which are perennial in a moderate warmth in the stove during winter, in summer giving them a good share of free air. Some of them will sometimes ripen their seeds in England.

[1 to 14. 22. 25. Being natives of the Cape require only the protection of a greenhouse or glass case. They may be increased by seeds or cuttings, and should be treated as directed for n. 2.

PSYCHOTRIA. (Altered by Linneus from Psychotrophum, the name which was given it by Browne, from ψυχροτρόφον, the name of an herb in Dioscorides, so called from its delighting to grow in cold situations.)

^u Cavanilles.

Lin. gen. n. 229. Reich. n. 246. Schreb. n. 313.

Juss. 204. Psychotrophum. Brown. jam. t. 17.

f. 2. Jacqu. amer. 65. Gertn. t. 25.

Class. 5. 1. Pentandria Monogynia.

Nat. order of Stellatæ. Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth very small, five-toothed, superior, permanent.

COR. monopetalous, salver-shaped (or funnel-shaped); tube long: border short, five-cleft: segments subovate, acute.

STAM. Filaments five, capillary. Anthers linear, not exceeding the tube.

PIST. Germ inferior. Style filiform. Stigma bifid, with the segments thickish, blunt.

PER. Berry roundish, (ovate or oblong) one-celled (two-celled, G.) crowned with the calyx.

SEEDS two, hemispherical (or oblong,) on one side convex and five-grooved, on the other flat.

ESSENTIAL CHARACTER.

Cal. five-toothed, crowning. Cor. tubular. Berry globular. Seeds two, hemispherical, grooved.

SPECIES.

1. Psychotria asiatica.

Lin. spec. 245. syst. 214. Reich. 1. 477. Willd.

961. amoen. 5. 395. Swartz obs. 74. Gertn.

fruct. 1. 120. Brown. jam. 160. t. 17. f. 2. sec.

Gertn. v. n. 8.

Stipules emarginate, leaves lanceolate-ovate.

2. Psychotria glabrata.

Lin. spec. ed. Willd. 962. Swartz prodr. 43.

descr. 390.

Stipules acute undivided deciduous, leaves ovate very smooth shining, flowers paniced erect.

3. Psychotria axillaris.

Lin. spec. ed. Willd. 962.

Ronabea latifolia. Aubl. guian. 1. 154. t. 59.

β. Ronabea erecta. Aubl. guian. 1. 156.

Stipules acute undivided, leaves ovate acute, flowers axillary.

4. Psychotria laurifolia.

Lin. spec. ed. Willd. 962. Swartz prodr. 43. descr.

392.

Stipules ovate acuminate deciduous, leaves lanceolate-ovate acute thickish smooth, panicles erect, berries roundish.

5. Psychotria parviflora.

Lin. spec. ed. Willd. 962.

Simira tinctoria. Aubl. guian. 1. 170. t. 65.

Stipules ovate cuspidate deciduous, leaves elliptic-ovate acuminate parallel-veined, panicles erect, berries oval.

6. Psychotria hirsuta.

Lin. spec. ed. Willd. 963. Swartz prodr. 42. descr.

394.

Stipules lanceolate entire deciduous, leaves lanceolate-ovate acute rough-haired, stem extremely hirsute, panicle spreading.

7. Psychotria foetens.

Lin. spec. ed. Willd. 963. Swartz prodr. 43. descr.

396.

Stipules acuminate entire deciduous, leaves lanceolate-ovate acute smooth, panicle spreading very much, branches reflex filiform.

8. Psychotria citrifolia.

Lin. spec. ed. Willd. 963. Swartz prodr. 43. descr.

398.

Brown. jam. 160 t. 17. f. 2. sec. Swartz. Stipules ovate permanent, leaves elliptic acuminate subcoriaceous, panicles short, berries oblong ribbed.

9. Psychotria nitida.

Lin. spec. ed. Willd. 963.

Mapouria guianensis. Aubl. guian. 1. 175. t. 67.

Stipules roundish, deciduous, leaves roundish-ovate acuminate, panicle terminating, border of the corolla longer than the tube.

10. Psychotria marginata.

Lin. spec. ed. Willd. 963. Swartz prodr. 43. descr.

400.

Psychotrophum fruticosum, fol. plumbeis ovato-acuminatis, floribus laxo racemosis. Brown. jam. 161. n. 6.

- Stipules entire acuminate deciduous, leaves lanceolate-ovate acute, cartilaginous-bristly at the end, panicle loose.*
11. *Pfychotria tenuifolia.*
Lin. spec. ed. Willd. 964. Swartz prodr. 43. descr. 402.
Stipules ovate emarginate deciduous, leaves oblong acute very thin smooth, panicles erect subseffile.
12. *Pfychotria nervosa.*
Lin. spec. ed. Willd. 964. Swartz prodr. 43. descr. 403.
Stipules oblong emarginate deciduous, leaves ovate acuminate at both ends nerved somewhat waved, panicles sessile almost erect.
13. *Pfychotria carthagenensis.*
Lin. spec. ed. Willd. 964. Jacqu. amer. 65. t. 174. f. 22. pict. 37. t. 260. f. 19.
Stipules emarginate, leaves obovate acuminate, panicle terminating.
14. *Pfychotria Myrsitiphyllum.*
Lin. spec. ed. Willd. 964. Swartz prodr. 44. descr. 405.
Myrsitiphyllum minus fruticosum, fol. ovato-acuminatis nitidis subrigidis oppositis. Brown. jam. 152.
Myrti folio arbor, &c. Sloan. jam. 2. 102. Raii dendr. 66.
Stipules ovate deciduous, leaves lanceolate-ovate nerveless shining rigid, branches directed one way, racemes compound terminating.
15. *Pfychotria laxa.*
Lin. spec. ed. Willd. 965. Swartz descr. 407.
Stipules ovate acute deciduous, leaves ovate acuminate, racemes in threes, terminating trichotomous, branches and pedicels subcapillary loose.
16. *Pfychotria parasitica.*
Lin. spec. ed. Willd. 965. Swartz prodr. 44. descr. 408.
Viscoides pendulum. Jacqu. amer. 73. t. 51. f. 1.
Stipules embracing retuse, leaves ovate acuminate veinless somewhat succulent, racemes terminating or axillary compound.
17. *Pfychotria horizontalis.*
Lin. spec. ed. Willd. 965. Swartz prodr. 44. descr. 410.
Stipules ovate, leaves lanceolate-ovate acute, branches leaves and branchlets of the panicles horizontal.
18. *Pfychotria nutans.*
Lin. spec. ed. Willd. 965. Swartz prodr. 43. descr. 411.
Stipules two-toothed, leaves lanceolate acute nerved, racemes three-parted erect, in their fruiting state nodding.
19. *Pfychotria speciosa.*
Lin. spec. ed. Willd. 965. Forst. prodr. n. 89.
Arboreous, leaves oblong-lanceolate, involucre terminating subtriflorous.
20. *Pfychotria involucrata.*
Lin. spec. ed. Willd. 965. Swartz descr. 413.
Nonatella officinalis. Aubl. guian. 1. 182. t. 70. f. 1.
Stipules two-toothed, leaves lanceolate-ovate shining, racemes terminating corymbed, pedicels three-flowered, flowers involucred.
21. *Pfychotria flexuosa.*
Lin. spec. ed. Willd. 966.
Nonatella paniculata. Aubl. guian. 1. 184. t. 70. f. 2.
Stipules two-toothed, leaves ovate attenuated to both ends, panicle divaricating flexuose.
22. *Pfychotria racemosa.*
Lin. spec. ed. Willd. 966.
Nonatella racemosa. Aubl. guian. 1. 186. t. 72.
Stipules two-lobed, leaves oblong acuminate, raceme terminating simple, flowers involucred.
23. *Pfychotria violacea.*
Lin. spec. ed. Willd. 966.
Nonatella violacea. Aubl. guian. 1. 188. t. 73.
Stipules oblong blunt deciduous, leaves oblong acuminate, flowers panicle-corymbed involucred.
24. *Pfychotria brachiata.*
Lin. spec. ed. Willd. 966. Swartz prodr. 45. descr. 415.
Stipules ovate bifid, raceme terminating compound, branches brachiata, flowers aggregate sessile.
25. *Pfychotria grandis.*
Lin. spec. ed. Willd. 966. Swartz prodr. 43. descr. 417.
Stipules deltoid revolute at the edge awl-shaped at the tip, leaves cuneiform-obovate, stem angular.
26. *Pfychotria patens.*
Lin. spec. ed. Willd. 967. Swartz prodr. 45. descr. 419.
Stipules two toothed, leaves distich lanceolate-ovate membranaceous, branches spreading, panicles directed one way.
27. *Pfychotria uliginosa.*
Lin. spec. ed. Willd. 967. Swartz prodr. 43. descr. 421.
Pfychotrophum fruticosum fol. venosis ovatis oppositis, petiolis stipulatis, racemis terminalibus, baccis compressis. Brown. jam. 160. n. 1?
Stipules connate acute convex, leaves lanceolate-oblong, seeds compressed crested, stem subherbaceous simple erect.
28. *Pfychotria serpens.*
Lin. syst. 214. Reich. 1. 477. Willd. 967. mant. 204.
Stem subherbaceous creeping, leaves ovate acute at both ends.
29. *Pfychotria herbacea.*
Lin. spec. 245. syst. 214. Reich. 1. 478. Willd. 967. Jacqu. amer. 66. t. 46. pict. 37. t. 67. Swartz obs. 74.
Pfychotrophum herbaceum repens sylvaticum, fol. subrotundo-cordatis oppositis, flor. paucioribus alaribus, laciniis corollae erecto patentibus. Brown. jam. 161.
Jasminum inodorum repens, violae foliis, fructu puniceo. Barr. equin. 63.
Violae folio baccifera repens flore albo pentapetaloide, fructu rubro dispermo. Sloan. jam. 1. 243.
Periclymeno accedens, &c. Mer. hist. 3. 535.
Karinta-kali. Rheed. mal. 10. 41. t. 21. Raii suppl. 358.
Stem herbaceous creeping, leaves cordate petioled.
30. *Pfychotria emetica.*
Lin. syst. 214. ed. Willd 968. suppl. 144.
Ipecacuanha. Woodv. med. bot. 562. t. 203. Pif. bras. 101? Marcgr. bras. 17?
Herbaceous, procumbent, leaves lanceolate smooth, stipules extrafoliaceous subulate, heads axillary peduncled few-flowered.
31. *Pfychotria corymbosa.*
Lin. spec. ed. Willd. 969. Swartz prodr. 44. descr. 423.
Stipules two-toothed, leaves lanceolate-ovate acute subrigid shining, flowers in corymbs, peduncle and pedicels coloured.
32. *Pfychotria pubescens.*
Lin. spec. ed. Willd. 969. Swartz prodr. 44. descr. 425.
Stipules two-toothed, leaves lanceolate-ovate acuminate pubescent, panicles cymed spreading.
33. *Pfychotria pedunculata.*
Lin. spec. ed. Willd. 969. Swartz prodr. 44. descr. 427.
Stipules two-toothed, leaves ovate-lanceolate somewhat wrinkled, flowers in a sort of cyme, common peduncle elongated.
34. *Pfychotria crocea.*
Lin. spec. ed. Willd. 969. Swartz prodr. 44. descr. 429.
Pfychotrophum fruticosum, fol. ovatis venosis, racemis terminalibus croceis. Brown. jam. 160. t. 13. f. 1, 2. quoad flores.
Stipules two-toothed, leaves ovate acute nerved, panicles erect and peduncles saffron-coloured.
35. *Pfychotria alpina.*
Lin. spec. ed. Willd. 970. Swartz prodr. 44. descr. 431. obs. 77.
Stipules two-toothed, leaves lanceolate-ovate membranaceous netted-veined, panicles erect, corollas elongated diaphanous.
36. *Pfychotria paniculata.*
Lin. spec. ed. Willd. 970.
Chiococca paniculata. Lin. suppl. 145.

Stipules two-toothed, leaves ovate, panicle erect, stem arboreous.

37. *Psychotria Palicourea*.

Lin. spec. ed. Willd. 971. Swartz descr. 433.

Palicourea guianensis. Aubl. guian. 1. 173. t. 66.

Stephanium. Lin. gen. ed. Schreb. n. 308. & p. 822.

Stipules two-lobed, leaves broad-ovate acuminate at both ends, panicles erect, corollas cylindrical ventricose somewhat curved mealy on the outside.

38. *Psychotria lutea*.

Lin. spec. ed. Willd. 971.

Nonatella lutea. Aubl. guian. 1. 190. t. 74.

Stipules two-lobed, leaves broad-ovate acuminate, panicles erect, tube of the corolla narrowed at the base, segments of the border acute.

39. *Psychotria longiflora*.

Lin. spec. ed. Willd. 971.

Nonatella longiflora. Aubl. guian. 1. 185. t. 71.

Stipules two-lobed, leaves ovate-lanceolate acuminate, raceme terminating almost simple, tube of the corolla curved in, segments of the border bluntish.

DESCRIPTIONS, &c.

1. Native of the East Indies.—Gærtner affirms that the fruit of the Jamaica plant is as like to that of Ceylon as one egg is to another. He thus describes it—Berry small, ovate-globular, crowned with a short five-toothed calyx, marked with ten longitudinal deep grooves, two-celled; coriaceous when ripe, dry, bipartite, of a light bay inclining to straw colour. In each cell one seed, fastened to the bottom of it, flattish on one side, wrinkled transversely, and having a raised line along the middle; convex on the other side, with three larger dorsal grooves, and two smaller marginal ones, dark-coloured.

Gærtner attributes Browne's synonym to this species, which Swartz gives to his *citrifolia*.—Browne does not describe any of his seven species of *Psychotrophum*, except the last shortly; which is *P. herbacea*. He remarks in general, that they are all very common in Jamaica, in the woods, growing best in a rich shaded soil; that they are for the most part shrubby, and rise from three to six or seven feet in height; that the leaves are opposite in all, and the foot-stalks are generally supported with stipules at their insertions; that the flowers are commonly in loose clusters, terminating the stalks and branches; and that the seeds of all the species are pretty much like those of Coffee.

The very numerous species of this genus, natives of the West Indies, were unknown to Linneus. The form of the corolla is different in the several species; tubular, salver-shaped or funnel-shaped; with the opening villose in some, naked in others. The inflorescence in almost all is raceme-panicled. The berry is generally one-celled, though the unripe fruit appears to have two cells*. In Gærtner's ripe fruit however there are certainly two cells: and *Nonatella* of Aublet has a five-celled fruit, but only two seeds.

2. This resembles the preceding so much, that it may be only a variety; the leaves however are perfectly ovate and shining; whereas in that they are lanceolate-ovate and dark green not shining.

Native of Jamaica on rocks in the interior of the island†.

3. This differs from the other species in habit, and in having axillary flowers.—Native of Guiana, in woods‡.

4. This differs from *P. glabrata* (n. 2.) in having longer thickish leaves, larger flowers, and roundish berries.—Native of Jamaica and Hispaniola, in dry coppices§.

5. Trunk ten or twelve feet high, with many branches at the top, and the bark reddish brown on the outside and red within. Leaves subsessile, wide, acute, smooth, pale green underneath, with purple nerves. Stipules deciduous, long, acute, one on each side within the leaves. Flowers in terminating racemes. Corolla white. The bark dyes silk and cotton of a fine red.

* Swartz obs.

† Swartz descr.

‡ Willdenow.

§ Swartz descr.

Native of Guiana, in great forests, especially in wet places, and called there *Simira*^b.

6. This differs from the rest of the genus in its very remarkable shagginess, and extremely spreading habit.—Native of Jamaica, in the southern parts, in old woods.

7. This differs from the preceding in its smoothness and in having the branches of the panicle reflex: A peculiar very fetid subacid odour proceeds from the branches when broken, and the leaves when bruised; like that of *Comocladia* and *Sebradera capitata*.

Native of Jamaica, in the southern parts, in mountain woods.

8. The leaves are very like those of the Lemon in colour and consistence. It is distinct from the rest in leaves, stipules and berries^c. The latter, as Gærtner remarks, are soft, one-celled and red, therefore very different from those of the first species.—Native of the West Indies.

9. This is a shrub, putting forth many stems from the root, which are straight, branched, and eight feet high. Leaves wide, ovate, acute, smooth, quite entire, petioled. Stipules two, opposite, roundish, deciduous, one on each side; within the base of the petioles. Flowers panicled, terminating. Corolla white.

Native of Guiana, on the banks of the river Sinemari; flowering in september. The country-name is *Maypouri-Crabri*; because the *Maypouris* or wild kine feed on the leaves and branches^d.

10. This differs from the others in the leaves, which are obovate, acuminate, cartilaginous at the edge, and furnished with very minute bristles, nerved and veined, dark green and shining above, beneath pale and somewhat glaucous, on roundish petioles. Swartz found it in woods, in the southern parts of Jamaica, flowering in spring.

11. This is distinguished by the leaves and stipules. The leaves are oblong, acuminate both ways, but blunt at the top, entire, nerved and veined; flat, thin and somewhat membranaceous, smooth, on round and thick petioles. Stipules ovate, wide, half-embracing, acuminate, bifid at the top, deciduous.—Native of Hispaniola in coppices.

12. It differs from the preceding in having a more spreading habit, the leaves more ovate and nerved, whence the surface is less smooth than in that; the margins also are slightly waved, and the stipules are larger^e. The leaves, according to Willdenow, are not properly nerved, but have prominent veins.—Native of Jamaica, in coppices.

13. Swartz and Willdenow distinguish this both from the preceding and the first species with which Jacquin had confounded it. It is a suberect branched shrub, the height of a man: The leaves are attenuated at the base, quite entire, shining, petioled, of various sizes. Flowers inodorous, white: tube erect, somewhat funnel-shaped, three times as long as the border. Stamens often six with a six-cleft corolla, or seven with the corolla seven-cleft. Berries red, crowned with the calyx almost of the same colour, and containing a red pulp. Seeds white.

Native of Carthagen in New Spain, in coppices, among bushes, and in hedges, very common; flowering there in august^f.

14. This small shrub seldom rises above four or five feet in height, and is easily distinguished by its tufted bushy form and smooth leaves^g.

In habit it differs from the *Psychotriums*. Browne, having seen only the unripe fruit, called it a two-celled drupe, and made a new genus of this shrub. The unripe berry is hard and two-celled; but when ripe it becomes juicy, and has a sweet taste; it has two seeds, but the partition disappears.

Native of Jamaica, in the northern parts, in dry coppices, among Logwood. Browne says it is common about the ferry and in the Savanna near Hunt's bay.

15. Leaves on very short petioles, from one to two inches in length, entire, smooth, paler and very mi-

^b Aublet.

^c Swartz descr.

^d Swartz.

^e Jacquin.

^f Aublet.

^g Browne.

nutely dotted underneath, scarcely nerved, veined, on very short petioles. Stipules very small; interposed between the leaves, entire, subciliate. Racemes two inches long, loose, compound. Berry oblong, a little acuminate at both ends, smooth.—Native of Jamaica, in coppices on the mountains.

16. This is a running shrub, rooting in the trunks of old trees, and subparasitical. Branches quadrangular towards the end, pendulous, smooth. Leaves an inch long, entire, veinless with scarcely apparent nerves, very smooth, bright green, pale underneath; on short round petioles, flat above. Stipules or sheaths small, membranaceous, between the petioles, permanent. Racemes solitary, erect, the length of the leaves. Peduncles half an inch long, roundish, smooth, red: branchlets opposite, decussated, fastigate like a cyme, spreading, three-parted at the top; flowers pedicelled, white, small. Berry globular or obovate, retuse, crowned with the calyx, scarlet.

Native of the West Indies. Found in the woods of Martinico, by Jacquin; in Paradise mountain, Montserrat, where it is called *Climbing Vine*, by Ryan; in St. Christopher's, by Fahlberg; in the mountains of Dominica and Guadeloupe, by Du Ponthieu.

17. This may be distinguished from the rest at first sight by the disposition of the branches, &c.—Native of Hispaniola, on open spots in a cretaceous soil, flowering in June.

18. Upright, branched. Branches numerous from the root. Leaves entire, veined, smooth, paler underneath, on short petioles. Stipules shrivelling, deciduous, with two awl-shaped teeth. Racemes terminating, solitary: common peduncles long, round, smooth. Flowers small, whitish. Berry roundish, scarlet, pendulous, the size of a red Currant. Seeds hemispherical, striated. It flowers in June, and the berries are ripe in July.—Native of Hispaniola, on dry hills, in a cretaceous soil^h.

19. Native of the island of Otaheiteⁱ.

20. This is a shrub from two to three feet in height, with round knobbed smooth branches. Leaves on short petioles, acuminate, entire, nerved and veined. Flowers subsessile, with a three-leaved involucre, and linear spreading leaflets or bractes, the length of the pedicels. Berry roundish, with a very minute calyx at top, black, ten-grooved. Seeds hemispherical, grooved.—Native of Jamaica and Guiana^k.

21. This differs from the preceding in having ovate leaves, the flowers paniced, the ramifications divaricating and flexuose, and the peduncles naked not involucred. It resembles *P. marginata*, but is sufficiently distinct, in having the stipules two-toothed, the margin of the leaves naked, and the panicle flexuose.—Native of Cayenne, in barren places^l.

22. The trunk of this shrub is from two to three feet in height and branched. The branches are knobbed. Leaves ovate-oblong, acuminate, smooth, dark green above, paler underneath, petioled. Stipules embracing, four-lobed, annexed. Flowers in terminating racemes. Involucre of the calyx four-leaved; the leaflets long and narrow. Corolla white; with a ventricose tube, and a five-cleft border, with acute lobes. Berry black, ten-streaked, five-celled.—Native of Guiana, in the woods of Orapu, flowering and fruiting in August.

23. This also is a shrub with the trunk four or five feet in height, and branched at the top. Branches knobbed. Leaves wide, ovate-oblong, acute, smooth, quite entire, on short petioles. Stipules deciduous, opposite, oblong, blunt, one on each side at the base of the petioles. Flowers in terminating racemes: raceme violet. Involucre of the calyx four-leaved; leaflets long, narrow, acute. Corolla white. Berry violet, ten-streaked, five-celled.—Native of Guiana, in woods, flowering in July^m.

24. This shrub is a fathom in height, with upright, four-cornered, even branches. Leaves oblong, acuminate at both ends, entire, nerved and veined, smooth, somewhat wrinkled, paler underneath, on round pe-

tiolos, which together with the nerves are pubescent underneath. Stipules interposed between the leaves, wide, smooth. Raceme almost upright: common peduncle round flattened a little, elongated, pubescent; branches spreading horizontally, three-parted at the top; pedicels very short. Flowers sessile, three or four, aggregate, pale. Bractes wide, concave, sharp, at the base of the branchlets of the raceme, and of the pedicels, and under the flowers, pubescent. Berry oblong, crowned, two-grooved, very dark blue. Seeds grooved. It flowers in May and June.

Native of Jamaica, on high mountains in the southern parts.

25. This is suffruticose, and from twelve to sixteen feet in height. Stem upright, subherbaceous, thick, stiff, grooved, smooth; with herbaceous, stiff, angular, smooth branches, and axillary, grooved branchlets. Leaves a foot and more in length, and three inches wide, with a short point, quite entire, nerved and veined, smooth, paler underneath; on short, thick, roundish, smooth petioles. Stipules interposed between the leaves, wide, awl-shaped at the tip, smooth. Panicles large, at the ends of the branchlets. Common peduncle sometimes longer than the leaves, roundish, upright, striated: branches in threes and fours, in a sort of whorl, stiff, somewhat compressed, margined, thicker towards the base, striated, three or four-parted, again subdivided at the tip: flowers numerous, on short pedicels, somewhat clustered, pale. Berry ovate, crowned with a very minute calyx. Seeds plano-convex. It flowers in April; and differs in habit, leaves, stipules, &c.

Native of Jamaica, in the interior western parts, in mountain coppices.

26. This is a singular species, with the branches of the panicle divaricating and directed all one way, as in the *flexuosa*, n. 21. which it very much resembles in habit.—Native of Jamaica, on the Blue Mountains.

27. Roots long, creeping. Stem two or three feet high, herbaceous only a little shrubby towards the bottom, thick, round, at the top leafy and smooth, somewhat succulent. Leaves a foot long, acuminate, entire, with arched nerves, shining, pale underneath. Petioles long, round, thick. Peduncles the length of the petioles, round, smooth, three-parted at the top; branchlets shorter than the peduncle, many-flowered at the top: flowers subsessile, clustered, small, pale red. Bractes acute, opposite, convex, at the subdivisions of the peduncles. Berry spherical, scarlet, when dry compressed. Seeds plano-convex, compressed, crested on the outer side. It flowers in Spring.—Native of Jamaica, in low wet places on mountainsⁿ.

28. This very much resembles the next species, but yet it is distinct. Stems creeping, from two feet to a fathom in length, with the branches erect, alternate, round, jointed, perennial. Leaves petioled, acute at both ends, and even on both sides. Stipules roundish, deciduous. Corymbs terminating, brachiate, scarcely longer than the leaves. Seeds two-grooved in the outer convex side.—Native of the East Indies^o.

29. Stem filiform, round, smooth. Leaves spreading, acute, bluntly ferrate, smooth above and shining, below silvery and white. Petioles round, longish, erect, pubescent. Stipules opposite, ovate, emarginate, white. Peduncles shorter than the petioles, erect, thickish, round, commonly radical but sometimes axillary, few-flowered. Flowers white. Berry roundish, scarlet, crowned. Seeds hemispherical, oblong, grooved.

Native of the West Indies, in shady places^p. In Jamaica. Jacquin found it in Martinico, bearing flowers and ripe fruits in December. Also in the East Indies.

30. Root perpendicular, roundish, somewhat branched. Leaves approximating, spreading very much, quite entire, acuminate, having a round prominent rib underneath, but sharpish above, even, flat, from two to three inches in length. Stipule single on each side, stiffish, horizontal, very short, deciduous. Flowers white, small, sessile, on short, solitary peduncles, the

* Swartz,

ⁱ Forster.

^k Swartz.

^l Willdenow.

^m Aublet.

ⁿ Swartz.

^o Linn. mant.

^p Swartz.

length of the petioles, from two to five together. Each flower has a simple bracte so small as to be scarcely visible. Perianth small, five-toothed, permanent, with very small teeth, somewhat rolled back. Corolla one-petalled, funnel-form: tube longer than the calyx, cylindrical, widening upwards: opening almost closed with soft villose hairs: border five-parted; with the segments lanceolate acute pubescent within, somewhat revolute, almost equal to the tube. Nectary a thickish rim, obscurely five-cornered, whitish, surrounding the base of the style. Filaments very short inserted into the throat of the corolla. Anthers small, linear, erect, pubescent at the top. Germ inferior, roundish. Styles almost cylindrical, erect, the length of the tube. Stigma thickish, two-parted. Berry subovate, even, crowned with the calyx, one-celled. Seeds two, united, oblong, acute at both ends, flat within, gibbous on the outside^a.

Native of North America, in the warmest part of it.

This plant is supposed to be the Ipecacuanha, but on an authority which ought not to be followed implicitly, namely that of an American quack, who sent a specimen of it in flower to the Spanish governor, who communicated it to Mutis.

Dr. Woodville has given a figure of the true plant from a specimen preserved in spirits, and sent from Brazil by Governor Phillip to Sir Joseph Banks; but it has not the fructification.

There are three sorts of Ipecacuanha root in our shops—the ash-coloured or gray, the brown, and the white. The ash-coloured is brought from Peru, and is a small wrinkled root, bent into a great variety of figures, brought over in short pieces, full of wrinkles and deep circular fissures, down to a small white woody fibre that runs in the middle of each piece: the cortical part is compact, brittle, and looks smooth and resinous on breaking: it has very little smell; the taste is bitterish and subacid, covering the tongue as it were with a kind of mucilage. The brown is small, somewhat more wrinkled than the foregoing; of a brown or blackish colour without, and white within; this was brought from Brazil. The white sort is woody, has no wrinkles, and no perceptible bitterness. The first is that usually preferred for medicinal use. The brown, even in a small dose, has been sometimes observed to produce violent effects. The white, though taken in a large one, has scarcely any effect at all; Dr. Irving has ascertained by experiments, that this root contains a gummy and resinous matter, and that the gum is in much greater proportion, and is more powerfully emetic than the resin; that the cortical is more active than the woody part, and that the whole root manifests an antiseptic and astringent quality. He also found its emetic property to be most effectually counteracted by means of the acetous acid, in so much that thirty grains of the powder taken in two ounces of vinegar, produced only some loose stools.

The first account we have of Ipecacuanha is that published by Piso in 1649; but it did not come into general use till thirty years after, when Helvetius, under the patronage of Lewis XIV. employed it at the Hotel de Dieu, and introduced this root into common practice: experience has proved it to be the mildest and safest emetic with which we are acquainted, having this peculiar advantage, that if it does not operate by vomit, it readily passes off by the other emunctories.

It was first introduced with the character of an almost infallible remedy in dysenteries and other inveterate fluxes, and also in disorders proceeding from obstructions of long standing: nor has it lost much of its reputation by time. In the spasmodic asthma, Dr. Akenfide remarks, that where nothing contraindicates repeated vomiting, he knows no medicine so effectual. In violent paroxysms a scruple procures immediate relief: where the complaint is habitual, from three to five grains every other morning may be given for a month or six weeks.

This medicine has also been successfully used in

^a Mutis in Linn. suppl.

hemorrhages. Several cases of menorrhagia are mentioned by Dahlberg, in which one-third or half a grain was given every four hours till it effected a cure. These small doses are likewise found of great use in catarrhal and even consumptive cases, as well as in various states of fever. Dr. Cullen informs us, that he knew a practitioner who cured intermittents by giving five grains of Ipecacuanha, or enough to excite nausea, an hour before the accession of the fit was expected; and that Dr. Thompson, formerly of Montrose, proposed to cure agues by emetics given at the time of accession, or at the end of the cold stage; this practice has also been successful, and may indeed be executed by tartar emetic; but Ipecacuanha is more manageable, and generally more easy to the patient.

This root, particularly in the state of powder, is now advantageously employed in almost every disease in which vomiting is indicated; and when combined with Opium, under the form of *pulvis sudorificus*, it furnishes us with the most useful and active sweating medicine which we possess. It is also given with advantage in very small doses, even when it produces no sensible operation. The full dose in substance is a scruple, though less doses will frequently produce an equal effect. The officinal preparation is *Vinum Ipecacuanhae*^{*}.

31. This is a shrub, a fathom in height; the branches and branchlets subdivided, upright, round, shining; the latter dark red. Leaves entire, nerved and veined, very smooth, shining; on short, round, smooth petioles. Stipules small, interposed between the leaves, with the teeth lanceolate. Flowers not in a true corymb, but in a panicle approaching nearer to that form than in any of the rest, especially when nodding with a load of berries: branchlets trichotomous, erect, fastigate: common peduncles shorter than the leaves, round, smooth, purple: bractes awl-shaped, coloured, at the subdivisions of the panicle. Flowers purple. Berry roundish, twin, compressed a little, dark red. Seeds hemispherical, striated. It flowers in summer.—Native of Jamaica, in the high mountains.

32. This also is a shrub, a fathom high, with the branches subdivided, round, erect, pubescent. Leaves entire, nerved, pubescent especially underneath, sometimes subtomentose, softish, from two to three inches long, on roundish petioles of a middling length. Stipules interposed between the leaves, with awl-shaped short teeth. Panicles terminating, erect, the length of the leaves, with spreading subfastigate branchlets, almost forming a cyme, trichotomous, with a floret in the middle commonly sessile. Common peduncles an inch long, round, pubescent. Bractes linear, opposite at the subdivisions of the panicle. Flowers yellowish green. Berry roundish-twin, crowned, pubescent, black with a blue juice. Seeds hemispherical, grooved and striated. It flowers the whole year.—Common in Jamaica and other islands of the West Indies.

33. This differs from all the others in its subcymose inflorescence, and in having the common peduncles elongated.—Native of Jamaica, in the interior, in mountain woods.

34. This is distinguished by the leaves being very much veined, and the panicles saffron-coloured[†].

The leaves are not nerved, but veined, with the veins prominent: such leaves should rather be called ribbed, a nerved leaf being that which has several undivided nerves springing from the base[†].

Native of the West Indies, in mountain coppices.

35. This is a shrub from five to ten feet high, with the branches thick, four-cornered, smooth, almost simple. Leaves acuminate at both ends, subciliate, membranaceous, somewhat rigid, many-nerved, smooth on both sides; on round, pubescent petioles. Stipules interposed between the leaves, connate, membranaceous, truncated in the middle, having on each side a long linear erect subciliate toothlet. Panicle often shorter than the leaves: common peduncle an inch long, flattened or angular, smooth, sometimes red:

^{*} Woodville.

^{*} Swartz.

[†] Willdenow.

branches decussated, from upright spreading, simply subdivided; with the pedicels scattered, red, longer. Berry roundish, larger, two-grooved, crowned. Seeds hemispherical, grooved. It flowers in spring and summer.

Native of Jamaica, on the Blue Mountains. It resembles *Chiococca paniculata* of the younger Linneus's Supplement so much, that it can scarcely be different: or if that is to be distinguished, still it must be a species of *Psychotria*^u. See the next species.

36. This is a high tree, with very smooth round branches. Leaves on short petioles, acuminate at both ends, quite entire, veined. A thin membrane combines the leaves, and is extended within them into two stipular teeth. Panicle terminating branched. Flowers yellow. Berry yellow, compressed; having a lateral groove, it appears as if it were twin. It is perhaps different from the species immediately foregoing, this being arboreous, that shrubby; the leaves being ovate in this, lanceolate-ovate in that. The description we have of it is too short to state other differences.

Found at Surinam by Dalberg, and in South America by Mutis^x.

37. This is a shrub with round smooth branches and coloured branchlets. Leaves decussated, entire, nerved and veined, smooth, five or six inches in length; on quadrangular smooth petioles, half an inch long. The two lobes of the stipules are ovate, obtuse, pressed close, large, permanent, rigid. Panicle almost the length of the leaves: common peduncle two inches long, four-cornered, blood-red; branchlets erect, compressed, grooved, short, trichotomous, coloured; flowers pedicelled, erect. Pericarp, when unripe, two-celled, with one seed in each cell, crowned with the calyx. Certainly not to be separated from the *Psychotriums*, and resembling *P. crocea* and *alpina* very much in many respects.—Native of the West Indies and Guiana^v.

38. The trunk of this is a foot high or more, with many knobbed branches at the top. Leaves ovate, acute, smooth, quite entire, petioled. Stipules embracing, two-lobed, annexed; the lobes oblong, opposite. Flowers in terminating racemes. Calyx naked. Corolla yellow, with a very long tube, and a five-cleft border; the clefts long and acute. Berry five-celled.

Native of Guiana, near mount Courou; flowering in september.

39. This is a perennial plant, four feet high, with a knobbed, branched stem. Leaves ovate-oblong, acute, smooth, quite entire, petioled, annexed to an embracing, four-toothed sheath. Flowers terminating, in panicles. Calyx knobbed. Corolla white. Berry violet.

Native of Cayenne and Guiana, in barren places; flowering and fruiting in august^z.

PSYCHOTROPHUM. See *Psychotria*.]

PSYLLIUM. See *Plantago*.

PTARMICA. See *Achillea*, [*Parthenium*, *Xeranthemum*.]

PTELEA. (Πτελεα of *Theophrastus* and *Dioscorides*: the name of a tree used in building.)

Lin. gen. n. 152. Reich. n. 159. Schreb. n. 1505. Gært. t. 49. Juss. 375.

Class. 4. 1. Tetrandia Monogynia. or Dioecia Tetrandia.

Nat. order of *Terebintaceæ*, Juss.

GENERIC CHARACTER.

* Male.

CAL. Perianth four-parted, acute, small, deciduous.

COR. Petals four, oblong, concave, spreading, larger than the calyx, coriaceous.

STAM. Filaments four, awl-shaped, erect, curved in at the top, flattish and villose at the base, almost the length of the corolla. Anthers roundish.

PIST. Germ ovate, small, abortive. Style very short, bifid at the top. Stigmas obsolete.

* Female.

CAL. and COR. as in the Male.

STAM. Filaments as in the Male, much shorter than the corolla. Anthers roundish, barren.

^u Swartz.

^x Linn. suppl. and Willdenow.

^y Swartz.

^z Aublet.

PIST. Germ ovate, compressed, biggish. Style short, compressed. Stigmas two, bluntish, diverging.

PER. Drupe roundish, large, juiceless, compressed, membranaceous-winged, two-celled.

SEEDS solitary, oblong, attenuated upwards.

OBS. Some of the flowers have a five-cleft calyx, and a five-petalled corolla. In these, and even in the flowers that are four-cleft, there are often five, six and seven stamens. In each cell of the germ there are two seeds, but only one of them, and sometimes only a single seed in the whole drupe comes to perfection. In the female flowers the anthers are sometimes polliniferous, and hence this genus might be referred to the class Polygamia. Willdenow has continued it in the genus *Tetrandia*, wherein Linneus had placed it.

ESSENTIAL CHARACTER.

Cal. four-parted, inferior. Cor. four-petalled. Stigmas two. Fruit with a roundish membrane, having one seed in the middle.

SPECIES.

1. *Ptelea trifoliata*. Three-leaved *Ptelea* or Shrubby Trefoil.

Lin. spec. 173. Reich. 1. 335. Willd. 670. hort. cliff. 36. Gært. fruct. 1. 223. Trew. rar. 12. t. 9. Mill. fig. t. 211. Du Roi barbecc. 2. 203. Dubam. arb. 2. t. 43. Kniph. cent. 9. n. 81.

Ptelea similis. Zimm. goett. 207.

Frutex virginianus trifolius, ulmi famaris. Pluk. alm. 159. Dill. elth. 147. t. 122. f. 148.

β. *Ptelea pentaphylla*. Five-leaved *Ptelea*.

Munchb. Hausvat. 3. 242. Fabric. helmst. 416. Du Roi barbecc. 2. 203.

DESCRIPTION, &c.

The three-leaved *Ptelea* grows naturally in North America; it was first discovered in Virginia by Mr. Banister, who sent the seeds to England, from which some plants were raised at Fulham, and some other curious gardens; but being planted in the open air, they were destroyed by a severe winter, so that there were scarce any of the plants left in England. In 1724, Mr. Catesby sent over a good quantity of the seeds from Carolina, which succeeded so well as to furnish many gardens with the plants. This rises with an upright woody stem ten or twelve feet high, dividing upwards into many branches, covered with a smooth grayish bark, garnished with trifoliate leaves standing upon long foot-stalks. The leaflets are ovate or ovate-lanceolate, smooth, and of a bright green on their upper side, but pale on their under; these come out late in the spring, soon after which the bunches of flower-buds appear, which is generally in the beginning of June, the leaves being then but small, and afterwards increase in size, but are not fully grown till the flowers decay. The flowers are produced in large bunches at the end of the branches; they are of an herbaceous white colour, composed of four or five short petals, ending in acute points; these are fastened at their base to a short calyx, cut into four segments almost to the bottom. In the center is situated an orbicular compressed germ supporting a short style, which is attended by four awl-shaped stamina; the germ afterwards turns to a capsule surrounded by a leafy border, having two cells, each containing one seed.

[Medicus first observed that the *Ptelea* was dioecious. According to Willdenow, it is a polygamous shrub.]

PROPAGATION AND CULTURE.

This shrub may be propagated by cuttings planted in pots of fresh rich earth, and plunged into a moderate hot-bed. The best time for this is in the beginning of March, but they must be carefully managed so as not to have too much heat, and shaded from the sun in the middle of the day, otherwise they will not succeed. It may also be propagated by layers, but these are often two years before they take root; if good seeds can be procured either here or from abroad, the plants raised from those will be much stronger.

These seeds may be sown in the beginning of April, on a bed of light earth, in a warm sheltered situation,

where, if the ground is moistened in dry weather, the plants will come up in six weeks; but if the seeds are sown in pots, and placed on a very moderate hot-bed, the plants will come up sooner, and make greater progress the first year; but they must not be forced or drawn, for that will make them very tender; therefore in June the plants should be exposed to the open air, in a sheltered situation, where they may remain till the frost comes on, when those in the pots should be either placed under a common frame, to shelter them from severe frost, or the pots plunged into the ground, near a hedge, that the frost may be prevented from penetrating through the sides of the pots to the roots of the plants. The following spring the plants may be planted into a nursery-bed, at about one foot distance, where they may grow two years, by which time they will be fit to transplant where they are designed to remain.

These plants are a little tender while they are young, therefore will require some protection the first and second year, but particularly from the early frosts in autumn, which frequently kills the tops of the tender shoots before they are hardened; and the more vigorous the plants have grown the preceding summer, the greater danger there is of their being killed, therefore they should be screened either with mats or some other covering; but as they advance in strength, they become more hardy, and are rarely injured by frost.

[PTELEA VISCOSA. See *Dodonaea*.

PTERANTHUS. See *Camphorosma*.

PTERIS (of Pliny. Πτερίς of Theophrastus and Dioscorides, from πτερον, a wing, so named on account of its winged leaves.)

Lin. gen. n. 1174. Reich. n. 1291. Schreb. n. 1626. Smith gen. dorsif. 241.

Class. 24. 2. Cryptogamia Filices.

Nat. order of Filices or Ferns.

GENERIC CHARACTER.

Fruetif. in an uninterrupted marginal line. Involucre from the margin of the frond turned in, uninterrupted, separating on the inner side.

SPECIES.

* With simple fronds.

1. Pteris piloselloides.

Lin. spec. 1530. Reich. 4. 392. Thunb. jap. 331. Kämpf. ic. select. t. 31. Lour. cochinch. 678. 833.

Barren fronds obovate, fertile lanceolate longer, shoots creeping.

2. Pteris lanceolata.

Lin. spec. 1530. Reich. 4. 392. Desfont. atlant. 401. Lour. cochinch. 679. 834. Plum. amer. 28. t. 40. fil. 116. t. 132. Mor. hist. 3. 558. n. 20. Raii suppl. 52. n. 15. (Lingua cervina). Pet. fil. 123. t. 6. f. 5.

Fronds lanceolate subangular smooth fruiting at the tip.

3. Pteris angustifolia.

Swartz prodr. 129.

Fronds lanceolate-linear entire erect fruiting along the whole edge.

4. Pteris lineata.

Lin. spec. 1530. Reich. 4. 393. Plum. amer. 28. t. 41. fil. 123. t. 143. Mor. hist. 3. 558. n. 21. Raii suppl. 52. n. 14. (Lingua Cervina). Pet. fil. 126. t. 14. f. 3. (Phyllitis).

Fronds linear quite entire fruiting longitudinally.

5. Pteris tricuspidata.

Lin. spec. 1531. Reich. 4. 393. Plum. fil. 121. t. 10. f. 6. (Lingua Cervina). Pet. fil. 124. t. 10. f. 6. (Phyllitis).

Fronds linear trifid at the top.

6. Pteris furcata.

Lin. spec. 1531. Reich. 4. 393. Plum. fil. 122. t. 141. (Lingua Cervina). Pet. fil. 125. t. 6. f. 6. (Phyllitis).

Fronds dichotomous hispid underneath, fruiting at the tips.

7. Pteris quadrifoliata.

Lin. spec. 1531. Reich. 4. 393. Pluk. phyt. t. 401. f. 5. (Filix).

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Marfilea minuta. Lin. mant. 308. Jac. Swartz obs. 396.

Frond quaternate roundish quite entire, shoots creeping.

* With pinnae fronds.

8. Pteris arborea.

Lin. syst. 930. Reich. 4. 393.

Leaflets pinnatifid, trunk arboreous prickly.

9. Pteris granditolia.

Lin. spec. 1531. Reich. 4. 394. hort. cliff. 473.

Pet. fil. 127. t. 6. f. 15. (Phyllitis). Plum. fil.

88. t. 106. (Lingua Cervina). Plum. amer. 6.

t. 8. (Filix). Raii suppl. 64. (Phyllitis). Mor.

hist. 3. 571. n. 2. (Filix).

Acrosticum marginatum. Lin. spec. 1526. Brown.

jam. 105. n. 6. sec. Swartz.

Pinnas opposite ovate-linear acuminate quite entire.

10. Pteris nervosa.

Lin. syst. 930. Thunb. jap. 332.

Pinnas lanceolate parallel-nerved entire the lowest bipinnate.

11. Pteris longifolia.

Lin. spec. 1531. Reich. 4. 394. hort. cliff. 473.

Brown. jam. 90. n. 2. Pet. fil. 129. t. 6. f. 12.

Mor. hist. 3. 558. n. 17. (Lonchitis). Plum. fil.

52. t. 59. Raii suppl. 65. uli. Plum. amer. 12.

t. 18. (Filix).

Pinnas linear repand cordate at the base.

12. Pteris denticulata.

Swartz prodr. 129.

Lower pinnas semipinnate lanceolate, the barren ones toothlet-ciliate, the fertile ones quite entire.

13. Pteris vittata.

Lin. spec. 1532. Reich. 4. 394. Osh. it. t. 4.

Brown. jam. 90. 3. Lour. cochinch. 679. 834.

Pet. gaz. t. 63. f. 10. (Filix).

P. obliqua. Forsk. descr. 185.

Pinnas linear straight rounded at the base.

14. Pteris stipularis.

Lin. spec. 1532. Reich. 4. 395. Plum. amer. 12.

t. 19. fil. t. 70. Pet. fil. 130. t. 12. f. 1. (Filix).

Pinnas linear sessile, stipules lanceolate.

15. Pteris trichomanoides.

Lin. spec. 1532. Reich. 4. 395. hort. cliff. 473.

Brown. jam. 105. n. 7. (Acrosticum). Plum. fil.

57. t. 75. Pet. fil. 137. t. 9. f. 16. Sloan. jam. 1.

80. t. 35. f. 1. Raii suppl. 60. 1. (Trichomanes).

Pluk. phyt. t. 281. f. 4. (Filix).

Pinnas subovate blunt repand hirsute underneath.

16. Pteris cretica.

Lin. syst. 931. Reich. 4. 395. mant. 130. Vahl.

symb. 1. 84. Thunb. jap. 332.

P. femiserrata. Forsk. descr. 186.

Hemionitis multifida. Baub. pin. 364.

Phyllitis ramosa. Alp. exot. 67. t. 66.

Lingua cervina foliis costae innascentibus. Tournef.

inst. 544. t. 321.

Filix cretica minor non ramosa. Mor. hist. 3. 572.

f. 14. t. 1. f. 16.

Pinnas opposite lanceolate serrulate narrowed at the base; the lowest subtripartite.

*** With subbipinnate or branched fronds.

17. Pteris pedata.

Lin. spec. 1532. syst. 931. Reich. 4. 395. hort.

cliff. 473. Forst. prodr. n. 417. Brown. jam. 90.

n. 1.

P. argentea. Aët. petrop. 12. 519. t. 12. f. 2.

Hemionitis. Plum. amer. 24. t. 34. fil. 130. t. 152.

Sloan. jam. 1. 73.

Filix marginifera, geranii folio. Petz. fil. 176. t. 8.

f. 12.

F. Hemionitis americana, petroselinii foliis profunde

laciniatis. Pluk. phyt. t. 286. f. 5. Raii suppl. 55.

Adiantum monophyllum amer. fol. profunde laciniatis

ad oras pulverulentum. Mor. hist. 3. 592.

β. A. monoph. Antegonum ad oras pulv., platani in

modum divisum, lacinia media longius producta.

Mor. hist. 3. 392.

Fronds five-angled trifoliate, pinnas pinnatifid, the lateral ones two-parted.

18. Pteris sinuata.

Lin. syst. 931. Thunb. jap. 332.

Fronds bipinnatifid, pinnules and sinuses rounded.

19. *Pteris aquilina*. Female Fern or Brakes.
Lin. spec. 1533. *Reich.* 4. 396. *hort. cliff.* 473.
fl. succ. n. 940. *Huds. angl.* 451. *Witther. arr.*
ed. 3. 765. *Scop. carn. n.* 1269. *Gunn. norv.*
n. 30. *Pollich pal. n.* 956. *Hall. belv. n.* 1688.
(Filix). *Thunb. jap.* 332. *Bolt. fil. t.* 10.
Filix femina. *Fuchs. hist.* 596. *Camer. epit.* 992.
Matth. 1291. *Ger.* 969. 2. *emac.* 1128. 2. *Dod.*
pempt. 462. 2. *Raii hist.* 149. *syn.* 124. *Blackw.*
t. 325.—*vulgaris.* *Park. theat.* 1037.
F. ramosa major pinnulis obtusis non dentata. *Baub.*
pin. 357. *Plum. amer.* 23. *t. A. f.* 1.
F. ram. maj. repens vulgarissima. *Mor. hist.* 3. *f.* 14.
t. 4. f. 3.
Fronds superdecompound, leaflets pinnate, pinnae lanceo-
late, lower pinnatifid, upper lefs.
20. *Pteris caudata*.
Lin. spec. 1533. *Reich.* 4. 396. *hort. cliff.* 473.
Lour. cochinch. 680. 835. *Brown. jam.* 91. 7.
Plum. amer. 14. *t.* 22. *fil.* 23. *t.* 29. *Pet. fil.*
135. t. 3. *f.* 12. *Sloan. jam.* 1. 101. *Mor.*
hist. 3. 583. *n.* 8. *(Filix).*
β. Sloan. jam. 1. 101. *t.* 63.
Fronds superdecompound, pinnae linear, the lowest pinnate-
toothed at the base, the terminating ones very long.
21. *Pteris mutilata*.
Lin. spec. 1533. *Reich.* 4. 397. *Brown. jam.* 91.
n. 8. *Plum. amer.* 21. *t.* 30. *fil.* *t.* 51. *Pet. fil.*
131. t. 3. *f.* 10. *(Lonchitis).*
Fronds decompound, leaflets pinnate, the lowest semipin-
natifid, the terminating ones and those of the base very
long.
22. *Pteris atropurpurea*.
Lin. spec. 1534. *Reich.* 4. 397. *Gron. virg.* 197.
Fronds decompound pinnate, pinnae lanceolate, the termi-
nating ones longer.
23. *Pteris nigra*.
Retz. obs. 6. 38. *n.* 85.
Frond tripinnate, leaflets ovate, the terminating one sub-
trilobate.
24. *Pteris arguta*.
Vahl symb. 1. 84.
P. ferrulata. *Forst. descr.* 187.
Filix non ramosa jamaicensis pediculo albicante, &c.
Pluk. phyt. t. 290. *f.* 2.
Fronds subbipinnate, lower leaflets twice two-parted,
pinnae lanceolate serrate.
25. *Pteris biaurita*.
Lin. spec. 1534. *Reich.* 4. 397. *Lour. cochinch.*
679. 835. Brown. jam. 90. *n.* 4. *Plum. amer.*
10. t. 14. *fil.* *t.* 15. *Pluk. phyt. t.* 401. *f.* 1.
Pet. fil. 134. *t.* 3. *f.* 11. *(Filix).*
Fronds pinnate, pinnae pinnatifid, the lowest two-parted.
26. *Pteris quadriaurita*.
Retz. obs. 6. 38. *n.* 86.
Fronds pinnate, pinnae pinnatifid toothed at the top, the
four lower pairs bifid.
27. *Pteris semipinnata*.
Lin. spec. 1534. *Reich.* 4. 397. *Osbeck. it. t.* 3. *f.* 1.
Thunb. jap. 333.
Fronds subbipinnate, the lateral leaflets and the lowest
lobe semipinnatifid.
28. *Pteris ferrulata*.
Lin. syst. 931. *suppl.* 445.
Fronds semibipinnate linear serrulate.
29. *Pteris heterophylla*.
Lin. spec. 1534. *Swartz obs.* 397. *Brown. jam.* 91.
n. 5.
Adiantum hexagonum. *Lin. syst.* 940. 25. *Plum.*
fil. 84. *t.* 37.
Ruta muraria major, fol. variis, &c. *Sloan. jam.* 1. 92.
t. 53. *f.* 2.
Fronds bipinnate, pinnae ovate-oblong serrate blunt, the
fertile ones quite entire.
30. *Pteris lunulata*.
Retz. obs. 2. 28. *n.* 99. *t.* 4.
Frond pinnate, pinnules alternate petioled crescent-shaped
striated.
31. *Pteris esculenta*.
Forst. prodr. n. 418. *escul.* 47.

Fronds superdecompound grooved, leaflets pinnate, pinnae
linear decurrent, the uppermost shorter.

32. *Pteris comans*.
Forst. prodr. n. 419.
Fronds pinnate, leaflets pinnatifid, pinnae elongated lan-
ceolate, at the top attenuated serrate.
33. *Pteris rotundifolia*.
Forst. prodr. n. 420.
Fronds pinnate hispid, pinnae subopposite roundish obso-
letely crenate.
34. *Pteris humilis*.
Forst. prodr. n. 421.
Fronds subbipinnate, leaflets oblong gashed subpinnate, the
outermost obsoletely crenate confluent.

DESCRIPTIONS, &c.

1. Root filiform, long, creeping, tomentose, brown. Shoots also creeping, filiform, long and hispid. Fronds some barren, others fertile; the former obovate or somewhat oblong, smooth, quite entire, blunt, petioled; the latter double the length, lanceolate, blunt, fruiting very closely underneath along the wide margin. Native of the East Indies, Japan, and Cochinchina, on rocks and trees^a.

2. Fronds cordate almost quite entire, striated, erect^b.—Native of Domingo, of Algiers, according to Desfontaines, and according to Loureiro, of Cochinchina.

3. Native of the West Indies^c.

4. Native of Domingo.

5, 6. Natives of the West Indies.

7. Native of the West Indies^d; according to Linneus; but this is a mistake, for it is a native of the East Indies, and the same with *Marsilea minuta* of Linneus's Mantissa.

8. It is not known of what country this is a native.

9. Native of Dominica and Martinico in bogs^e. If it be the sixth *Acrosticum* of Browne, it also grows in the cooler mountains of Jamaica, and seldom rises above three feet and a half from the ground.

10. Stipe angular, grooved, smooth. Frond wholly smooth, a foot and half high with the stipe. The lower pinnae are in pairs, the rest are simple, attenuated at bottom, a finger's length.—Native of Japan^f.

11. This plant seldom rises above fourteen or sixteen inches; it is remarkable for its narrow simple leaves and undivided stalk.—Native of Jamaica and Dominica, in cool moist places, and in woods near rivulets^g.

12. Native of Hispaniola^h.

13. Root creeping long fibrous black. Fronds five feet long, erect, on round smooth grooved long stipes. Pinnae linear-lanceolate with a long point, smooth, striated transversely, pale green, flat, on short petioles, sometimes very minutely serrateⁱ.

Browne says, it springs from a large firm root, and rises commonly to the height of twelve or sixteen inches, sometimes more.

Native of China, Cochinchina and Jamaica.

14. Native of South America.

15. Leaves simple, milky white underneath, with a brown down at the margin: the stalk is pretty slender, and seldom shoots more than ten or twelve inches above the root^k.

Native of rocks in Dominica, and Jamaica, where Browne says it is common in the middle mountains of Liguanea.

16. Pinnae lanceolate or ensiform, narrowed at the base; the upper ones connate-subdecurrent, the lowest petioled and often bifid or trifid^l.

Native of the islands of Candia and Elba. Vahl gathered it about Naples, Forkahl in Arabia, and Thunberg at Nagasaki in Japan.

17. This little plant seldom rises above four or six inches from the ground; it is beautifully dissected, and of a very singular form, but varies much in its division and appearance^m.—Native of Jamaica, Dominica and the Society Isles; Linneus adds Siberia,

^a Linn. spec. Thunb. Lour.

^b Loureiro.

^c Swartz.

^d Linn.

^e Idem.

^f Thunberg.

^g Browne.

^h Swartz.

ⁱ Loureiro.

^k Browne.

^l Linn. mant.

^m Browne.

noticing that the Siberian plant is smaller and snow-white underneath, with a ferruginous margin: but Swartz affirms that this is certainly different.

18. Frond weak, erect, a foot and half long: pinnae alternate, spreading, scarcely a finger's length; segments subopposite, entire, waved, nerved, smooth; sinuses rounded not acute.—Native of Japan, about Jedo^a.

19. This is our common Fern or Brake, called Braken in the north. The roots are creeping, and when cut obliquely present a kind of representation of the imperial eagle; whence Linneus's trivial name of *aquilina*. Stem upright, eighteen inches, and in woods three or four feet high, angular, smooth, branched, rigid; all the pinnae sessile, hard, striated; bright green above, glaucous underneath^o. The fructifications are in rough, tomentose, rufescent parallel lines along the margins of the pinnules, which are rolled back very much so as almost to cover the capsules when ripe^z.

Native of most parts of Europe on heaths and in woods.

A tolerably pure alkali is obtained from the ashes. The common people in many parts of England mix these ashes with water and form them into balls; these balls are afterwards made hot in the fire, and then used to make lye for scouring linen. Fern makes a very durable thatch, and is an excellent litter for horses and cows. Where fuel is scarce, they use it to heat ovens, and to burn limestone; for it affords a very violent heat. In the more inhospitable climates bread is made of the roots^z.

Thunberg informs us, that in Japan the young fronds, before the leaves are displayed, are eaten, and that bundles of them are exposed to sale in the shops during the months of April and May. The woody root is bruised, soaked in water, and boiled; and though quite black, it is eaten by the poorer sort.—Fern it is said may be destroyed by repeated mowings in summer, but the most effectual way is by paring and burning.

20. Native of Jamaica and Dominica. Browne says, it is very common in the mountains of the former, in the most open spots, and that it thrives best in a stiff clay.

21. The lower lateral leaves are longer at the base, pinnate only on the lower side.

Native of the same islands^z, and growing like the preceding, but never rising so high: it loves an open gravelly soil, and is very common on the lower hills of Jamaica^z.

22. Stipe a span high, dark purple, shining. Pinnae rolled back with a wide margin, on longer petioles the lower they are; the lowest petioles augmented with one or two pairs of smaller sessile pinnae.—Native of Virginia^z.

23. Stipe a span high, striated, channelled on one side, smooth and even, black. Branches of the frond opposite and alternate. Pinnules small, ovate, blunt, entire except the end one, which is commonly three-lobed. Fructification marginal, but often filling up the disk so completely, that the nerve of the pinnule only appears.—Native of China near Canton^a.

24. Stipe two feet high, very smooth and even. Frond pinnate: leaflets pinnatifid; the two lowest augmented with two leaflets on the lower side, and hence half bipinnatifid: pinnae smooth, the barren ones ferrate to the base, the fruiting only at the tip. It can scarcely be distinguished from the next species, and may perhaps be only a variety of it: the pinnae are smaller, and the last is not elongated so much as in Plumier's figure of the *biurita*.—Native of Arabia; sent also from Madeira^z.

25. A foot and half high, erect. Pinnae smooth, with linear blunt segments; the lowest divided into two shorter earlets. Fructifications linear^z.

According to Browne, it rises commonly to the height of two feet and a half or better, and is easily

^a Thunberg. ^o Pollich. ^p Weis. ^q Withering.
^r Linn. ^s Browne. ^t Linn. ^u Retz.
^v Vahl. ^w Loureiro.

distinguished by the regular division of its lower ribs. Native of the West Indies and CochinChina.

26. Stipe four-cornered, even. Pinnae pinnatifid almost to the nerve; segments blunt; the end one lanceolate, acuminate, long, ferrate especially towards the tip. It is very distinct from the *biurita* in size, in the ferratures and number of the bifid pinnae.—Koenig sent it from Ceylon^z.

27. Scape even. Fronds lanceolate, pinnate. Leaflets opposite, remote, pinnatifid: with the terminating apexes elongated: the lower margin of the leaves, and only that, is commonly pinnatifid, but not the upper; hence the leaflets are, as it were, semipinnate: the lowest segment also of the pinnae is longer than the rest, and in like manner semipinnatifid; all the rest being entire and blunt.—Found in China, by Osbeck^z, and in Japan by Thunberg.

28. Stipe half round, a span high, even, green, purple at bottom. Leaflets decurrent, opposite; the lowest unequally five-parted, with ensiform pinnae, one or two of them elongated; the next similar, decurrent, but three-parted; those of the third or fourth pair simple and a little smaller; the last leaflet an unequal pinna, longer, united to the rest: the barren pinnae very finely ferrate, the fertile ones scarcely crenate.—Native of Jamaica^b.

29. This is a very elegant little species, and rises to the height of sixteen or eighteen inches. It is pretty much divided, and the leaves when young are ferrate; but as it begins to seed the margin reflects, and none of these are seen.

Native of Jamaica in moist and shady places: common about the cascade in St. Ann's^c.

It has been confounded with *Osmunda crispa* by Linneus, but ought to be restored to this genus. The fructifications at first are in an interrupted line about the edge; whence *Adiantum hexagonum* of Linneus is only a synonym of this; but when they are matured they become confluent, and are covered by the reflex margin^d, as Browne remarked.

30. Frond quite simple, a foot long and more. Stipe like ebony, shining, compressed. Pinnae green, even, striated, with the streaks radiating from the petiole to the margin. The outer margin fruiting, almost semicircular; the inner barren, scarcely curved. The upper pinnae are hatchet-shaped, and the terminating one three-cornered. The form of this agrees exactly with *Adiantum lunulatum* of Burman, ind. 235. except the five-flowered margin: but sometimes the margin is cleft into three or more segments; and thus a genuine species of *Pteris* resembles an *Adiantum*. This beautiful Fern was sent to Retz from Bengal^e.

31. Fronds triply-pinnate, very large, radical, smooth, with the stipe grooved above, all the divisions alternate, except the more universal ones, which are sometimes opposite. Leaflets about two inches long, with the pinnae quite entire, blunt, rolled back at the edge, coriaceous, approximating, the lower ones separate, toothed here and there, or pinnatifid, the outmost gradually shorter. The marginal lines of fructification occupy almost the whole disk, with a thin little membrane, scarcely covering the seeds.

Native of the Society Isles in woods. The roots are eaten there by the poorer sort and when better food is scarce, though they are woody, insipid, and have little nourishment in them. In Otaheite this fern is called *e-Narré*.

32, 33, 34. Natives of New Zealand^f.

PTEROCARPUS. (From *πτερον* a wing, and *καρπος* a fruit; having a winged fruit.)

Lin. gen. n. 854. Reich. n. 925. Schreb. n. 1159.

Jacqu. amer. 283. Gært. t. 156. Juss. 364.

Auctore Loeftlingio.

Class. 17. 4. Diadelphia Decandria.

Nat. order of Papilionaceæ or Leguminosæ.

GENERIC CHARACTER.

CAL. Perianth one-leafed, tubular-bell-shaped, five-toothed: teeth acute.

^z Retz. ^a Linn. ^b Linn. suppl. ^c Browne.
^d Swartz. ^e Retz. ^f Forster.

Cor. papilionaceous. *Standard* with an oblong claw, roundish-cordate, spreading, convex. *Wings* lanceolate, shorter than the standard. *Keel* short.
STAM. *Filaments* ten, united. *Anthems* roundish.
PIST. *Germ* pedicelled, oblong, compressed. *Style* awl-shaped. *Stigma* simple.
PER. *Legume* roundish-sickle-shaped, leafy-compressed, varicose with veiny sides, woody within, not opening: the cells longitudinal.
SEED solitary, kidney-shaped, thicker at the base, appendicled at the top.

ESSENTIAL CHARACTER.

Cal. five-toothed. *Capf.* sickle-shaped, leafy, varicose. *Seeds* few, solitary.

SPECIES.

1. *Pterocarpus Draco*.
Lin. spec. 1662. *syft.* 641. *Reich.* 3. 394. *mat. med.* 169. *Jacqu. amer.* 283. *t.* 183. *f.* 92. *piet.* *t.* 264. *f.* 91.
Draco arbor. *Loefl. it.* 266. 273. *n.* 147. 168.—
indica filiquosa, populi folio. *Comm. hort.* 1. 213. *t.* 109.
Moutouchi suberosa. *Aubl. guian.* 748. *t.* 299.
β. Lingoum. *Rumph. amb.* 2. 205. *t.* 70.
Leaves pinnate.
2. *Pterocarpus lunatus*.
Lin. syft. 641. *suppl.* 317.
Leaves pinnate, *spines* stipular, *fruits* crescent-shaped.
3. *Pterocarpus santalinus*.
Lin. syft. 642. *suppl.* 318.
Leaves ternate roundish retuse very smooth, *petals* crenate waved.]
4. *Pterocarpus Ecastaphyllum*.
Lin. syft. 642. *Reich.* 3. 394. *Berg. aff. stockh.* 1769. 116. *t.* 4. *Swartz obs.* 275. *Plum. spec.* 19. *ic.* 246. *f.* 2. (*Spartium*.)
Hedysarum Ecastaphyllum. *Lin. spec.* 1052. *amoen.* 5. 403. *Mill. dict. n.* 20.
Ecastaphyllum. *Brown. jam.* 299.
Leaves simple ovate acuminate silky underneath.
- [5. *Pterocarpus buxifolius*.
Lin. syft. 642. *Ait. kew.* 3. 7. *Swartz obs.* 276.
P. glabra. *Lin. syft.* 534. *Reich.* 3. 395. *Plum.* *ic.* 243. *t.* 246. *f.* 1.
Aspalathus Ebenus. *Lin. syft.* 647.
Amerimnum Ebenus. *Swartz prodr.* 104. *Diët. nostr.*
Leaves simple aggregate obovate veinless.
6. *Pterocarpus Rohrii*.
Vahl symb. 2. 79.
Apalatoa spicata. *Aubl. guian.* 382. *t.* 147. *Juss. gen.* 365.
Leaves pinnate, *stipules* none, *fruits* roundish.

DESCRIPTIONS, &c.

1. This is a tree thirty feet high; the wood white and solid, without any resin; the bark thick, outwardly of a ferruginous gray colour, inwardly sub-ferruginous and smoothish; being cut transversely when fresh, it betrays no marks of redness at first, but in a short time it is variegated with many blood-red dots, that collect into little globules or tears. The tree itself, cut in different parts, in a short time is full of the same bloody drops, shining and very clear; in the space of some minutes, especially if the sun shines hot, they harden, and then are collected, under the name of *Sanguis draconis* or Dragon's blood. The bark wood and leaves have an astringent taste. The long branches are adorned their whole length with alternate shining pinnate leaves, on a rib seven inches long, grooved above; they have five leaflets on each side with an odd one; these are lanceolate-oblong, bluntish, quite entire, veined, bright green above, pale green beneath, alternate, the outer ones an inch and half long, the middle ones two inches; on round short subvillose petioles. The bark of the trunk and branches of the root, cut into pieces, is every where used by the inhabitants for cleaning their teeth. The resin was formerly sent from Carthage into Spain, but since it has fallen into disuse in Europe for stopping blood, &c. the gathering of it is neglected.

* Jacquin.

Native of the West Indies; also of the East Indies, unless that be a different species.

2. This is a stiffish shrub, with strong recurved stipular spines in pairs. Leaves inserted between the spines, alternate, unequally pinnate; leaflets from five to seven, alternate, subsessile, oblong, blunt. Panicle terminating, pubescent, ferruginous, composed of peduncles in a sort of spike, directed one way, and hence toothed by the falling of the flowers all on one side. Spikes bent down and curved in, as in the *Asperifolia*. Corolla white: standard reflex, emarginate: wings oblong, oblique, with the tooth reversed. Legume compressed, reniform or lunate, with the tip almost touching the base, valveless, without any leafy keel. Seed kidney-shaped, compressed, very large, being the size of the whole legume.

Native of South America, where it was found by Dalberg.

3. This is a very lofty tree, with the bark of the Alder, and alternate branches. Leaves alternate, petioled, ternate seldom pinnate, with four or five leaflets, which are alternate, petioled, the upper ones in the same pinna larger, ovate orbiculate or oblong, quite entire, emarginate or retuse, very smooth above, hoary underneath. Stipules none. Racemes axillary, simple or branched, erect. Bractes none. Calyx brown. Standard of the corolla obcordate, erect, with the sides bent back, toothletted, curled and waved, yellow with red veins: wings spreading, toothletted and waved at the edge, yellow: keel oblong, a little inflated, curled at the tip. Filaments yellow: anthers white. Germ hirsute: style curved. Legume pedicelled, smooth, keeled along the lower edge: keel membranaceous, somewhat waved, varicose with veins under the epidermis, not opening. Seed single, orbicular, compressed, scarcely emarginate. It varies in the form of the leaves.

This is the true *Santalum rubrum*, which Koenig first detected in the East Indies. The wood is dark red with black veins, heavy, close, capable of a good polish, and sinking in water; it stains a beautiful red when moistened with water. The sap yields one sort of *Sanguis draconis*. Many of the red Indian woods transude a blood-red juice through the clefts of the bark, which hardens into a red resin, not differing from *Sanguinis draconis*; which therefore is collected from several trees, and this among others. See *Calamus*, *Dalbergia*, *Dracena*.

This drug however is chiefly obtained from the fruit of *Calamus Rotang*, exposed to the steam of boiling water; or by boiling it, inspissating the strained decoction, and drying it in the leaves of some reed. The best kind breaks smooth, is of a dark red colour, and when powdered changes to crimson; it readily melts and inflames: it totally dissolves in pure spirit, and is soluble likewise in expressed oils, but not in water. It has no smell, but discovers some warmth and pungency to the taste. It has been employed in hæmorrhages and alvine fluxes, but is now rarely used internally.

4. This is a shrub or a small tree, with a branched even stem, and spreading even branches; branchlets flexuose, round, pubescent, villose. Leaves petioled, alternate, spreading in a double row, entire, nerved, pubescent. Petioles short, round, thick, pubescent. Racemes scarcely longer than the petioles, axillary, almost simple, before flowering time convoluted: flowers numerous, directed one way, on very short peduncles, white. Calyx ferruginous and silky on the outside; the two upper teeth approximating; the three lower equal and acute. Standard of the corolla roundish, entire, somewhat compressed, covering the wings, veined: wings sickle-shaped, contiguous to the keel, which is ovate, concave, bifid at the base, emarginate at the tip. Filaments in two bodies, five in each, distinct at top: anthers minute, roundish. Germ elongated, round: style curved in, ascending, the length of the keel. Legume suborbicular, compressed like a leaf, opening; containing one compressed seed.

Native of the West Indies. Browne says, that it is

* Linn. suppl.

* Woodville.

* Swartz.

not uncommon in the low lands about Kingston, growing chiefly in swampy places, and running generally to the length of seven or eight feet, in an oblique direction from the root. When the plant is young, the more tender leaves are beset with down; but this falls off as they grow more hardy, and in time they appear quite smooth.—This species was cultivated by Mr. Miller before 1733. Houstoun sent it from Carthage.

5. See the description of this under *Amerimnum Ebenus*, to which genus Swartz referred it, being very nearly allied to *Amerimnon* of Browne in the flower and fruit. It has something in common with several plants of this class.

Native of the West Indies. Cultivated in 1739 by Mr. Miller. It flowers in July and August¹.

6. This is a tree, with smooth round branches, covered with a dusky ash-coloured bark. Leaves alternate: leaflets three or four pairs, gradually larger outwards, alternate, ovate-oblong, acuminate, quite entire, smooth, shining, beautifully netted on both sides with very numerous minute veins. Universal petioles often a span long, flexuose, grooved above, slightly striated beneath: partial petioles two lines long, wrinkled underneath at the insertion of the leaf. Racemes axillary, shorter by half than the leaf, many-flowered: pedicels scattered, filiform, one-flowered, with two bristle-shaped bractes in the middle. Flowers nodding. Legume an inch and half in length, smooth, veined in the middle, containing only one seed.—Found in South America by von Rohr*.

PTEROCEPHALUS. See *Scabiosa*.

PTEROCOCCUS. See *Calligonum*.

PTERONIA. (From πτερον, a wing.)

Lin. gen. n. 937. Reich. n. 1017. Schreb. n. 1265. Gertn. t. 167. Juss. 174. Pterophorus. Vaill. act. gall. 1719.

Class. 19. 1. Syngenesia Polygamia Æqualis.

Nat. order of *Compositæ Discoideæ*. *Cinarocephalæ*, Juss.

GENERIC CHARACTER.

CAL. common imbricate: scales lanceolate, keeled, acuminate.

COR. compound uniform: corollets hermaphrodite, tubular, numerous, equal. Proper one-petalled, funnel-form: border five-cleft, acute.

STAM. Filaments five, capillary, very short. Anther cylindrical, tubular.

PIST. Germ oblong. Style filiform, the length of the stamens. Stigma bifid.

PER. none. Calyx unchanged.

SEEDS solitary, oblong, compressed. Down sessile, subplumose, with subpilose rays.

REC. chaffy, flattish: chaffs many-parted into bristles shorter than the seeds.

ESSENTIAL CHARACTER.

Recept. with many-parted bristles. Down subplumose. Cal. imbricate.

SPECIES.

1. *Pteronia camphorata*. Aromatic *Pteronia*.

Lin. spec. 1176. Juss. 737. Reich. 3. 721. mant. 464. amoen. 6. afr. 48. Gertn. fruct. 2. 408.

Pterophorus camphoratae foliis ad margines pilosis. Vaill. act. 375.

Conyza aromatica, &c. Pluk. mant. t. 345. f. 56. 2. Leaves scattered ciliate at the base.

2. *Pteronia oppositifolia*. Forked *Pteronia*.

Lin. Juss. 737. Reich. 3. 721. Gertn. fruct. 2. 408.

Cyanus centauroides frutescens, lavandulae folio. Breyn. prodr. 3. 28. t. 17. f. 3. cent. fasc. 21.

Leaves opposite, branches dichotomous divaricating.

3. *Pteronia stricta*. Cluster-flowered *Pteronia*.

Ait. kew. 3. 162.

Leaves scattered and in bundles filiform subciliate at the base, calycine leaflets entire, hollows of the receptacle many-parted-fetaceous.

4. *Pteronia flexicaulis*.

Lin. Juss. 737. suppl. 355.

Leaves filiform smooth, calyxes commonly four-cornered, branches short rigid.

¹ Hort. kew.

* Vahl.

5. *Pteronia retorta*.

Lin. Juss. 737. suppl. 356.

Leaves ovate reflex smooth ciliate at the edge and rugged, stem erect, calycine scales entire.

6. *Pteronia hirsuta*. Hairy *Pteronia*.

Lin. Juss. 737. suppl. 356.

Leaves lanceolate spreading hairy, stem procumbent, calycine scales entire.

7. *Pteronia glabrata*. Smooth *Pteronia*.

Lin. Juss. 737. suppl. 356.

Leaves lanceolate smooth, calycine scales ovate membranaceous.

8. *Pteronia inflexa*.

Lin. Juss. 738. suppl. 356.

Leaves ovate hairy, calycine scales subarticulate membranaceous, peduncle bent in.

9. *Pteronia scariosa*.

Lin. Juss. 738. suppl. 356.

Branches spiny, calyxes scariosa, leaves oval.

10. *Pteronia glomerata*.

Lin. Juss. 738. suppl. 356.

Leaves ovate-three-sided smooth, stem four-cornered.

11. *Pteronia cinerea*.

Lin. Juss. 738. suppl. 356.

Leaves oblong tomentose, calycine scales ovate membranaceous.

12. *Pteronia villosa*.

Lin. Juss. 738. suppl. 356.

Leaves lanceolate blunt hairy, calycine scales ovate membranaceous.

13. *Pteronia membranacea*.

Lin. Juss. 738. suppl. 357.

Leaves ovate mealy-tomentose, calycine scales awl-shaped scariosa at the edge.

14. *Pteronia spinosa*.

Lin. Juss. 738. suppl. 357.

Leaves awl-shaped spinescent pungent.

15. *Pteronia Cephalotes*.

Lin. Juss. 738. suppl. 358.

Leaves awl-shaped folded together keeled serrulate, calyxes oblong terminating very minutely lacerated.

16. *Pteronia pallens*.

Lin. Juss. 738. suppl. 357.

Leaves filiform smooth, calyxes round ovate, stem and branches curved in round.

17. *Pteronia minuta*.

Lin. Juss. 738. suppl. 357.

Leaves linear wandering, flowers axillary.

18. *Pteronia fasciculata*.

Lin. Juss. 738. suppl. 357.

Flowers in bundles each of one floret only.

DESCRIPTIONS, &c.

1. This is a shrub with rugged branches, three feet high. Leaves linear, very narrow, acute, flat, spreading. Flowers terminating, solitary, yellow, larger than those of *Santolina*^m. Receptacle flat, with deep chaffy cells, torn and bristly at the top, and stiffish. Seeds ovate-oblong, compressed like a lens, smooth, of a sort of chestnut colour or ferruginous. Down twice as long as the seed, lemon-coloured, caducous: rays filiform-fetaceous, with longish cilia on both sides or subplumose, connected at the base into a ringⁿ.—Native of the Cape of Good Hope.

2. This is a small naked shrub, a palm in height; with opposite, dichotomous branches. Leaves small, sub lanceolate, hoary or subtomentose. Flowers terminating, sessile, yellow. Corollets deeply divided. Stigmas two, longish. Seeds hirsute. Down fetaceous, hispid. Receptacle chaffy. Dav. Royen.

It agrees with the genus of *Stabelina*, but the down is not branched, nor the anthers tailed, nor the leaves alternate^o.

The flower is one of the largest of this order and genus. Calyx cylindrical, imbricate with cartilaginous even scales, subpubescent at the tip, membranaceous-attenuated at the edge. Receptacle honey-combed: cells with very short margins, lacerate-fetaceous, inclosing a flattened teat. Seeds oblong, flattened rhomb-shaped, hirsute, silky-white. Down fetaceous, rigid,

^m Linn. mant. & amoen.

ⁿ Gertner.

^o Linn. Juss.

yellowish; with very numerous, subplumose rays, twice the length of the seed, fastened closely to the top of it, but not uniting into a ring.

Pteronia therefore has much affinity with the *Capitata*, and accordingly is placed along with them by Jussieu; but on account of its opposite or almost acroscleaves, and the receptacle not manifestly chaffy in all, it may keep its place among the *Discoideæ*.*

3. This, with the two preceding, was introduced from the Cape of Good Hope by Mr. Francis Masson in 1774†.

4 to 8. Found at the Cape of Good Hope by Thunberg.

9. Stem frutescent, stiff: with the barren branchlets ending in a spine. Leaves elliptic, sessile, small, even, quite entire, smooth, remote. Calyxes terminating, sessile, cylindrical, imbricate, even, mucronate, scarious at the tip, with a broadish, hyaline, membrane. Disk yellow, convex.—Native of the Cape of Good Hope.

10, 11, 12, 13. Found at the Cape of Good Hope by Thunberg.

14. Stem shrubby, woody, branched, round. Leaves alternate, sessile, distant, slightly striated, spreading very much, rigid, mucronate, permanent. Flowers four at most, (peduncled, Retz.) sessile in the uppermost axils of the leaves, especially at the ends of the branches, imbricate, cylindrical; with blunt scales.—Native of the Cape of Good Hope.

15. This is a smooth and even proliferous shrub. Leaves remotely opposite, an inch long, ferrulate along the edge and keel. Flowers terminating, erect. Calyxes large, thick, imbricate: scales ovate, scarious, blunt, very finely lacerated and ciliate. Seeds obovate, biggish. Down simple, dense, fastigate. Receptacle naked; and therefore it is rather a *Chrysocoma*. Native of the Cape of Good Hope.

16. This is an unequal shrub, with whitish branches, like *Galenia*. Leaves opposite, linear, somewhat branched. Corymbs three-flowered, terminating, yellow.—Native of the Cape.

17. Stems a palm high, with the branches dichotomous above. Leaves alternate or opposite, every where subpubescent. Flowers from the forkings of the stem, subsessile, the size of *Lithospermum* seeds. Calyx even. Florets minute, few.—Native of the Cape.

18. Stem shrubby, dichotomous, with scales mucronate on each side on the branchlets. Leaves opposite, imbricate, erect, an inch long, lanceolate, slightly keeled, resinous. Bundles of flowers fastigate, yellow, terminating, sessile. Calyxes oblong, imbricate: leaflets lanceolate, acute.—Found by Thunberg at the Cape of Good Hope.

The habit of these plants is singular and peculiar; but some of the species having a naked receptacle, ought rather to be placed in the genus *Chrysocoma*: either therefore a new generic character should be constructed for *Pteronia*, or the natural genus torn asunder†.

PTEROPHORUS. See *Pteronia*.

PTEROSPERMADENDRON. See *Pentapetes* and *Pterospermum*.

PTEROSPERMUM. (*Wing-seeded*.)

Lin. gen. Schreb. n. 1124. *Pterospermadendron*.

Amm. in Act. Petrop. *Pentapetes*. Lin. zeyl. 250.

gen. n. 834. Reich. n. 899.

Class. 16. 5. Monadelphia Dodecandria.

GENERIC CHARACTER.

CAL. *Perianth* five-parted: leaflets coriaceous, oblong, reflex.

COR. *Petals* five, oblong, spreading.

STAM. *Filaments* fifteen, linear, united at the base into a tube. *Anthers* oblong, erect. *Ligules* five, longer, coloured, almost upright, the length of the corolla, each between every three stamens.

PIST. *Germ* roundish, pedicelled? *Style* cylindrical, the length of the stamens. *Stigma* thickish.

PER. *Capsule* pedicelled, woody, ovate, five-celled, the cells two-valved.

* Gartner.

† Hort. kew.

‡ Linn. suppl.

SEEDS several, oblong, compressed, with a membranaceous wing.

ESSENTIAL CHARACTER.

CAL. single, five-parted. COR. five-petaled. FILAM. fifteen, with five ligules, one between every three filaments. CAPS. five-celled, with the cells two-valved. SEEDS many, winged.

SPECIES.

1. *Pterospermum suberifolium*.

Pentapetes suberifolia. Lin. spec. 959. syst. 619. Reich. 3. 331. aman. 1. 407.

Pentapetes. Lin. zeyl. n. 250.

Pterospermadendrum suberis folio anguloso subtus incano, floribus albis. Amm. act. petrop. 8. 215. t. 14.

Leaves ovate repand.

2. *Pterospermum acerifolium*.

Pentapetes acerifolia. Lin. spec. 959. syst. 619.

Reich. 3. 331. aman. 1. 407.

Pterospermadendrum folio aceris, flore fructuque majore. Amm. act. petrop. 8. 216. t. 16, 17.

Leaves cordate repand.

DESCRIPTIONS, &c.

1. This is a tree, with alternate perennial thick hardish leaves, of the same substance with those of the *Ilex* or Holm Oak, irregular or ovate-oblong, narrower towards the base, acuminate, from the middle outwards repand, petioled, smooth. Flowers axillary, with the appearance of those of *Michelia*; allied to those of *Grewia*. Stamens fifteen conjoined, every third barren and longer.—Native of the East Indies.

2. Native of the East Indies.

PTEROTA. See *Fagara*.

PTHORA. See *Ranunculus*.

PUBETA. See *Duroia*.

PUCCOON. See *Sanguinaria*.

PUDDING-GRASS. See *Mentha Pulegium*.

PULCOLLI. See *Justicia*.

PULEGIUM. See *Mentha* and *Spermacoce*.

PULICARIA. See *Inula*.

PULLI-SCHOVADI. See *Ipomæa*.]

PULMONARIA. (So named from its being supposed to be a good remedy in disorders of the lungs (pulmones); or, according to others, from the spots on the leaves resembling those on some diseased lungs.)

Lin. gen. n. 184. Reich. n. 196. Schreb. n. 244.

Tournef. t. 55. Juss. 130. *Cerinthoides*. Boerb.

Class. 5. 1. Pentandria Monogynia.

Nat. order of *Asperifoliæ*. *Borraginæ*, Juss.

GENERIC CHARACTER.

CAL. *Perianth* one-leafed, five-toothed, prismatic-pentagonal, permanent.

COR. one-petalled, funnel-form: tube cylindrical, the length of the calyx: border half-five-cleft, blunt, from upright-spreading. Throat pervious.

STAM. *Filaments* five, in the throat, very short. *Anthers* erect, converging.

PIST. *Germ*s four. *Style* filiform, shorter than the calyx. *Stigma* blunt, emarginate.

PER. none. *Calyx* unchanged, fostering the seeds at bottom.

SEEDS four, roundish, blunt.

OBS. *Cerinthoides*, B. was distinguished by having the calyx shorter than the tube of the corolla.

ESSENTIAL CHARACTER.

CAL. prismatic-five-cornered. COR. funnel-form with an open throat.

SPECIES.

1. *Pulmonaria angustifolia*. Narrow-leaved Lungwort.

Lin. spec. 194. syst. 187. Reich. 1. 392. Willd.

768. hort. cliff. 44. fl. suec. n. 164. Wither. arr.

ed. 3. 228. Fl. dan. t. 483. Gunn. norv. n. 1115.

Hall. belv. n. 598. Pollich pal. n. 189. Roth.

germ. 1. 83. 2. 212: Hoffm. germ. 64. Gmel.

fib. 4. 73. Krock. fles. n. 279. Villars dauph. 2.

451. Allion. pedem. n. 175. Kniph. cent. 1. n. 70.

Berg. phyt. 17.

* Linn. zeyl.

- α. *Pulmonaria alpina angusto folio.* *Bocc. mus.* 110. t. 86.
P. angustifolia 2 Clusii. *Ger.* 662. 2. *emac.* 808. 2. —potius 3. *Raii hist.* 489.
P. angustif. *Park. parad.* 248. 3. t. 251. f. 2.
P. ang. cærulea. *Baub. pin.* 260. *Mor. hist.* f. 11. t. 29. f. 5.
P. 3. austriaca. *Clus. hist.* 2. 169. ic. *With the leaves not spotted.*
β. *Pulmonaria faccharata.* *Mill. dict. n.* 3.
P. 5. pannonica. *Clus. hist.* 2. 170. ic.
P. maxima foliis quasi saccharo incrustatis. *Pluk. alm.* 359. *With the leaves spotted.*
Leaves hirsute, stem-leaves oblong-lanceolate embracing, root-leaves elliptic.
2. *Pulmonaria officinalis.* *Common Lungwort.*
Lin. spec. 194. *syft.* 187. *Reich.* 1. 393. *Willd.* 768. *hort. cliff.* 44. *fl. suec. n.* 163. *mat. med.* 56. *Woodv. med. bot.* 2. 5. t. 212. *Huds. angl.* 81. *Wither. arr. ed.* 3. 228. *Smith, brit.* 217. *engl. bot. t.* 118. *Abbot, bedf.* 42. *Fl. dan. t.* 482. *Hall. helv. n.* 597. *Hoffm. germ.* 641. *Roth. germ.* 1. 83. 2. 212. *Scop. carn. n.* 194. *Krock. files. n.* 280. *Villars dauph.* 2. 452. *Allion. pedem. n.* 174. *Blackw. t.* 376. *Sabb. hort.* 2. t. 26. *Ludw. et. t.* 45. *Berg. phyt.* 15. *Plenck, ic.* 73. *Tillands, ic.* 62.
P. altera. *Matth.* 1040. *Camer. epit.* 784.
P. maculosa. *Lob. obs.* 317. 1. ic. 586. *Ger.* 662. 1. & 663. 4. *emac.* 808. 1. *Raii hist.* 488.
P. latifolia mac. *Park. parad.* 251. 1.
P. foliis Echii. *Ger. emac.* 808. *Raii syn.* 226.
P. italorum ad Buglossum accedens. *Baub. hist.* 3. 595.
P. vulgaris maculoso folio. *Clus. hist.* 2. 169. 1.
Symphytum maculosum. *Dod. pempt.* 135. 1. — f. *Pulmonaria latifolia.* *Baub. pin.* 259. *Mor. hist.* f. 11. t. 29. f. 8.
β. *P. vulgaris latifolia flore albo.* *Baub. pin.* 259. *White-flowered common Lungwort.*
κ. *P. non maculoso folio.* *Clus. hist.* 2. 169. 2. *Baub. pin.* 260. *Knorr. del. rom.* 2. t. P. 2. *Kniph. cent.* 1. n. 72.
Leaves hirsute, stem-leaves ovate-oblong, root-leaves subcordate.
[3. *Pulmonaria suffruticosa.* *Shrubby Lungwort.*
Lin. spec. 1667. *syft.* 187. *Reich.* 1. 393. *Willd.* 769.
Lithospermum angustifolium umbellatum. *Baub. pin.* 258. 517. *Pluk. phyt. t.* 42. f. 7. *Bocc. sic.* 77. *Leaves linear rugged, calyxes awl-shaped five-parted.*
4. *Pulmonaria paniculata.* *Panicked Lungwort.*
Ait. kew. 1. 181. *Willd. spec.* 769.
Calyxes abbreviated five-parted hispid, leaves ovate-oblong acuminate somewhat hairy.]
5. *Pulmonaria virginica.* *Virginian Lungwort.*
Lin. spec. 194. *syft.* 187. *Reich.* 1. 393. *Willd.* 769. *Ait. kew.* 1. 182. *Mill. fig. t.* 212. *Gron. virg.* 20. *Trew. Ebret.* 11. t. 12. *Curt. magaz.* 160.
Symphytum f. Pulmonaria non maculata, fol. glabris acuminatis, flore patulo cæruleo. *Pluk. phyt. t.* 207. f. 6. *Mor. hist.* 3. 444. n. 6.
Calyxes abbreviated very smooth, leaves lanceolate bluntish.
[6. *Pulmonaria sibirica.* *Siberian Lungwort.*
Lin. spec. 194. *syft.* 187. *Reich.* 1. 394. *Willd.* 770.
Anchusa fol. radicalibus cordatis, caulinis ovatis. *Gmel. fib.* 4. 75. n. 15. t. 39.
Calyxes abbreviated, root-leaves cordate.
7. *Pulmonaria maritima.* *Sea Lungwort.*
Lin. spec. 195. *syft.* 187. *Reich.* 1. 394. *Willd.* 770. *Huds. angl.* 81. *Wither. arr. ed.* 3. 229. *Smith, brit.* 218. *engl. bot. t.* 368. *Curt. lond.* 6. t. 18. *Dicks. ficc.* 1. 3. *Lightf. scot.* 134. t. 7. *Fl. dan. t.* 25. *Gunn. norv. n.* 17. *Hoffm. germ.* 64. *Krock. files. n.* 281.
Cerithe fol. ovatis petiolatis. *Lin. hort. cliff.* 48.
C. marit. procumbens. *Dill. elth.* 75. t. 65. f. 75.
Cynoglossum proc. glaucophyllum marit. *Pluk. phyt. t.* 172. f. 3.

C. perenne marit. proc. *Mor. hist.* 3. 450. f. 11. t. 28. f. 12.
Echium marinum. *Raii hist.* 500. *syn.* 228. *Petiv. brit. t.* 29. f. 3. *Sibbald.* 12. 4.
Buglossum dulce ex insulis lancastræ. *Park. theat.* 767. t. 766. f. 5.
Calyx abbreviated, leaves ovate glaucous, stem branched procumbent.]

DESCRIPTIONS, &c.

1. This has leaves much narrower than those of the common sort, (*officinalis*, n. 2.) and covered with soft hairs, not spotted. The stalks rise a foot high, and have narrow leaves on them, of the same shape with those below, but smaller, and almost embracing. The flowers are produced in bunches on the top of the stalks, like the others: the corollas are red before they expand, but when they are fully blown are of a most beautiful blue colour. [It varies with a white flower. Linneus remarks, that it is scarcely different from the next species, except in the narrowness of the leaves. Haller says it differs from the following in having a higher stalk, attaining to three feet; narrower leaves, the lower elliptic and blunt, the upper short, heart-shaped, sessile, decurrent into the long petiole, four or five inches in length, and one inch in breadth. Flowers in bundles at the top, with green stipules between them. Calyx hirsute, five-toothed, very wide during the maturity of the plant, not divided to the middle.]

Native of Sweden, Denmark, Germany, Switzerland, Austria, Hungary, France and Italy. It is said by Johnson, upon Gerard, to have been found by Mr. Goodyer in a wood by Holbury-house, in the New Forest, Hampshire. Mr. Robson informed Dr. Withering, that he had a specimen sent him in the year 1783, by the late Mr. Waring, of Leescrood in Flintshire, who found it growing wild on the ruins of the monastery Maes Glas. But Dr. Smith thinks that the leaf sent by Robson out of Wales, belonged rather to *Symphytum tuberosum*. *Pulmonaria angustifolia* therefore must be considered at present as a doubtful native of Britain.]

β. Leaves large, spear-shaped, rough: foot-stalks of the lower leaves broad. Stalks a foot high, with spear-shaped, half-embracing leaves. The leaves are greatly spotted with white, appearing as if they were incrustated with sugar-candy. Flowers in large bunches on the top of the stalk. Tube of the corolla longer than the calyx, and the brims spreading more than those of the common sort. The colour is a bright blue; and they appear in april and may.

Native of the mountains of Switzerland, [Austria and Hungary. It was cultivated by Mr. Miller in 1731.]

2. Root perennial, fibrous. Lower leaves rough, about six inches long, and two inches and a half broad, of a dark green on their upper side, marked with many broad whitish spots, but pale and unspotted on their under side. Stalks almost a foot high, having several smaller leaves on them standing alternately. The flowers are produced in small bunches at the top of the stalks: calyx tubulous, hairy, as long as the tube of the corolla; brims of the petal spread open, and shaped like a cup, red purple and blue in the same bunch.

[Leaves hairy on both sides: root-leaves petioled, ovate or subcordate; stem-leaves ovate, sessile, embracing. (Lower leaves much lengthened out at the base, of a light green; the upper ones only, which are ovate and rather broad, being speckled with white on the upper side: this however is a variable circumstance.) Stem simple, erect, angular and rough. Racemes in pairs, short, terminating. Calyx rough-haired. Corolla blue, before it expands red: varying as the preceding with white flowers.]

Native of Europe in woods and shady places, flowering from march to may. I found it at La Batie near Geneva in flower, on the 15th of march, 1779. In Britain, though common in every garden, it is unfrequent in a wild state. Mr. Abbot found it between

Thurleigh and Milton-Ernys in Bedfordshire; Mr. E. Robson, in Cliff-wood, six miles west of Darlington; and if this be Goodyer's plant, it is an inhabitant of the New Forest. Dr. Milne found it in several woods of Kent, and between Croydon and Godstone in Surry.

The leaves, which are the part recommended in medicine, have no peculiar smell, but in their recent state manifest a slightly astringent and mucilaginous taste; hence they are supposed to be demulcent and pectoral, and have been used in hemoptoes, tickling coughs, and catarrhal defluxions upon the lungs.

The name *Pulmonaria* seems however to have arisen rather from the speckled appearance of these leaves, resembling that of the lungs, than from any intrinsic quality which experience has discovered to be useful in pulmonary complaints*.

Most plants in this natural class of *Asperifoliae* are far more mucilaginous than this; which according to Linneus, when burnt, affords frequently one seventh of its weight in ashes.

3. Stems woody at bottom, perennial with the leaves. Flowering-stems quite simple, somewhat hairy. Leaves almost filiform, scattered, hispid, long. Flowers in bundles, terminating, with the calyxes shorter by half than the corolla.—Found by Seguier and Arduini in the mountains of Italy†.

4. Native of Hudson's Bay. Introduced in 1778 by Daniel Charles Solander, L.L.D. It flowers in may and june; and varies from blue to white flowers‡.]

5. Root perennial, thick, fleshy, sending out many small fibres. Stalks a foot and half high, dividing at the top into several short branches. Leaves near the root four or five inches long, two inches and a half broad, smooth, of a light green, on short foot-stalks: those upon the stem diminish in their size upwards, but are of the same shape and sessile. Every small branch at the top of the stalk is terminated by a cluster of flowers, each standing upon a separate short peduncle: their calyxes are very short, and are cut into five segments almost to the bottom; the tube of the flower is long, and at the top spreads open in shape of a funnel, the brim being entire, but appears five-cornered from the folding of the petal. The most common colour of these flowers is blue, but there are some purple, others red and some white: they appear in april, and if they have a shady situation, will continue in beauty great part of may; and sometimes are succeeded by seeds in England. The leaves and stalks entirely decay in august, and the roots remain naked till the following spring.

It grows upon mountains in most parts of North America. The seeds were sent many years since by Mr. Banister from Virginia, and some of the plants were raised in the Bishop of London's garden at Fulham. [According to the Kew catalogue it was cultivated in 1699 in the botanic garden at Chelsea.

Mr. Curtis remarks, that the leaves are glaucous; that the flowers before they expand are of a reddish purple colour, but when fully blown become of a light bright blue; and that it is said to vary with white and flesh-coloured flowers. In favourable seasons, the flower-garden owes much of its gaiety to this elegant plant, at a time when ornament is most desirable.

6. Root perennial. Leaves smooth, glaucous. Stem-leaves ovate. Corymbs branched, nodding. It is a middle species between the preceding and following.—Native of Siberia‡.

7. Root perennial, (or biennial) woody, blackish. Stems numerous, procumbent, a foot or more in length, nearly round, leafy, much branched above. Leaves numerous, scattered, sessile, pointed, narrowed at the base, perfectly entire, ribbed on the under side, waved, the point most commonly bent back, the upper surface rugged with fine prominent points. Racemes leafy, terminating. Flowers on longish, simple, round peduncles, a little thickened next the flowers, and somewhat warted, one or two together, sometimes axillary, and generally clustered about the extremities

of the branches. Calyx glaucous, shorter than the tube, divided almost to the base, where it is a little prismatic, into five ovate acute segments. Corolla with a short thick tube, and a small border in five obtuse segments, red at first, then blue; orifice a little toothed, but pervious. Stamens inserted about the middle of the tube, and projecting beyond the orifice. Stigma capitate. The whole plant turns black in drying, unless it be first immersed in fresh water for twenty-four hours to extract the sea salt, according to Dillenius^b.

Native of Norway, Iceland, Britain. It is a great ornament of sandy sea-coasts, in Scotland and the north of England; flowering in july. The roots strike deeply into the sand, or among the pebbles. It is mentioned by Ray as found by Mr. Lawson at Scrammerston Mill, between the salt-pans and Berwick; also near Whitehaven in Cumberland, and against Bigger in the Isle of Walney in Lancashire; by Mr. Lhwyd near Trefarthen in Anglesea, and by the river Uyfi in the way from Dinardindle to Clynog in Caernarvonshire; by Dr. Sibbald in several places along the south side of the Firth of Forth; by Mr. Lightfoot on the coast of Fife, near St. Andrew's, &c. in the Isle of Bute, in Arran at Loch-Ransa, and at Lamlaish, at Icolumb-kill, and at Glen-Elg, in Invernessshire, &c.; by Mr. Dickson at the ferry on the sea shore near Inverness; near Maryport in Cumberland by Mr. Harriman; about Aberdeen by Mr. Browne; on the west shore of the Isle of Walney by Mr. Atkinson.

Dr. Blair relates, in his Miscellaneous Observations, p. 55. that he was credibly informed by a gentleman, that in the late famine, one of his farmers being straitened for bread, taking this plant for Colewort, to which it is not unlike in colour, ordered to boil a dish of it, and gave it to his wife and children, with the servants in his family; all of them became very sick, some vomited excessively, others slept two or three days without intermission, and one or two of them died.—Had Blair related this of his own knowledge, I should have been inclined to believe it; but the gentleman might be mistaken in the plant; and the *Asperifoliae*, as far as we know, betray no symptoms of a narcotic quality.

The four last species are very nearly allied; having an upright stem, the tube of the corolla longer than the border, the root-leaves cordate, and the stem very much branched; whoever regards them as varieties, will scarcely be mistaken^c.]

PROPAGATION AND CULTURE.

These plants having perennial roots, may be cultivated by parting their roots, which may be done either in the spring, or autumn; but if the ground be moist into which they are planted, it is better to be done in the spring, otherwise the autumn is preferable, that the plants may be well rooted before the dry weather comes on in the spring, which will cause them to flower much stronger.

The soil in which they are planted should not be rich, but rather a fresh light sandy ground, in which they will thrive much better than in a richer soil, in which they are very subject to rot in the winter. They should have a shady situation, and thrive best in a moist soil, for in a hot dry soil they burn and decay in summer, unless they are duly watered in dry weather. All the early sorts are better transplanted, and parted in autumn, that they may be well rooted to flower strong the following spring. The fifth sort should not have a soil too moist, for as the roots run deep in the ground, they will be in danger of rotting by much wet.

They may also be propagated by seeds sown in autumn, soon after they are ripe, where they are to remain, for the seedling plants do not succeed so well when they are transplanted. The common sorts will come up from scattered seeds.

[5. Mr. Curtis remarks that *P. virginica* requires a pure air, and a situation moderately sheltered, as the cold easterly winds in april, when it is in flower, are apt to deface it.

* Woodville.

† Linn. spec.

‡ Hort. kew.

§ Linn. spec.

^b Curtis and Smith.

^c Linn. spec.

7. Gather the seeds as they ripen, for by staying for the last-blown flowers, the seeds from the first will have fallen out: sow them either early in september or the ensuing february, in a pot of earth composed of three parts sea sand, or common sand, and one part rotten cow-dung, finely sifted; in about six weeks or two months from the february sowing these seeds will vegetate, and in the autumn the plants will be fit to transplant into separate pots, and most of them will flower the ensuing year. Snails and slugs are uncommonly fond of this plant; if therefore it be planted in the open border, it will in all probability be destroyed. Set them with the greenhouse plants, and treat them as such. Water them over the leaves as little as may be, for the water is apt to settle on them in drops, and to leave marks which greatly disfigure them^d.

PULMONARIA. See *Hieracium* and *Lichen pulmonarius*.

PULSATILLA. See *Anemone* and *Atragene*.

PULTENÆA. (So named by Dr. J. E. Smith, in honour of my much esteemed friend William Pulteney, M.D. of Blandford in Dorsetshire, whose writings have so essentially contributed to the introduction and establishment of Linnean botany in this country.)

Class. 10. 1. Decandria Monogynia.

GENERIC CHARACTER.

CAL. five-toothed, with an appendage on each side.

COR. papilionaceous; the wings shorter than the standard.

LEGUME of one cell, with two seeds.

SPECIES.

1. *Pultenæa stipularis*.

Smith, bot. N. Holl. p. 35. t. 12. Curt. magaz. 475. With linear mucronated subciliated leaves, and solitary two-nerved lacerated stipules.

2. *Pultenæa paleacea*.

Willdenow, sp. pl. 506. With linear mucronated smooth leaves, terminal head, and oblong-acuminate toothed bractes longer than the flower.

3. *Pultenæa linophylla*.

Willdenow, sp. pl. 506. Schrad. et Wendl. fert. hannov. p. 28. t. 18. (bracteata.) With linear obtuse mucronated strigose leaves, few-flowered terminal heads, and scariose bifid bractes much shorter than the calyx.

4. *Pultenæa juncea*.

Willdenow, sp. pl. 506.—*Sophora juncea*. Schrad. & Wendl. fert. hannov. p. 9. t. 3. With filiform leaves with cartilaginous-trifid tips, terminal raceme, unappendiculated cups, and extipulated stem.

5. *Pultenæa villosa*.

Willdenow, sp. pl. 507. With oblong hairy leaves, solitary axillary flowers, and villose stem.

6. *Pultenæa daphnoides*.

Willdenow, sp. pl. 507. With smooth obovate mucronated leaves, and terminal headed flowers.

DESCRIPTIONS, &c.

1. The stem of this species is shrubby, variously branched, and round; the wood hard and whitish; bark brown, covered more or less with withered bristly stipules: branches long and straight, pointing upwards, clothed with leaves, and terminated by round heads of handsome yellow inodorous flowers. The leaves surround the branches in great numbers without any regular order, and are linear, very narrow, tipped with a little sharp point, entire, smooth, without any projecting vein or nerve, most frequently ciliated with fine stiff hairs. Footstalks very short, pale and smooth, erect at night, by which the leaves become closely pressed to the branch, and imbricated one over the other, though in the day time, and especially in bright sunshine, they spread horizontally. The very remarkable stipules stand solitary just above the insertion of each footstalk, erect and close pressed to the branch, the bark of which they by that means completely conceal; they are brown, of a chaffy texture, lanceolate, cloven, and sometimes lacinated, furnished with two

parallel nerves. The flowers are about twenty or more, in a round head, among spreading leaves, and the branch they at first terminate is at length sometimes protruded a little beyond them; by which they become verticillate; each stands on a short, round, smooth flower-stalk, with bractes like the leaves, but smaller, and likewise accompanied with stipules. Calyx slightly campanulate, red, divided half way down into five acute, spreading, ciliated teeth, of which the two uppermost are the shortest and broadest; between them and the next pair stand the two appendages which make a material part of the generic character; and which agree exactly in appearance with the proper teeth, except in being somewhat narrower, and inserted, one on each side, about half way down the entire part of the calyx, to which their lower end is closely applied, so that they make the calyx appear to have seven teeth of equal length. Corolla of five petals. Standard with a firm horizontal claw, its limb erect, round, slightly notched, the two sides generally folded together, deep yellow, with a red semicircular line near the base. Wings nearly linear, obtuse, concave, with a large tooth at the base, deep yellow, horizontal, much shorter than the standard. Keel of two pale yellow obovate concave petals as long as the wings, strongly connected by their lower edge, and with a tooth near their base on the upper. Stamens all nearly equal, somewhat shorter than the keel, a little declining; filaments inserted into the receptacle, cylindrical, tapering to a point: anthers small and roundish: germ small, green, oval, smooth, tipped with a tuft of white hair, and containing the rudiments of two or three seeds: style longer than the stamens, subulate, recurved, smooth: stigma acute. Pod scarcely longer than the calyx, roundish, pointed, turgid, brown, hairy at the extremity, of one cell, containing two seeds on short footstalks, inserted into the upper edge of each valve, near the base. The plant appears to abound in mucilage, especially the leaves.

Native of New Holland. First flowered in England in april 1794. Described by Dr. Smith.

2. Native of New Holland.

3. A shrub of six feet high; upright, stem branching, brown, branches alternate, subdividing into smaller, covered with a silky pubescence. Leaves scattered, thickish, green, paler beneath. Stipules two, opposite, upright, sharp, brown-ferruginous. Head consisting of four or six flowers, upright, sessile, involucreted by bractes, which are imbricate, ovate, bifid, scarious, and reddish-brown. Flowers pale orange: standard marked in the middle by a semilunar radiated purple spot: keel of a purplish violet-colour.—Native of New Holland.

4. This, which is described and figured by Schrader as a species of *Sophora*, is a small upright smooth shrub of about two or three feet high, with simple branches growing at pretty acute angles or upright; the leaves have the appearance of a kind of long green spines, but when the plant is young there are some footstalked oval-lanceolate leaves without stipules. Flowers yellow: standard marked with a semilunar radiated red spot.

Native of New Holland. Bears the open air very well in summer, but should be housed in winter.

5. Native of New Holland.

6. A shrub of about three feet high, with an upright, silky, branching stem; leaves alternate and silky; heads consisting of six or eight flowers, with silky involucre, and hollow hairy stipule.—Native of New Holland.

PUMILEA. See *Turnera*.

PUMILIO. See *Cucubalus*.

PUMPELMUS. See *Citrus*.]

PUMPKIN OR PUMPKIN. See *Cucurbita*.

PUNICA (of Pliny. So named from its place of growth; Linn. &c. or from the punicean or red appearance of its flowers and fruit. Miller.)

Lin. gen. n. 618. Reich. n. 673. Schreb. n. 847.

Tournef. t. 407. Juss. 325. Gertn. t. 38.

Class. 12. 1. Icosandria Monogynia.

Nat. order of Pomaceæ. Myrti, Juss.

10 M

CAL.

^d Curtis, lond.

GENERIC CHARACTER.

- CAL. *Perianth* one-leaved, bell-shaped, five-cleft, acute, coloured, permanent.
- COR. *Petals* five, roundish, from upright spreading, inserted into the calyx.
- STAM. *Filaments* numerous, capillary, shorter than the calyx, and inserted into it. *Anthers* somewhat oblong.
- PIST. *Germ* inferior. *Style* simple, the length of the stamens. *Stigma* headed.
- PER. *Pome* subglobular, large, crowned with the calyx, divided into two chambers by a transverse partition, the upper having about nine, the lower about three cells: *partitions* membranaceous.
- SEEDS very many, angular, succulent. *Receptacle* fleshy, scrobicular, dividing each cell of the pericarp two ways.

OBS. *Botanists paint and describe five pistils, I have always met with no more than one.*

ESSENTIAL CHARACTER.

Cal. five-cleft, superior. *Petals* five. *Pome* many-celled, many-seeded.

SPECIES.

1. *Punica Granatum*. *Common Pomegranate Tree*.
Lin. spec. 676. *syft.* 462. *Reich.* 2. 480. *Willd.* 981. *hort. cliff.* 134. *ups.* 122. *mat. med.* 123. *Woodv. med. bot.* 158. t. 58. *Gärtn. fruct.* 1. 183. *Hall. herb. n.* 1098. *Scop. carn. n.* 585. *Villars dauph.* 3. 530. *Allion. pedem. n.* 1804. *Gron. orient.* 144. *Gmel. it.* 3. 33. *Ludw. est.* t. 13. *Blackw. t.* 97. & 145. *Kniph. cent.* 2. n. 64. *Mill. illustr. Mill. fig.* 213. *Plenck, ic.* 376. *Regnault bot. Ebret, dec. t.* 71. 72.
Punica quæ malum granatum fert. *Cæsalp.*
P. sylvestris. *Cord. hist.* 184. *Tournef. inst.* 636.
P. malus. *Dalech. hist.* 303.
Malus punica. *Camer. epit.* 130. 131.
Malus punica sylvestris & fativa. *Bauh. pin.* 438. *Raii hist.* 1462. 1. 2.
Malus granata f. punica. *Ger.* 1262. *emac.* 1450. f. 1. 2. *Park. parad.* 428. t. 429. f. 4.
 β. *Floribus plenis.* *Double-flowered Pomegranate Tree*.
Malus punica sylvestris major, f. Balauftium majus,
—& minus. *Park. parad.* 430. *Raii hist.* 1463. 3. 4.
Balauftia flore pleno majore & minore. *Bauh. pin.* 438. *Knorr. del. 1. t.* 5.
Balauftia. *Ger.* 1262. *emac.* 1450.
Leaves lanceolate, stem arboreous.
2. *Punica nana.* *Dwarf Pomegranate Tree*.
Lin. spec. 676. *syft.* 462. *Reich.* 2. 481. *Willd.* 981. *Du Roi barbecc.* 2. 204. *Brown. jam.* 239.
P. americana nana f. humillima. *Tournef. inst.* 636. *Dubam. arb. 9.* *Aubl. guian.* 513.
Leaves linear, stem shrubby.

DESCRIPTIONS, &c.

1. This tree rises with a woody stem eighteen or twenty feet high, sending out branches the whole length, which likewise put out many slender twigs, rendering it very thick and bushy. Some of these are armed with sharp thorns. The leaves are narrow spear-shaped; about three inches long, and half an inch broad in the middle, drawing to a point at each end; they are of a light lucid green, and stand opposite. The flowers come out at the ends of the branches, singly or three and four together; frequently one of the largest terminates the branch, and immediately under that are two or three smaller buds, which continue a succession of flowers for some months. The calyx is very thick and fleshy, and of a fine red colour. The petals are scarlet.

[The fruit, according to Linneus is a pome, but according to Gartner an inferior berry, crowned with the tube of the calyx, which is sharply toothed, globular a little flattened, covered with a hard coriaceous rind including a pulp, divided into two unequal chambers by a transverse diaphragm. The upper chamber is larger, with from seven to nine cells, separated from each other by a very thin membranaceous partition: the lower chamber is much smaller, hollowed conically upwards, divided into three cells by very tender mem-

branaceous partitions. In the upper chamber the receptacles are wedge-shaped processes of a fleshy substance, tending from the walls of the berry towards the axis, and hollowed on every side into little pits, into which the seeds are inserted: in the lower chamber the processes are irregular, or it is the bottom of the berry, hollowed into many cells irregularly, in which the seeds are fixed. These are variously angular, pellucid, commonly tinged with red, and shining like crystal.]

Native of Spain, Portugal, Italy, Barbary, Persia, Japan, China, Cochinchina, &c. In the West Indies, where it is supposed to have been introduced from Europe, the fruit is larger and better flavoured.

The varieties are—

The wild Pomegranate with single and double flowers. The sweet Pomegranate.

The small-flowering Pomegranate with single and double flowers.

The Pomegranate with striped flowers.

[The rind of the fruit, and the flowers are the parts directed for medicinal use. They are both powerful astringents, and have long been successfully employed as such both internally and externally, in gargles, in diarrhoea, &c. The dose in substance is from half a dram to a dram; in infusion or decoction, to half an ounce.]

It was cultivated in 1596, by Gerardus.

The wild, I think, (says Parkinson) was never seen in England, before John Tradescante my very loving good friend brought it from the parts beyond the seas, and planted it in his Lords garden at Canterbury.]

2. The dwarf Pomegranate seldom rises more than five or six feet high. The flowers are much smaller than those of the common sort; the leaves are shorter and narrower; the fruit is not larger than a nutmeg, and has little flavour: but it may be kept within compass; and in the West Indies, where it is a native, and is planted for hedges, it continues flowering great part of the year.—[It is cultivated in Cochinchina, according to Loureiro.]

PROPAGATION AND CULTURE.

The single Pomegranate is now pretty common in the English gardens, where formerly it was nursed up in cases, and preserved in green-houses with great care (as was also the double flowering kind); but they are both hardy enough to resist the severest cold of our climate in the open air; and, if planted against warm walls in a good situation, the first will often produce fruit, which in warm seasons will ripen tolerably well; but as these fruits do not ripen till late in the autumn, they are seldom well tasted in England, for which reason the sort with double flowers is commonly preferred to it. The sort with sweet fruit, as also the wild sort, are less common in the English gardens than the former two.

These plants may be easily propagated by laying down their branches in the spring, which in one year's time will take good root, and may then be transplanted where they are designed to remain. The best season for transplanting these trees is in spring, just before they begin to shoot; they should have a strong rich soil, in which they flower much better, and produce more fruit than if planted on dry poor ground; but in order to obtain those in plenty, there should be care taken in the pruning of these trees, for want of which we often see them very full of small shoots, but do not find many flowers produced upon them; therefore I shall set down directions for pruning these trees, so as to obtain a great quantity of flowers and fruit.

The flowers of this tree, always proceed from the extremity of the branches which are produced the same year. This therefore directs, that all weak branches of the former year should be cut out, and that the stronger should be shortened in proportion to their strength, in order to obtain new shoots in every part of the tree. The branches may be laid in against the wall about four or five inches asunder; for, as

^c Gartner.

^f Woodville.

^z Hort. kew.

their leaves are small, there is not a necessity of allowing them a greater distance. The best time for this work is about Michaelmas, or a little later, according to the mildness of the season, for if they are left until spring before they are pruned, they seldom put out their shoots so early, and the earlier they come out, the sooner the flowers will appear, which is of great consequence where fruit is desired. In summer they will require no other dressing, but to cut off all vigorous shoots which grow from the wall, and never produce flowers (for it is the middling shoots only which are fruitful;) and when the fruit is formed, the branches on which they grow should be fastened to the wall to support them, otherwise the weight of the fruit, when grown large, will be apt to break them down.

Though, as I said before, the fruit of this tree seldom arrives to any perfection in this country, so as to render it valuable; yet, for the beauty of its scarlet-coloured flowers, together with the variety of its fruit, there should be one tree planted in every good garden, since the culture is not great which they require; the chief care is to plant them upon a rich strong soil, and in a warm situation. Upon some trees which had these advantages, I have obtained a great quantity of fruit which have arrived to their full magnitude, but I cannot say they were well flavoured; however, they made a very handsome appearance upon the trees.

The double flowering kind is much more esteemed than the other in this country for the sake of its large, fine, double flowers, which are of a most beautiful scarlet colour; and, if the trees are supplied with nourishment, will continue to produce flowers for two months successively, which renders it one of the most valuable flowering trees yet known. This must be pruned and managed in the same manner as hath been already directed for the fruit-bearing kind, but this sort may be rendered more productive of its beautiful flowers by grafting it upon stocks of the single kind, which will check the luxuriancy of the trees, and cause them to produce flowers upon almost every shoot; by which method I have had a low tree, which was planted in the open air, extremely full of flowers, which made a very fine appearance.

2. The dwarf Pomegranate may be propagated by layers, like the former, but must be planted in pots filled with rich earth, and preserved in a greenhouse. In the summer, when the flowers begin to appear, if the plants are exposed to the open air, the buds will fall off without opening; they should be placed therefore in an airy glass case, and a large share of air should be given them every day in warm weather. By this treatment the plants may be continued in flower upwards of three months, and will make a fine appearance.

[PURGING NUT. See *Iatropa*.

PURPLE APPLE. See *Annona*.

PURPLE CHICKWEED. See *Arenaria rubra*.]

PURSLANE. See *Portulaca*.

[PURSLANE, SEA. See *Atriplex*.

PURSLANE TREE. See *Portulacaria*.

PUSÆTHA. See *Mimosa*.

PUTUMBA. See *Verbena*.]

PYRACANTHA. See *Mespilus*.

[PYRACANTHUS. See *Celastrus*.

PYRETHRUM. See *Anthemis*, *Chrysanthemum*, *Santolina*, *Spilanthus*.]

PYR LA (Dimin. from *Pyrus*; the leaves bearing some resemblance to those of the Pear.)

Lin. gen. n. 554. Reich. n. 598. Schreb. n. 752.

Tournef. t. 134. Juss. 161. Gertn. t. 63.

Class. 10. 1. Decandria Monogynia.

Nat. order of *Bicornes*. *Ericæ*, Juss.

GENERIC CHARACTER.

CAL. Perianth five-parted, very small, permanent.

COR. Petals five, roundish, concave, spreading.

STAM. Filaments ten, awl-shaped, shorter than the corolla. Anthers nodding, large, two-horned upwards.

PIST. Germ roundish, angular. Style filiform, longer than the stamens, permanent. Stigma thickish.

PER. Capsule roundish, depressed, five-cornered, five-celled, five-valved, opening at the corners: partitions contracted.

SEEDS numerous, chaffy.

Obs. Stamens and style in some upright, in others declining to one side, in others spreading. The figure of the stigma is different in different species.

ESSENTIAL CHARACTER.

Cal. five-parted. Petals five. Caps. superior, five-celled, opening at the corners, many-seeded. Anthers with two pores.

SPECIES:

1. *Pyrola rotundifolia*. Round-leaved Winter-green.
Lin. spec. 567. syst. 408. fl. lapp. 169. succ. n. 360. mat. med. 116. amoen. 1. 156. Gertn. fruct. 1. 303. Hudf. angl. 175. Wither. arr. ed. 3. 400. Smith, brit. 444. engl. bot. t. 213. Lightf. scot. 218. Hall. belv. n. 1010. Pollich pal. n. 395. Fl. dan. t. 110. Gmel. fib. 4. 128. Pallas, it. 3. 287. Krock. files. n. 627. Villars dauph. 3. 587. Allion. pedem. n. 1610. Blackw. t. 594. Plenck, ic. 335.
Pyrola. Camer. epit. 723. Dod. pempt. 138. Baub. hist. 3. 535. Ger. 330. 1. emac. 408. 1. Matth. 982. Raii hist. 1233. syn. 363. Lob. obs. 157. 2.
P. vulgarior. Clus. hist. 2. 116. 3. Mor. hist. f. 12. t. 10. f. 1.
P. nostras vulgaris. Park. theat. 508.
P. rotundifolia major. Baub. pin. 191.
P. noveboracensis. Cold. noveb. 99.
P. folio rotundo. Rivin. pent. t. 137.
Limonium. Fuchs. hist. 467. Lonic. 186.
L. sylvestre. Trag. hist. 707.
Stamens ascending, pistil declining, raceme many-flowered.
2. *Pyrola minor*. Lesser Winter-green.
Lin. spec. 567. syst. 408. Reich. 2. 100. fl. succ. n. 361. At. stockh. 1741. p. 192. Hudf. angl. 176. Wither. arr. ed. 3. 401. Smith, brit. 444. engl. bot. t. 158. Lightf. scot. 218. Sibth. oxon. n. 399. Abbot, bedf. 92. Fl. dan. t. 55. Hall. belv. n. 1009. Gmel. fib. 4. 128. Scop. carn. n. 484. Pollich, pal. n. 396. Krock. files. n. 628. Villars dauph. 3. 587. Allion. pedem. n. 1611. Kn. ph. cent. 2. n. 82. Rivin. pent. t. 136. f. 1. Raii syn. 363.
Stamens and pistil straight, flowers in racemes dispersed.]
3. *Pyrola secunda*. Notch-leaved Winter green.
Lin. spec. 567. syst. 408. Reich. 2. 300. fl. succ. n. 362. lapp. n. 168. Hudf. angl. 176. Wither. arr. ed. 3. 401. Smith, brit. 445. engl. bot. t. 517. Lightf. scot. 219. Dicks. hort. sic. 5. 8. Fl. dan. t. 402. Scop. carn. n. 485. Pollich pal. n. 397. Hall belv. n. 1008. Krock. files. n. 629. Villars dauph. 3. 587. Allion. pedem. n. 1612.
P. folio ferrato. Baub. hist. 3. 536. 1. Raii hist. 1233.
P. fol. mucronato ferrato. Baub. pin. 181. Mor. hist. f. 12. t. 10. f. 4.
P. tenerior. Park. theat. 509. 3.
P. secunda tenerior. Clus. hist. 2. 117. Ger. emac. 408. 2.
Ambrosia montana. Dalech. hist. 1148.
Raceme one-sided.
4. *Pyrola umbellata*. Umbelled Winter-green.
Lin. spec. 567. Reich. 2. 300. fl. succ. n. 363. Gmel. fib. 4. 129. n. 18. Pollich pal. n. 398. Krock. files. n. 630.
P. frutescens arbuti flore. Baub. pin. 191. Mor. hist. f. 12. t. 10. f. 5.
P. 3. fruticans. Clus. hist. 2. 117.
Peduncles in a sort of umbel.]
5. *Pyrola maculata*. Spotted-leaved Winter-green.
Lin. spec. 567. Reich. 2. 300. Gron. virg. 48. Petiv. mus. 675. Pluk. mant. t. 349. f. 4.
Peduncles two-flowered.
6. *Pyrola uniflora*. One-flowered Winter-green.
Lin. spec. 568. syst. 409. fl. lapp. n. 167. succ. n. 364. Wither. arr. ed. 3. 401. Smith, brit. 446.

446. *engl. bot. t. 146. Fl. dan. t. 8. Hall. herb. n. 1011. Gmel. fib. 4. 129. Pallas, it. 3. 287. Scop. carn. n. 486. Pollich pal. n. 399. Krock. filef. n. 631. t. 1. Villars dauph. 3. 588. Allion. pedem. n. 1613.*
P. rotundifolia minor. Baub. pin. 191. Mor. hist. 3. f. 12. t. 10. f. 2.
P. quarta minima. Clus. hist. 2. 118. Ger. emac. 408.
P. minima alpina. Baub. hist. 3. 536.
P. flore singulari. Riv. pent. t. 139. f. 1.
Peduncle one-flowered.

DESCRIPTIONS, &c.

1. Root creeping. Stems angular, short, leafy. Leaves alternate, petioled, roundish, obsoletely serrate, very smooth. Peduncle terminating, a span long, with scattered bractes. Raceme terminating, almost upright, many-flowered. Pedicels alternate, with a lanceolate bracte at the base. Flowers nodding, white. Stamens ascending to the upper side of the flower. Anthers bent in and hanging down, four-grooved, awnless, with two subtubular pores at the base. Germ depressed, five-grooved. Style declining, recurved at the tip, longer than the stamens. Stigma wheel-shaped, five-tubercled^b. Capsule globular, umbilicated, rounded-five-cornered, five-celled, five-valved: partitions contrary to the valves. Receptacle five-lobed, fungous, fastened to the axis; with the lobes convex, attenuated downwards, hanging down within the cells. Seeds very numerous and very small, consisting of a globular nucleus, within an arillus, shaped like sawdust^c.

Leaves and flowers larger than in the next species. Calyx longer and more lanceolate; but the essential difference consists in the stamens being all bent as if for shelter towards the upper side of the flower; while the style, much longer than that of *P. minor*, is curved downwards in as singular a manner, and again recurved to catch the pollen. The stigma terminates in five blunt tubercles^k.

Native of the northern parts of Europe, Germany, Switzerland, the South of France and the North of Italy. In Britain not common: found on a common at Bradwell near Gorleston in Suffolk, by Mr. Wigg. In some woods of Scotland by Mr. Donn. It flowers in July.

2. This has the habit of the preceding, but is smaller. Peduncle almost naked, or only with a single bracte. Raceme erect. Flowers smaller, often reddish. Stamens spreading on every side. Pores of the anthers dilated, not tubular. Style very short, straight. Stigma peltate^l.

Native of the north of Europe: in Scotland and the north of Yorkshire: in Stokenchurch woods Oxfordshire; Whipsnall and woods about Luton, found by Mr. Abbot; near Tring in Hertfordshire, by Mr. Woodward. It is the species found in most of the places of growth mentioned for *P. rotundifolia*, as Hackfall woods, &c. It is in a manner naturalized in the Duke of Portland's wood at Bulstrode, where it was planted by Mr. Lightfoot^m.

3. Roots small and fibrous. Stems procumbent, alternately branched, with the branchlets erect and leafy. Leaves on longish petioles, spreading, ovate, acute, finely serrate, netted with veins, smooth on both sides, of a bright pleasant green. Peduncles terminating, solitary, with a few scattered bractes. Racemes many-flowered. Flowers all leaning to one side, greenish white, a little drooping, each having a bracte at the base of the pedicel. Calyx small. Petals oblong, concave. Anthers as in *P. minor*. Style long, straight, permanent. Stigma peltate, gibbousⁿ.

Native of woods in the north of Europe; and even in Switzerland, France and Italy. In fir and birch woods in the highlands of Scotland. Ray had it from Yorkshire. Mr. Miller found it in Westmoreland.

4. Root very long. Stem upright or a little de-

cumbent at the base, naked at bottom hard and woody, roughened here and there with tubercles. Leaves opposite, or heaped in whorls or scatteringly in the middle of the stem and branches, cuneiform-lanceolate, blunt, serrate, rigid, dark green above, pale green beneath, smooth, shining, hard, decurrent into the petiole, subsessile, from one to two inches in length, from four to six lines in width, broader at the top, narrower at the base. The common peduncle is continued from the stem and branches, and at the top of it are three or four peduncles bearing each one flower, forming a sort of umbel and hanging down. Flowers reddish white. Anthers whitish. Stigma capitate, obtuse^o: according to Retzius, subsessile, large, orbicular, hollowed in the middle.

Native of Europe, Asia and North America, in woods, particularly fir woods, and such as are very old, shady and desert. Indeed all the *Pyrolas*, as Linneus remarks, delight in deep shade and a rocky or barren soil.]

5. Root woody. Stems two or three, woody, a foot and half high. Leaves stiff, two or three inches long, an inch broad near the base, ending in acute points, and having some sharp indentures on their borders; the midrib is remarkably broad and very white, as are also the veins which run from it. The flowers are produced at the end of the stalk on slender peduncles about three inches long, each sustaining two small pale-coloured flowers at the top. It flowers in June.

6. The long branched roots run deep among moss in moist alpine woods. Every part is smooth. Stems short, simple, angular, leafy. Leaves obovate, blunt, serrulate, smooth, petioled. Peduncle solitary, longer than the leaves, upright, bearing one flower, larger than in the other species, of great elegance, possessing all the fragrance of Lily of the valley. Both corolla and calyx sometimes streaked externally with red. Linneus and Haller have observed that the stamens are not placed regularly with respect to the petals, some of the latter having three stamens next them, others two, and others but one. The anthers are of a most curious figure, four-lobed, with two tubes at the base, by which probably the pollen is discharged. The style is straight. The stigma resembles a five-rayed crown^p.

Native of woods in the northern parts of Europe: in Germany, Carniola, and even the South of France and the north of Italy. In Britain it was not known to grow wild till Mr. James Hoggan found it about the year 1783, on the islands of Harris and Bernera among the Hebrides; and Mr. James Hoy in fir woods near Brodie-house in Moray^q.

The species may be distinguished by the stigma; which in *rotundifolia* is incrassated, five-toothed, with the teeth upright and acute. That of *uniflora* exactly resembles this, except in being larger and peltate: In *minor* it is peltate, convex, five-lobed. So it is in *secunda*; but in the latter it is punched with five pores. In *umbellata* it is subsessile, large, and hollowed in the middle^r.]

PROPAGATION AND CULTURE.

These plants are all very difficult to cultivate in gardens, for as they grow on very cold hills, and in mossy moorish soil; they seldom continue long, when removed to a better soil, and a warmer situation.

The best time to transplant them into gardens is about Michaelmas, when the roots should be taken up with balls of earth to them, and planted in a shady situation, and on a moist undunged soil, where they should be frequently watered in dry weather. Or they may be planted in pots, filled with the same earth in which they grow, placed in a shady situation, in pans of water, or at least constantly watered in dry weather.

[*PYROLA*. See *Cornus*, *Parnassia*, *Satyrium*, *Trientalis*.

PYROLÆ AFFINIS. See *Epigæa*.

PYRO SIMILIS. See *Laurus Persea*.

^a Smith.

^b Gartner.
^m Idem.

^c Engl. bot.
ⁿ Idem.

^l Smith.

^o Pollich.

^p Smith.
^r Retzius.

^q Idem.

PYROSTRIA. (*Pyrus striata*; the fruit being like a pear, but striated.)

Willd. spec. 614. Juss. gen. 206.

Class. 4. 1. Tetrandria Monogynia.

Nat. order of Rubiaceæ, Juss.

GENERIC CHARACTER.

CAL. very small, four-toothed.

COR. bell-shaped, five-cleft, tomentose in the throat.

STAM. four.

PIST. one. Stigma capitate.

PER. Drupe pear-shaped, inferior, small, eight-freaked, not crowned.

SEED. Nuts eight, one-seeded.

SPECIES.

1. *Pyrostria falcifolia*.

Willd. spec. 614. Lamarck, encycl. t. 68. f. 4.

DESCRIPTION, &c.

Leaves opposite, petioled, bluntish, attenuated at the base, quite entire. Peduncles axillary, three or four-flowered*.

It is a small tree. Peduncles one, or many-flowered. Number of cells sometimes various. Stipules caducous*.—Native of the island of Mauritius.

PYROCHITON. See *Ornithogalum*.]

PYRUS. (*Pirus* of Pliny. Supposed to be from *πῦρ*, fire; the fruit drawing up to a point, like flame.)

Lin. gen. n. 626. Reich. n. 682. Schreb. n. 858.

Tournef. t. 404. Juss. 335. Gært. t. 87.

Malus. Tournef. t. 406. Juss. 334. Cydonia.

Tournef. t. 405. Juss. 335.

Class. 12. 4. Icosandria Pentagynia.

Nat. order of Pomaceæ. Rosaceæ, Juss.

GENERIC CHARACTER.

CAL. Perianth one-leafed, concave, five-cleft, permanent: segments spreading.

COR. Petals five, roundish, concave, large, inserted into the calyx.

STAM. Filaments twenty, awl-shaped, shorter than the corolla, inserted into the calyx. Anthers simple.

PIST. Germ inferior. Styles five, filiform, the length of the filaments. Stigmas simple.

PER. Pome roundish, umbilicate, fleshy, with five membranaceous cells.

SEEDS some, oblong, blunt, acuminate at the base, convex on one side, flat on the other.

OBS. It is surprising there has been a general consent to separate this well known genus into three, by making genera of species, and species of varieties.

ESSENTIAL CHARACTER.

Cal. five-cleft. Petals five. Pome inferior, five-celled, many-seeded.

SPECIES.

1. *Pyrus communis*. Common Pear Tree.

Lin. spec. 686. Reich. 2. 500. Willd. 1016. arb.

260. hort. cliff. 190. ups. 130. suet. n. 436.

Huds. angl. 216. Wither. arr. ed. 3. 462.

Smith, brit. 531. Relb. cant. n. 361. Sibth.

oxon. n. 451. Hall. belv. n. 1096. Pollich pal.

n. 477. Scop. carn. n. 598. Hoffm. germ. 173.

Roth. germ. 1. 215. 2. 548. Krock. fles. n. 760.

Villars dauph. 3. 543. Black. t. 453. Du Roi

barbecc. 2. 207. Plenck, ic. 395.

Pirus Achras. Gært. fruct. 2. 44.

Sorbus Pyrus. Crantz. austr. 93.

α. *P. Pyrastrer*. The Wild Pear Tree.

P. sylvestris. Baub. pin. 439. Dod. pempt. 800.

Ger. 1271. emac. 1457. Park. theat. 1500. 2.

Pyra. Matth. 251.

Pyrastrer f. *Pyrus sylvestris*. Baub. hist. 1. 57.

Raii hist. 1451. syn. 452.

β. *Pyrus fativa*. The Cultivated Pear Tree.

Baub. pin. 439. hist. 1. 56. Raii hist. 1450. syn.

452. Ger. 1267. emac. 1456. Park. theat.

1500. 1. parad. 590.

Leaves ovate ferrate, peduncles corymbed.

[2. *Pyrus Pollueria*. Woolly-leaved Pear Tree.

Lin. syst. 466. Reich. 2. 501. Willd. 1016. mant.

244. Hoffm. germ. 173. Roth. germ. 1. 215.

2. 549.

* Willdenow.

* Jussieu.

P. irregularis. Onomat. bot. 7. 611. Munchb. hausv. 5. 246. Du Roi karbecc. 2. 216. Knoop, pomol. 2. 38. t. 4.

P. pollulleriana. Baub. hist. 1. 59.

Leaves ferrate tomentose underneath, flowers corymbed.

3. *Pyrus nivalis*. Alpine Pear Tree.

Lin. suppl. 253. spec. ed. Willd. 1017. Jacqu.

austr. 2. 4. t. 107.

Leaves quite entire, flowers corymbed.]

4. *Pyrus Malus*. Common Apple Tree.

Lin. spec. 686. syst. 466. Reich. 501. Willd.

1017. arb. 261. mat. med. 127. hort. cliff. 189.

ups. 130. fl. suet. n. 437. Huds. angl. 216.

Wither. arr. ed. 3. 462. Smith, brit. 531. engl.

bot. t. 179. Lightf. scot. 258. Relb. cant.

n. 362. Sibth. oxon. n. 452. Hall. belv. n.

1097. Pollich pal. n. 478. Scop. carn. n. 599.

Hoffm. germ. 173. Roth. germ. 1. 215. 2. 549.

Krock. fles. n. 761. Villars dauph. 3. 544.

Du Roi karbecc. 222. Blackw. 178. Plenck,

ic. 394.

Sorbus Malus. Crantz, austr. 93.

Malus sylvestris. Mill. dict. n. 1. Baub. pin. 443.

Ger. 1276. emac. 1461. Park. theat. 1503. 2.

Raii hist. 1488. syn. 452.

Crab Tree or Wilding.

β. *Malus fativa*. The cultivated Apple Tree.

Baub. hist. 1. 1. Dod. pempt. 789. Raii hist.

1445. syn. 451. Mill. illustr. Blackw. 141.

Malus. Park. theat. 1503. 1. parad. 586. Ger.

1273, 1274. emac. 1459.

Leaves ovate-oblong acuminate ferrate smooth, umbels

simple sessile:—claws of the corolla shorter than the

calyx, styles smooth.

[5. *Pyrus dioica*.

Lin. spec. ed. Willd. 1018. arb. 263. phytog. fasc.

1. 8. n. 27. Moench. weissenf. 87. t. 8.

P. apetala. Munchb. hausv. 5. 247.

Malus non florens, fructificans tamen. Baub. pin.

435.

Leaves oval ferrate, flowers solitary dioecous, petals

linear the length of the calyx.

6. *Pyrus spectabilis*. Chinese Apple Tree.

Ait. kew. 2. 175. Lin. spec. ed. Willd. 1018.

Curt. magaz. 267.

Leaves oval-oblong ferrate even, umbels sessile:—claws

of the corolla longer than the calyx, styles woolly at

the base.]

7. *Pyrus prunifolia*. Siberian Crab Tree.

Lin. spec. ed. Willd. 1018. arb. 264. phytog. fasc.

1. 8. n. 26.

P. Malus β. Ait. kew. 2. 175.

Crataegus cerasi folio, floribus magnis. Mill. fig. 180.

t. 269.

Leaves ovate acuminate, umbels sessile, peduncles pubes-

cent, styles woolly at the base.

[8. *Pyrus baccata*. Small-fruited Crab Tree.

Ait. kew. 2. 175. Lin. mant. 75. spec. ed. Reich.

2. 502. ed. Willd. 1019. Giseke ic. fasc. 1. n. 12.

Pallas, it. 3. 105. fl. ross. 1. 23. t. 10.

Crataegus cerasi foliis, floribus magnis. Amm. ruth.

274. t. 31.

Leaves equally serrulate, peduncles clustered, pomes ber-

ried, calyces deciduous.]

9. *Pyrus coronaria*. Sweet-scented Crab Tree.

Lin. spec. 687. Reich. 2. 503. Willd. 1019. arb.

265. Du Roi karbecc. 2. 229. Kalm. it. 3. 10.

engl. ed. 2. 166.

Malus coronaria. Mill. dict. n. 2.

M. sylvestris floribus odoratis. Gron. virg. 55.

Duham. arb. 1.

Leaves cordate gash-ferrate angular smooth, peduncles

corymbed.

[10. *Pyrus angustifolia*. Narrow-leaved Crab Tree.

Ait. kew. 2. 176. Lin. spec. ed. Willd. 1020.

P. coronaria. Wangenh. amer. 61. t. 21. f. 47.

Leaves lanceolate-oblong shining tooth-ferrate attenuated

at the base entire, peduncles corymbed.

11. *Pyrus japonica*.

Lin. syst. 467. ed. Willd. 1020. Thunb. jap. 207.

Leaves wedge-shaped crenate smooth, flowers solitary.]

12. *Pyrus Cydonia*. *The Quince Tree*.
Lin. spec. 687. *fyst.* 467. *Reich.* 2. 503. *Willd.*
 1020. *hort. cliff.* 160. *mat. med.* 127. *Woodv.*
med. bot. 221. *t.* 79. *Kalm. it.* 3. 107. *Jacq.*
austr. t. 342. *Ludw. est. t.* 56. *Kniph. cent.* 6.
n. 75. *Hoffm. germ.* 173. *Roth. germ.* 1. 215.
 2. 550. *Du Roi karbecc.* 2. 231. *Willd. arb.*
 266. *Krock. siles. n.* 762. *Villars dauph.* 3.
 544. *Allion. pedem. n.* 1819. *Gærtn. fruct.*
 2. 45. *Plenck. ic.* 396. *Pallas roff.* 1. 21.
Dubam. 1. 206.
Sorbus Cydonia. *Crantz austr.* 93.
Cydonia. *Mill. dict. Park. parad.* 589.
Malus cotonea. *Ger.* 1264. *emac.* 1454. *Park.*
theat. 1504.
 α. *Malus cotonea sylvestris*. *Baub. pin.* 435. *Raii*
hist. 1454.
 β. *M. cotonea major*. *Baub. pin.* 434. *Raii hist.*
 1453. 2.
Cydonia oblonga. *Mill. dict. n.* 1. *fig.* 77. *t.* 116.
Pear-shaped Quince.
 γ. *M. cotonea minor*. *Baub. pin.* 434. *Raii hist.*
 1453. 1.
C. maliformis. *Mill. dict. n.* 2. *Apple-shaped*
Quince.
 δ. *Cydonia lusitanica*. *Mill. dict. n.* 3. *Portugal*
Quince.
Leaves quite entire, flowers solitary.
 [13. *Pyrus salicifolia*. *Willow-leaved Crab Tree*.
Lin. suppl. 255. *fyst.* 467. *Willd.* 1020. *Pallas*
it. 3. 734. *t.* N. f. 3. *fl. roff.* 1. 20. *t.* 9.
P. sylvestris orientalis, folio oblongo incano. *Tournef.*
cor. 43.
Leaves linear-lanceolate hoary white-tomentose under-
neath, flowers axillary solitary subsessile.
 DESCRIPTIONS, &c.

1. The Pear grows to a lofty tree, with upright branches, but the twigs or branchlets hanging down. Leaves elliptical, obtuse, serrate; the younger ones clothed with a deciduous cotton underneath and along the edge. Stipules linear. Flowers in terminating villose corymbs. Corolla snow-white. Pome produced at the base, hard and acerb (in the wild state), with five cells in the middle, each two-valved, and (regularly) containing two seeds.

Gærtner calls this fruit a Berry, and describes it as inferior, subturbinat, fleshy: the flesh or pulp solid, with stony concretions near the cells, which are lined with a coriaceous elastic levigated membrane. Seeds in each cell two, obovate, acuminate downwards, plano-convex, smooth, dark chestnut-coloured. It varies sometimes with four two-parted one-seeded cells:—and some of the seeds are generally wholly wanting or abortive, at least in the cultivated Pears.

The wild Pear, the mother of all the orchard and garden varieties is thorny. The stipules are setaceous, white (or reddish), deciduous: the peduncles alternate; the calyx clothed with a ferruginous wool.

The wood of the Pear is light smooth and compact: it is used by turners and to make joiners tools; and for picture frames, to be stained black. The leaves afford a yellow dye, and may be used to give a green to blue cloths. The juice of the fruit fermented is called Perry. The Squash, Oldfield and Barland Perrys are reckoned the best, and are little inferior to wine.

The Pear is a native of Europe. It is not known whence the numerous cultivated varieties are derived. This fruit was familiar to the ancients, and has long been a great favourite with the French. It was doubtless not unknown to our remote ancestors, but does not seem to have been in equal favour with them as with their neighbours.

In an account book of Henry VIII. now remaining in the Exchequer, there are the following charges, among others—

| | | | |
|---|---|---|----|
| For Medlars and Wardens (Pears) | o | 3 | 4 |
| Item to a woman who gaff the Kyng Peres | o | o | 2 |
| Item to a woman for three Apples | o | o | 12 |

Chaucer mentions the Pear tree, among other trees growing in this country.

^u Smith.

^x Linn. suec.

^y Scopoli.

^z Withering.

Parkinson enumerates sixty-four varieties of the Pear in his *Paradisus*. Most of these have been superseded by new and better sorts, imported from France, where this fruit has had great attention paid to it: Many however of the old sorts are still to be seen in orchards in the country. The Catherine Pear, a small red fruit, is yet common in the London markets; because it comes early: but it is a poor fruit.—Rea has twenty-one sorts for walls, thirty-five of which he calls Meat Pears, and thirteen Baking Pears: twenty-seven sorts obtained out of France by Sir Thomas Hanmer, and fifty-five others, observed in France by the same gentleman, in all an hundred and fifty-one. Worlidge says, there are supposed to be five hundred sorts, and that the French gardener reckons about three hundred choice ones.

Knoop, in his *Pomologia*, has an hundred and two varieties, engraved and coloured. Duhamel enumerates an hundred and nineteen, to which he says thirty or forty indifferent sorts, to be found in common orchards, might be added.

Bradley (in 1724) reckons an hundred and forty sorts, ranged according to the months in which they are fit for eating; his catalogue is from the French.

Mortimer also has many sorts. The Pears esteemed for making Perry in Worcestershire in his time were the Red and Green Squash, the John, the great Harpary, the Drake, the Mary, the Lullant; but above the rest are esteemed the Bosbury and Bareland Pears, the White and Red Horse Pears, and especially the Turgovian Pear, mentioned by Mr. Evelyn. In Hertfordshire he made excellent Perry from wild Pears.—*Art of husbandry*, 544. ed. 2. 1708.

In Worcestershire the Squash is now in much the highest esteem for Perry. It is an early tender fruit, bursting when it falls ripe from the tree; whence its name. Taynton has long been famous for Squash Pear Perry. Other sorts are the Oldfield, Bareland, Red Pear, Huff-cap, Sack, &c. both grafted and kernel fruits.—*Marshall's Gloucestersh.* 2. 256.

Miller has selected eighty, which are most esteemed for the several purposes to which this fruit is applied. These varieties, says he, which are now cultivated in curious fruit gardens, have been accidentally obtained by seeds; but being generally distinguished by the shape, size and flavour of the fruit, he gives the following distinctions.

1. *PYRUS (Musk) fativa*, fructu æstivo parvo racemoso odoratissimo. Tourn. *Petit Muscat*, Duh. n. 1. t. 1. i. e. *Little Musk Pear*, commonly called the *Supreme*. This fruit is generally produced in large clusters; it is rather round than long, the stalk short; and, when ripe, the skin is of a yellow colour; the juice is somewhat musky; and, if gathered before it is too ripe, is a good Pear. This ripens the middle of July, and will continue good but for a few days.
2. *PYRUS (Chio) fativa*, fructu æstivo minimo odoratissimo. Tourn. *Poire de Chio*; the *Chio Pear*, commonly called the *little Bastard Musk Pear*. This is smaller than the former, but is in shape pretty much like that. The skin, when ripe, has a few streaks of red on the side next the sun, and the fruit seldom hangs in clusters as the former, but in other respects is nearly like it.
3. *PYRUS (Citron des Carmes*, Duh. n. 7. t. 4. Hafliveau is n. 9.) *fativa*, fructu æstivo parvo, è viridi albido. Tourn. *Poire Hâliveau*, i. e. the *Hasting Pear*; *Poire Madeline*, ou *Citron des Carmes*, called commonly the *green Chisel*. This is a larger Pear than either of the former, and is produced more toward the pedicel. The skin is thin, and of a whitish green colour when ripe; the flesh is melting, and, if not too ripe, of a sugary flavour, but is apt to be mealy. This ripens in the end of July.
4. *PYRUS (Muscadelle) fativa*, fructu æstivo partim saturatè rubente, partim flavescente. Tourn. *Muscadelle Rouge*; the *red Muscadelle*. It is also called *La Bellissime*, i. e. the *Fairest* or *Supreme*, *Bellissime d'été*, or *Supreme*, Duh. n. 80. t. 42. This is a large early Pear, of great beauty; the skin is of a fine yellow colour, when ripe, beautifully striped with red; the flesh is half melting, and has a rich flavour,

if

if gathered before it be too ripe, but it is apt to be meally. This generally produces two crops of fruit in a year; the first is commonly ripe about the end of July, and the second ripens in September, but this late crop is seldom well tasted.

5. PYRUS (*Muscat*) fativa, fructu æstivo parvo flavescente moschato. Tourn. *Petit Muscat*, i. e. *the Little Muscat*. This is a small Pear, rather round than long; the skin is very thin, and, when ripe, of a yellowish colour; the flesh is melting, and of a rich musky flavour, but will not keep long when ripe. This comes the end of July.

6. PYRUS (*Cuisse Madame*) fativa, fructu æstivo oblongo ferrugineo, carne tenerâ moschatâ. Tourn. *Cuisse Madame*, Duh. n. 11. t. 5. *Lady's Thigh, in England commonly called Jargonelle*. This is a very long Pear, of a pyramidal shape, having a long foot-stalk; the skin is pretty thick, of a russet green colour from the sun, but towards the sun it is inclined to an iron colour; the flesh is breaking, and has a rich musky flavour; ripe the beginning of August. This is one of the best early summer Pears yet known, and is certainly what all the French gardeners call the *Cuisse Madame*, as may be easily observed by their description of this Pear; but I suppose the titles of this and the *Jargonelle* were changed in coming to England, and they have been continued by the same names.

7. PYRUS (*Windsor*) fativa, fructu oblongo, è viridi flavescente. *The Windsor Pear*. This is an oblong fruit, which swells toward the crown, but near the stalk is drawn toward a point; the skin is smooth, and, when ripe, of a yellowish green colour; the flesh is very soft, and, if permitted to hang but two or three days after it is ripe, grows meally, and is good for nothing.

8. PYRUS (*Jargonelle*) fativa, fructu æstivo oblongo, è viridi albo. *The Jargonelle*, Duh. n. 6. *now commonly called Cuisse Madame*. This is certainly what the French gardeners call the *Jargonelle*, which, as I have before observed, is now in England given to another fruit much preferable to this, so that the two names are changed; for the *Jargonelle* is always placed amongst those which the French call bad fruit, and the *Cuisse Madame* is set down amongst their best fruit, which is certainly the reverse with us, as they are now named. This Pear is somewhat like the *Windsor*, but is not so swelling toward the crown, and is smaller toward the stalk; the skin is smooth, of a pale green colour; the flesh is apt to be meally if it stands to be ripe, but, being a plentiful bearer, is much propagated for the London markets.

9. PYRUS (*Orange Musk*) fativa, fructu æstivo globoso sessili moschato, maculis nigris consperso. Tourn. *Orange Musquée*, Duh. n. 25. t. 10. i. e. *the Orange Musk*. This is a middle-sized Pear, of a short globular form; the skin is of a yellowish colour, spotted with black; the flesh is musky, but is very apt to be a little dry and choaky. It ripens in August.

10. PYRUS (*Blanquet*) fativa, fructu æstivo albido majori. Tourn. *Gros Blanquet*, Duh. n. 13. i. e. *Great Blanket*. This is also called *La Musfette d'Anjou*, i. e. the *Bagpipe of Anjou*. It is a large Pear approaching to a round form; the skin is smooth, and of a pale green colour; the flesh is soft, and full of juice, which has a rich flavour; the stalk is short, thick, and spotted; the wood is slender, and the leaf is very much like that of the tree called the *Jargonelle*. This ripens the beginning of August.

11. PYRUS (*Musk Blanquet*) fativa, fructu æstivo albido saccharato odoratissimo. Tourn. *The Blanquette, or Musk Blanquette*, Duh. n. 16. t. 6. *the little Blanket Pear*. This Pear is much less than the former, and more pinched in near the stalk, which is also short, but slenderer than that of the former; the skin is soft, and of a pale green colour; the flesh is tender, and full of a rich musky juice; the wood of this tree is much stronger than that of the former, and the shoots are commonly shorter. This ripens the middle of August.

12. PYRUS (*Long-stalk Blanquet*) fativa, fructu æstivo albido, pediculo longo donato. Tourn. *Blanquette à*

longue queue, Duh. n. 15. *Long-stalked Blanket Pear*. This Pear is in shape somewhat like the former, but the eye is larger, and more hollow at the crown; toward the stalk it is somewhat plumper, and a little crooked; the skin is very smooth, white, and sometimes toward the sun is a little coloured; the flesh is between melting and breaking, and is full of a rich sugary juice. This ripens the middle of August.

13. PYRUS (*Skinless*) fativa, fructu æstivo oblongo rufescente saccharato. Tourn. *Poire sans Peau*, Duh. n. 35. t. 13. *the Skinless Pear*. It is also called *Fleur de Guigne*, i. e. *Flower of Guigne*; and by some, *Rouffolet hâtif*, i. e. the early *Rouffolet*. This is a middle-sized fruit, of a long shape, and a reddish colour, somewhat like the *Rouffolet*; the skin is extremely thin; the flesh is melting, and full of a rich sugary juice; the shoots are long and straight. This ripens the middle of August.

14. PYRUS (*Robine*) fativa, fructu æstivo turbinato, carne tenera saccharata. *Muscat Robine*, i. e. *the Musk Robine Pear*. This is also called *Poire à la Reine*, i. e. the *Queen's Pear*; *Poire d'Ambre*, i. e. the *Amber Pear*; and *Pucelle de Xaintonge*, i. e. the *Virgin of Xaintonge*, Duh. n. 3. t. 2. This is a small round Pear, of a yellowish colour when ripe; the flesh is between melting and breaking. It has a rich musky flavour, and is a great bearer; it ripens the middle of August.

15. PYRUS (*Drone*) fativa, fructu æstivo turbinato moschato. *Le Bourdon Musqué*, Duh. n. 27. *the Musk Drone Pear*. This is a middle-sized round fruit, whose skin is of a yellowish colour when ripe; the flesh is melting, and has a high musky juice, but it must not hang too long on the tree, for it is subject to grow meally in a short time. This ripens the end of August.

16. PYRUS (*Orange*) fativa, fructu æstivo globoso sessili, è viridi purpurascence saccharato odorato. Tourn. *Orange Rouge*, Duh. n. 26. *the red Orange Pear*. This Pear has been the most common of all the sorts in France, which was occasioned by the general esteem it was in some years since. This is a middle-sized round fruit, of a greenish colour, but the side next the sun changes to a purple colour when ripe; the flesh is melting, and the juice is sugared with a little perfume; the eye is very hollow, and the stalk is short. This ripens the end of August.

17. PYRUS (*Cassiolette*) fativa, fructu æstivo oblongo minori cinereo odorato. Tourn. *Cassiolette. Friolet. Muscat-Vert. Leche-frion*, Duh. n. 44. t. 18. This is so called from its being shaped like a perfuming-pot. It is a long fruit, in shape like the *Cuisse Madame*, of an Ash colour; its flesh is melting, and full of a perfumed juice, but it is very apt to rot in the middle as soon as ripe, otherwise it would be esteemed an excellent Pear. It is ripe the end of August.

18. PYRUS (*Orange Musk*) fativa, fructu æstivo turbinato è viridi albido. *Orange Musquée*, Duh. n. 25. t. 10. *the Musk Orange Pear*. This is a large round Pear, in shape like a *Bergamot*; the skin is green; and the flesh is melting, but it is very subject to rot upon the tree, which renders it not near so valuable as some others. It ripens the end of August.

19. PYRUS (*Ognonet*) fativa, fructu æstivo globoso è viridi purpurascence. Tourn. *Gros Ognonet*, Duh. n. 19. t. 8. *the Great Onion Pear*. It is also called *Amiréroux*, i. e. *Brown Admired*; and *Roy d'Été*, i. e. the *King of Summer*; *Archiduc d'Été*, i. e. the *Summer Archduke*. This is a middle-sized round Pear, of a brownish colour next the sun; the flesh is melting, and the juice is passably good. This ripens the end of August.

20. PYRUS (*Averat*) fativa, fructu æstivo globoso sessili ex albido flavescence saccharato odorato. Tourn. *Robine*, Duh. n. 56. t. 27. It is also called *Muscat d'Aoust*, i. e. the *August Muscat*; *Poire d'Averat*, i. e. the *Averat Pear*; and *Poire Royale*, i. e. the *Royal Pear*. This is a roundish flat Pear, in shape very like a *Bergamot*; the stalk is long, straight, and a little spotted, and the eye is a little hollowed; the skin is smooth, and of a whitish yellow colour; the flesh is breaking, but not hard, and its juice is richly sugared.

sugared and perfumed. It is a great bearer, and is esteemed one of the best summer Pears yet known; it ripens the end of august.

21. PYRUS (*Rose*) fativa, fructu æstivo globoso sessili odorato. Tourn. *Poire de rose*, Duh. n. 57. *the Rose-Pear*; and *Epine-rose*, i. e. *the Thorny Rose*. This is a short round fruit, shaped like the great Onion Pear, but much larger; of a yellowish green colour; but a little inclining to red on the side next the sun; the stalk is very long and slender; the flesh is breaking, and the juice is musky: this ripens the end of august. The shoots and the leaves of this tree are large.
22. PYRUS (*Pouchet*) fativa, fructu æstivo globoso albido saccharato. Tourn. *Poire du Pouchet*. This is a large, round, whitish Pear, shaped somewhat like the Besideri; the flesh is soft and tender, and the juice is sugary; this ripens the end of august.
23. PYRUS (*Parfumé*) fativa, fructu æstivo turbinato sessili saturatius rubente punctato. Tourn. *Poire Parfumé*, i. e. *the perfumed Pear*. This is a middle-sized round fruit, whose skin is somewhat thick and tough, and of a deep red colour, spotted with brown; the flesh is melting, but dry, and has a perfumed flavour. This ripens the end of august.
24. PYRUS (*Boncrétien*) fativa, fructu æstivo oblongo magno, partim rubro, partim albido odorato. Tourn. *Boncrétien d'Été*, Duh. n. 40. t. 47. f. 4. *the Summer Boncrétien*. This is a large oblong fruit, whose skin is smooth and thin; the side next the sun is of a beautiful red colour, but the other side is of a whitish green; the flesh is between breaking and tender, and is very full of juice, which is of a rich perfumed flavour. It ripens the beginning of september.
25. PYRUS (*Salviati*) fativa, fructu æstivo globoso, ex rubro albidoque flavescence saccharato odorato. Tourn. *Salviati*, Duh. n. 21. t. 9. This Pear is pretty large, round, and flat, very much like the Besideri in shape, but not in colour; the stalk is very long and slender, and the fruit is a little hollowed both at the eye and stalk; the colour is red and yellow next the sun, but on the other side is whitish; the skin is rough, the flesh is tender, but a little soft, and has no core; the juice is sugary and perfumed, somewhat like the Robine, but is not near so moist. This ripens the beginning of september.
26. PYRUS (*Caillot-rosat*) fativa, fructu æstivo globoso sessili rufescente odorato. Tourn. *Caillot-rosat*, Duh. p. 177. *the Rose-water Pear*. This is a large round Pear, somewhat like the Messire Jean, but rounder; the stalk is very short, and the fruit is hollowed like an Apple, where the stalk is produced; the skin is rough, and of a brown colour; the flesh is breaking, and the juice is very sweet. This ripens the middle of september.
27. PYRUS (*Choak-Pear*) fativa, fructu æstivo longo, acerbitate strangulationem minitante. Tourn. *Poire d'Etrangillon*, *the choaky Pear*. The flesh is red. This is seldom preserved in gardens, so there needs no description of it.
28. PYRUS (*Rouffelet*) fativa, fructu æstivo oblongo è ferrugineo rubente, nonnunquam maculato. *Poire du Rouffelet*, *the Ruffelet Pear*. Gros Rouffelet. Roy d'été. Duh. n. 34. t. 12. This is a large oblong Pear; the skin is brown, and of a dark red colour next the sun; the flesh is soft and tender, without much core; the juice is agreeably perfumed, if gathered before it be too ripe. This produces larger fruit on an espalier than on standard trees: it ripens the middle of september.
29. PYRUS (*Prince's Pear*) fativa, fructu æstivo subrotundo, partim rubro, partim flavescence, odorato. *Poire de Prince*, *the Prince's Pear*. This is a small roundish Pear, of a bright red colour next the sun, but a yellowish colour on the opposite side; the flesh is between breaking and melting; the juice is very high-flavoured: it is a great bearer. This ripens the middle of september, but will keep a fortnight good, which is what few summer-fruits will do.
30. PYRUS (*Mouille-bouche*) fativa, fructu æstivo globoso viridi, in ore liquefcente. Gros *Mouille-bouche*, i. e. *the great Mouthwater Pear*. This is a large round Pear with a smooth green skin; the stalk is short and

thick; the flesh is melting, and full of juice, if gathered before it be too ripe, otherwise it is apt to grow meally. This ripens the middle of september.

31. PYRUS (*Bergamotte d'Été*) fativa, fructu æstivo rotundo sessili saccharato, è viridi flavescence. *Bergamotte d'Été*, Duh. n. 45. *Summer Bergamot*. This is by some called the Hamden's Bergamot. It is a pretty large, round, flat Pear, of a greenish yellow colour, and hollowed a little at both ends like an Apple; the flesh is melting, and the juice is highly perfumed. This ripens the middle of september.
32. PYRUS (*Bergamot Autumn*) fativa, fructu autumnali sessili saccharato odorato è viridi flavescence, in ore liquefcente. Tourn. *Bergamotte d'Automne*, Duh. n. 48. t. 21. *the Autumn Bergamot*. This is a smaller Pear than the former, but is nearly of the same shape; the skin is of a yellowish green, but changes to a faint red on the side next the sun; the flesh is melting, and its juice is richly perfumed. It is a great bearer, ripens the end of september, and is one of the best Pears of the season.
33. PYRUS (*Swiss Bergamot*) fativa, fructu autumnali turbinato viridi, striis sanguineis distincta. Tourn. *Bergamotte Suisse*, Duh. n. 47. t. 20. *the Swiss Bergamot*. This Pear is somewhat rounder than either of the former; the skin is tough, and of a greenish colour, striped with red: the flesh is melting, and full of juice, but is not so richly perfumed as either of the former. This ripens the end of september.
34. PYRUS (*Beurré Rouge*) fativa, fructu autumnali suavissimo, in ore liquefcente. Tourn. *Beurré Rouge*, Duh. n. 75, 76. t. 38, 39. *the red Butter Pear*. It is called l'Amboise, and in Normandy Isambert; as also Beurré gris, i. e. the gray Butter; and Beurré vert, i. e. the green Butter Pear. All these different names of Beurrés have been occasioned by the difference of the colours of the same sort of Pear, which is either owing to the different exposure where they grew, or from the stock, those upon the free stocks being commonly of a browner colour than those which are upon Quince stocks, whence some persons have supposed them to be different fruits, though in reality they are the same. This is a large long fruit, for the most part of a brown colour. The flesh is very melting, and full of a rich sugary juice. It ripens the beginning of october, and, when gathered from the tree, is one of the very best sort of Pears we have.
35. PYRUS (*Doyenne*) fativa, fructu autumnali turbinato sessili flavescence, et in ore liquefcente. Tourn. *Doyenné*, Duh. n. 81. t. 43. *the Dean's Pear*. It is also called by all the following names; Saint Michel, i. e. Saint Michael; Beurré blanc d'Automne, i. e. the white Autumn Butter Pear; Poire de Neige, i. e. the Snow Pear; Bonne Ente, i. e. a good Graft; the Carlisle, and Valentia. This is a large fruit, in shape somewhat like the gray Beurré, but shorter and rounder; the skin is smooth, and, when ripe, changes to a yellowish colour; the flesh is melting, and full of juice, which is very cold, but it will not keep good much more than a week after it is gathered, being very subject to grow meally; it is a very indifferent fruit. This is a great bearer, and ripens the beginning of october.
36. PYRUS (*Verte-longue*) fativa, fructu autumnali longo viridique odorato, in ore liquefcente. Tourn. *La Verte-longue*, Duh. n. 74. t. 73. *the long green Pear*. It is also called Mouille bouche d'Automne, i. e. the Autumn Mouthwater Pear. This is a long fruit, which is very green when ripe; the flesh is melting, and very full of juice, which, if it grows upon a dry warm soil, and a free stock, is very sugary, otherwise it is but a very indifferent Pear. It ripens the middle of october, but in some years will keep till december.
37. PYRUS (*Messire Jean*) fativa, fructu autumnali tuberoso sessili saccharato, carne durâ. Tourn. *Messire Jean blanc & gris*, Duh. n. 55. t. 26. *the white and gray Monsieur John*. These, although made two sorts of fruit by many persons, are indubitably the same; the difference of their colour proceeding from the different soils and situations where they grow, or the stocks on which they are grafted. This Pear, when grafted

grafted on a free stock, and planted on a middling soil, neither too wet nor over dry, is an excellent autumn Pear; but when it is grafted on a Quince stock, it is very apt to be stony; or if planted on a very dry soil, is very apt to be small and good for little, unless the trees are watered in dry seasons, which has rendered it less esteemed by some persons, who have not considered the cause of their hardness; for when it is rightly managed, there are not many Pears in the same season to be compared with it. This is a large roundish fruit, the skin is rough, and commonly of a brown colour; the flesh is breaking, and full of a rich sugared juice. It ripens the end of october, and will continue good near a month.

38. PYRUS (*Muscat fleuri*) sativa, fructu autumnali globoso ferrugineo, carne tenerâ sapidissimâ. Tourn. *Muscat fleuri*, Duh. n. 4. *the flowered Muscat*. It is also called Muscat à longue queue d'Automne, i. e. the long-stalked Muscat of the Autumn. This is an excellent Pear, of a middling size, and round; the skin is of a dark red colour; the flesh is very tender, and of a delicate flavour. It ripens the end of october.
39. PYRUS (*Poire de Vigne*) sativa, fructu autumnali globoso ferrugineo, carne viscidâ. Tourn. *Poire de Vigne*, Vigne. Demoiselle. Duh. n. 110. t. 58. f. 2. *the Vine Pear*. This is a round fruit, of a middling size; the skin of a dark red colour; the flesh is very melting, and full of a clammy juice; the stalk is very long and slender. The fruit should be gathered before it be full ripe, otherwise it grows mealy and soon rots. It ripens the end of october.
40. PYRUS (*Rouffeline*) sativa, fructu autumnali oblongo, dilutè rufescente, saccharato, odoratissimo. Tourn. *Poire Rouffeline*, Duh. n. 37. t. 15. *the Rouffeline Pear*. It is also called in Touraine, Le Muscat à longue queue de la fin d'automne, i. e. the long-stalked Muscat of the end of autumn. This is by some English gardeners called the Brute-bonne, but that is a very different fruit from this. It is shaped somewhat like the Rouffelet, but the skin of this is smooth, and of a greenish yellow from the sun, but the side next the sun is of a deep red colour, with some spots of gray; the flesh is very tender and delicate; the juice is very sweet, with an agreeable perfume. It ripens the middle of october, but must not be long kept, lest it rot in the middle.
41. PYRUS (*Pendar*) sativa, fructu autumnali oblongo majori cinereo. Tourn. *Poire Pendar*, i. e. *the Knave's Pear*. This is very like the Cassiolette Pear, but is somewhat larger; the flesh is fine and tender; the juice is very much sugared. It ripens the end of october.
42. PYRUS (*Sucré vert*) sativa, fructu autumnali turbinateo tuberoso viridi saccharato, in ore liquecente. Tourn. *Sucré vert*, Duh. n. 68. t. 34. *the green Sugar Pear*. This Pear is shaped like the Winter Thorn, but is smaller; the skin is very smooth and green; the flesh is very buttery; the juice is sugared, and of an agreeable flavour; but it is sometimes subject to be stony in the middle, especially if grafted on a Quince stock.
43. PYRUS (*Marquise*) sativa, fructu autumnali tuberoso sessili, è viridi flavescente, maculis nigris consperso, carne tenerâ saccharatâ. Tourn. *La Marquise*, Duh. n. 93. t. 49. *the Marchioness's Pear*. This is often of two different shapes, according to the nature of the soil where they are planted; for when the soil is dry, the fruit very much resembles a fine Blanquet; but when the soil is very rich and moist, it grows much larger. It is a well-shaped Pear, flat at the top; the eye is small and hollowed; the skin is of a greenish yellow, a little inclining to red on the side next the sun. If this Pear does not change yellow in ripening it is seldom good; but if it does, the flesh will be tender and delicate, very full of juice, which is sugared. It ripens the beginning of november.
44. PYRUS (*Chat-brulé*) sativa, fructu autumnali, oblongo, partim albido, partim rufescente. *The Chat-brulé*, Duh. n. 116. *the Burnt Cat*. It is also called Pucelle de Xaintogne, i. e. the Virgin of Xaintogne. This is a small oblong Pear, shaped much like the Martin

Sec, but differs from it in colour, this being of a pale colour on one side, but of a dark brown on the other; the skin is smooth; the flesh is tender, but dry, and, if kept a short time, is apt to grow mealy. It is in eating the beginning of november.

45. PYRUS (*Besidéri*) sativa, fructu autumnali globoso sessili, ex albido flavescente. *Le Bezi d'Hery*, Duh. n. 23. It is so called from Hery, which is a forest in Bretagne, between Rennes and Nantes, where this Pear was found. This is a middle-sized round Pear, of a pale green, inclining to a yellowish colour; the stalk is very long and slender; the flesh is dry, and but very indifferent for eating, but it bakes well. It ripens the middle of november.
46. PYRUS (*Crasane*) sativa, fructu brumali sessili, è viridi flavescente, maculato, utrinque umbilicato, in ore liquecente. Tourn. *The Crasane, or Bergamotte Crasane*, Duh. n. 49. t. 22. It is also called Buerré Plat, i. e. the flat Butter Pear. This is a middle-sized Pear, hollowed at the crown like an Apple; the stalk is very long and crooked; the skin is rough, of a greenish yellow colour when ripe, covered over with a russet coat; the flesh is extremely tender and buttery, and is full of a rich sugary juice, and is the very best Pear of the season. This is in eating the middle of november.
47. PYRUS (*Dauphine*) sativa, fructu brumali turbinateo sessili flavescente saccharato odorato, in ore liquecente. Tourn. *Lansac ou la Dauphine*, Duh. n. 109. t. 57. *the Lansac or Dauphine Pear*. This Pear is commonly about the size of a Bergamot, of a roundish figure, flat towards the head, but a little produced towards the stalk; the skin is smooth, and of a yellowish green colour; the flesh is yellow, tender, and melting; the juice is sugared, and a little perfumed; the eye is very large, as is also the flower, and the stalk is long and straight. When this Pear is upon a free stock, and planted on a good soil, it is one of the best fruits of the season; but when it is on a Quince stock, or upon a very dry soil, the fruit will be small, stony, and worth little. It ripens the end of november.
48. PYRUS (*Martin Sec*) sativa, fructu brumali oblongo, partim intensè, partim dilute ferrugineo, saccharato, odorato. Tourn. *Martin Sec*, Duh. n. 36. t. 14. *the Dry Martin*. This is sometimes called the Dry Martin of Champagne, to distinguish it from another Dry Martin of Burgundy. This Pear is almost like the Rouffelet in shape and colour, which has occasioned some persons to give it the name of Winter Rouffelet. It is an oblong Pear, whose skin is of a deep russet colour on one side, but the other side is inclining to a red; the flesh is breaking and fine; the juice is sugared, with a little perfume, and if grafted on a free stock, is an excellent Pear, but if it be on a Quince stock, it is very apt to be stony. It is in eating the end of november, but if permitted to hang the full time on the tree, will keep good two months.
49. PYRUS (*Bigarrade*) sativa, fructu brumali magno sessili, è cinereo flavescente. Tourn. *La Villaine d'Anjou*. It is also called Poire Tulipée, i. e. the Tulip Pear, and Bigarrade, i. e. the Great Orange. This is a large round Pear, with a very long slender stalk; the skin is of a pale yellow colour; the flesh is breaking, but not very full of juice. This is in eating the end of november.
50. PYRUS (*Poire de gros queue*) sativa, fructu brumali flavescente odoratissimo, pediculo crassiori. Tourn. *Poire de gros queue*, i. e. *the large stalked Pear*. This is a large roundish Pear, with a yellow skin; the stalk is very thick, from whence it had the name; the flesh is breaking and dry, and has a very musky flavour; but it is apt to be stony, especially if it be planted in a dry soil, or grafted on a Quince-stock, as are most of the perfumed Pears.
51. PYRUS (*Amadote*) sativa, fructu brumali turbinateo rufescente odorato. *L'Amadote*, i. e. *the Amadote Pear*. This is a middle-sized Pear, somewhat long, but flat at the top; the skin is generally rough, and of a russet colour; the flesh is dry and high-flavoured, if grafted on a free stock. The wood of this tree is generally

generally thorny, and is esteemed the best sort of Pear for stocks to graft the melting Pears upon, because it gives them some of their fine musky flavour. It is in eating the beginning of december, but will keep good six weeks.

52. PYRUS (*Bouvar*) *fativa*, fructu brumali, globoso, dilute virente, tuberoso, punctato, in ore liquescente. Tourn. *Petit Oin*, i. e. *Little Lard Pear*. It is also called Bouvar and Roufette d'Anjou, i. e. the Russet of Anjou; and Amadont, and Merveille d'Hyver, i. e. the Wonder of the Winter. This Pear is of the size and shape of the Ambret or Leschasserie, but the skin is of a clear green colour, and a little spotted; the stalk is pretty long and slender; the eye is large, and deeply hollowed; the flesh is extremely fine, and melting; the juice is much sugared, and has an agreeable musky flavour. It is in eating the middle of December, and is esteemed one of the best fruits in that season. This is better on a free stock than upon the Quince.
53. PYRUS (*Louisebonne*) *fativa*, fructu brumali, longo, è viridi albicante, in ore liquescente. Tourn. *Louisebonne*, Duh. 97. t. 53. This Pear is shaped somewhat like the St. Germain, or the Autumn Vertelongue, but is not quite so much pointed; the stalk is very short, fleshy, and somewhat bent; the eye and the flower are small; the skin is very smooth; the colour is green, inclining to a pale colour when ripe; the flesh is extremely tender and full of juice, which is very sweet, especially when it grows upon a dry soil, otherwise it is apt to be very large and ill tasted. It is in eating the beginning of december.
54. PYRUS (*Colmar*) *fativa*, fructu brumali, tuberoso, è viridi flavescente, punctato, saccharato. Tourn. *Poire de Colmar*, i. e. *the Colmar Pear*. It is also called Poire Manne, the Manna Pear, and Bergamotte tardive, the late Bergamot. Colmar Poire Manne. Duh. n. 94. t. 50. This Pear is somewhat like a Boncrétien in shape, but the head is flat; the eye is large, and deeply hollowed; the middle is larger than the head, and is sloped toward the stalk, which is short, large, and a little bent; the skin is green, with a few yellowish spots, but is sometimes a little coloured on the side next the sun; the flesh is very tender, and the juice is greatly sugared. It is in eating the latter end of december, but will often keep good till the end of january, and is esteemed one of the best fruits of that season.
55. PYRUS (*L'Eschasserie*) *fativa*, fructu brumali, globoso, citriformi, flavescente, punctato, in ore liquescente, saccharato, odoratissimo. Tourn. *L'Eschasserie*. It is also called Vertelongue d'Hyver, i. e. the Winter long green Pear, and Besidéri Landri, i. e. the Landry Wilding. Echassery. Bezi de Chassery, Duh. n. 66. t. 32. This Pear is shaped like a Citron; the skin is smooth, and of a green colour, with some spots while it hangs on the tree, but as it ripens it becomes of a yellowish colour; the stalk is straight and long; the eye is small, and not hollowed; the flesh is melting, and buttery; the juice is sugared, with a little perfume. It is in eating the latter end of december.
56. PYRUS (*Virgouleuse*) *fativa*, fructu brumali longo, è viridi flavescente, in ore liquescente, saccharato. Tourn. *Le Virgoulé*, or *La Virgouleuse*, Duh. n. 95. t. 51. It is also called Bujaleuf, and Chambrette; and Poire de Glace, i. e. the Ice Pear in Gascoigne; but it is called Virgoule, from a village of that name in the neighbourhood of St. Leonard in Limousin, where it was raised and sent to Paris by the Marquis of Chambret. This Pear is large, long, and of a green colour, inclining to yellow as it ripens; the stalk is short, fleshy, and a little bent; the eye is of a middling size, and a little hollowed; the skin is very smooth, and sometimes a little coloured towards the sun; the flesh is melting, and full of a rich juice. It is in eating the latter end of december, and will continue good till the end of january, and is esteemed one of the best fruits of the season; but the tree is very apt to produce vigorous shoots, and the blossoms being generally produced at the extreme part of the shoot, when they are shortened,

the fruit will be entirely cut away, which is the reason it is condemned as a bad bearer; but when it is grafted on a free stock, it ought to be allowed at least forty feet to spread; and if upon a Quince stock, it should be allowed upwards of thirty feet, and the branches trained in against the espalier or wall, at full length, in a horizontal position, as they are produced. Where this tree is thus treated, it will bear very plentifully, and the fruit will be good.

57. PYRUS (*Ambrette*) *fativa* spinosa, fructu globoso, sessili, ferrugineo, in ore liquescente, saccharato, odoratissimo. Tourn. *Ambrette*, Duh. n. 65. t. 31. This is so called from its musky flavour, which resembles the smell of the Sweet Sultan Flower, which is called Ambrette in France. This Pear is like the Leschasserie in shape, but is of a russet colour; the eye is larger, and more hollowed; the flesh is melting, and the juice is richly sugared and perfumed; the seeds are large and black, and the cells in which they are lodged are very large; the wood is very thorny, especially when grafted on free stocks. The fruit is in eating the latter end of december, and continues good till the latter end of january, and is esteemed a very good fruit by most people.
58. PYRUS (*Epine d'Hyver*) *fativa*, fructu brumali, magno, pyramidato, albido, in ore liquescente, saccharato, odorato. Tourn. *Epine d'Hyver*, Duh. n. 64. t. 44. f. 3. *Winter-thorn Pear*. This is a large fine Pear, nearly of a pyramidal figure; the skin is smooth, and of a pale green colour, inclining to yellow as it ripens; the stalk is short and slender; the flesh is melting and buttery; the juice is very sweet, and in a dry season, is highly perfumed; but when it is planted on a moist soil, or the season proves wet, it is very insipid, so that it should never be planted on a strong soil. It ripens the end of december, and will continue good two months.
59. PYRUS (*Saint Germain*) *fativa*, fructu brumali longo, è viridi flavescente, in ore liquescente. Tourn. *Saint Germain*, Duh. n. 96. t. 52. *the St. Germain Pear*. It is also called Inconnue la Fare, i. e. the Unknown of La Fare; it being first discovered upon the banks of a river which is called by that name, in the parish of St. Germain. This is a large long Pear, of a yellowish green colour when ripe; the flesh is melting, and very full of juice, which in a dry season, or if planted on a warm dry soil, is very sweet; but when it is planted on a moist soil, the juice is very apt to be harsh and austere, which renders it less esteemed by some persons, though in general it is greatly valued. This is in eating from the end of december till february.
60. PYRUS (*Saint Austin*) *fativa*, fructu brumali tuberoso subacido flavescente punctato. Tourn. *Saint Austin*, Duh. n. 99. t. 58. f. 3. This is about the size of a middling Virgoulé Pear, but is somewhat shorter and slenderer near the stalk; the skin is of a fine Citron colour, spotted with red on the side next the sun; the flesh is tender, but not buttery, and is pretty full of juice, which is often a little sharp, and to some persons is disagreeable, but others value it on that account. This is in eating in december, and will continue good two months.
61. PYRUS (*Boncrétien d'Espagne*) *fativa*, fructu brumali pyramidato, partim purpureo, punctis nigris consperso, flavescente. Tourn. *Boncrétien d'Espagne*, Duh. n. 89. t. 46. *the Spanish Boncrétien*. This is a large Pear, of a pyramidal form, of a fine red or purple colour on the side next the sun, and full of small black spots; the other side is of a pale yellow colour, the flesh is breaking, and when it is on a light rich soil, and grafted on a free stock, its juice is very sweet. It ripens in the end of december, and will continue good a month or six weeks. If this be grafted on a Quince stock, it is very apt to be dry and stony. This is a very good fruit for baking.
62. PYRUS (*Poire de Livre*) *fativa*, fructu brumali, magno, oblongo, turbinato, ferrugineo, utrinque umbilicate. Tourn. *Poire de Livre*, Duh. n. 104. *the Pound Pear*. It is also called Gros Ratteau Gris, the gray rake Pear; and Poire d'Amour. In England this

this is called Parkinson's Warden, or the black Pear of Worcester. This is a very large Pear, and commonly weighs a pound or more; the skin is rough, and of an obscure red colour on the side next the sun, but somewhat paler on the other side; the stalk is very short, and the eye is greatly hollowed. This is not fit for eating, but bakes or stews exceeding well, and is in season from december to march.

63. PYRUS (*Besi de Caffoy*) sativa, fructu brumali parvo flavescente, maculis rubris consperso. Tourn. *Besi de Caffoy*, i. e. the Wilding of Caffoy, a forest in Bretagne, where it was discovered, and passes under the name of Rouffet d'Anjou. It is also called Petit Beurré d'Hyver, i. e. Small Winter Butter Pear. Bezy de Caiffoy; or, Rouffette d'Anjou, Duh. n. 59. t. 29. This is a small oblong Pear, of a yellowish colour, spotted with red; the flesh is melting, and the juice is very rich. It is in eating in december and january. This is a prodigious bearer, and commonly produces its fruit in large clusters, provided it be not too much pruned; for it generally produces its blossom-buds at the extremity of its shoots, which if shortened, the fruit would be cut away. There was a tree of this kind in the gardens of Camden-house near Kensington, which generally produced a great quantity of fruit.
64. PYRUS (*Martin-fire*) sativa, fructu brumali turbulato inæquali, ventre tumido, partim purpureo, partim flavescente. Tourn. *Ronville*. It is also called Hocrenaille and Martin-fire, i. e. the Lord Martin Pear. Martin-fire Ronville, Duh. n. 30. t. 19. f. 5. This Pear is about the size and shape of a large Rouffolet; the eye is of a middling size, and hollowed a little; the middle of the Pear is generally swelled more on one side than on the other, but is equally extended towards the stalk; the skin is very smooth and soft, and is of a lively red colour next the sun, but on the other side it changes yellow as it ripens. The flesh is breaking and full of juice, which is very sweet and a little perfumed; but if grafted on a Quince stock, is very apt to be small and stony.
65. PYRUS (*Citron d'Hyver*) sativa, fructu brumali citriformi flavescente duro moschato odoratissimo. Tourn. *Citron d'Hyver*, i. e. the Winter Citron Pear. It is also called the Musk Orange Pear, in some places. This is a pretty large Pear, in shape and colour very like an Orange or Citron, from whence it had its name. The flesh is hard and dry, and very subject to be stony, for which reasons it is not valued as an eating Pear, but will bake very well. It is in season from december to march.
66. PYRUS (*Rouffolet d'Hiver*) sativa, fructu brumali oblongo, è viridi flavescente, saccharato, saporis austeri. Tourn. *Rouffolet d'Hiver*, Duh. n. 31. t. 19. f. 2. the Winter Rouffolet. This is by some supposed to be the same Pear as is called the Dry Martin, but it is very different from that in several particulars. The colour of this is a greenish yellow, inclining to brown; the stalk is long and slender, and the flesh is buttery and melting, and generally full of juice, which is very sweet, but the skin is apt to contain an austere juice, so that if it be not pared, it is apt to be disagreeable to many persons palates. It is in eating in january and february.
67. PYRUS (*Portail*) sativa Pictaviensis, fructu brumali globoso sessili saccharato odorato. Tourn. *Poir Portail*. This Pear was discovered in the province of Poictou, where it was so much esteemed, that they preferred it to most other fruit, though in the opinion of the most curious judges, it does not deserve the great character which is given to it; for it rarely happens that it proves good for eating, being generally dry, stony, and hard, unless in extraordinary seasons, and upon a very good soil. This must always be grafted on a free stock, and should be planted on a light rich soil; and in very dry seasons the trees should be watered, otherwise the fruit will be stony. It is in season from january to march, and bakes well.
68. PYRUS (*France-real*) sativa, fructu brumali magno globoso flavescente, punctis rufis consperso. Tourn. *France real*, Duh. n. 6. It is also called Fin-or

d'Hyver, i. e. the Golden End of Winter. This is a very large Pear, almost of a globular figure; the skin is yellow, spotted with red; and the stalk is short. The flesh of this Pear is dry, and very apt to be stony, but it bakes exceeding well, and continues good from january till march.

69. PYRUS (*Easter Bergamot*) sativa fructu, brumali turbulato sessili subacido flavescente, punctis asperioribus consperso. Tourn. *Bergamotte Bugi*. It is also called Bergamotte de Pâque, the Easter Bergamot. Duh. n. 52. t. 24. It is a large Pear, almost round, but is a little produced in length towards the stalk; the eye is flat and the skin is green, having many rough protuberances like spots dispersed all over, but, as it ripens, becomes yellowish; the flesh is breaking, and in a good season the juice is sweet; but it must have a free stock, a south-east wall, and a good soil, otherwise it is apt to be stony and austere. It is in eating from february till april.
70. PYRUS (*Muscat of Germany*) Muscat d'Alleman, Duh. n. 72. t. 36. This is an excellent Pear, more long than round, of the shape of the Winter-royal, but is less toward the eye, and is more ruffet, and of a red colour next the sun; it is buttery, melting, and a little musky. This is in eating in march, april, and sometimes in may, if it is well preserved.
71. PYRUS *Bergamotte de Hollande*, or d'Alençon. Amofelle. Duh. n. 53. t. 25. It is large and round, of the shape of the ordinary Bergamot. The colour is greenish, the flesh is half buttery and tender, the juice is highly flavoured. This is a very good Pear, and will keep till april.
72. PYRUS (*Naples*) Duh. n. 107. t. 56. This is a pretty large, long, greenish Pear; the flesh is half breaking; the juice is sweet, and a little vinous. It is in eating in march. I am in doubt whether this Pear is not in some places taken for a Saint Germain, for there is a Pear in some gardens, very like the Saint Germain, which will keep till april, and this Pear agrees with the characters of that. It is called in England the Easter St. Germain.
73. PYRUS (*Boncrétien d'Hiver*) sativa, fructu brumali magno pyramidato, è flavo nonnihil rubente. Tourn. *Boncrétien d'Hyver*, Duh. n. 87. t. 45. the Winter Boncrétien Pear. This Pear is very large and long, of a pyramidal figure; the skin is of a yellowish colour, but the side next the sun inclines to a soft red; the flesh is tender and breaking, and is very full of rich sugared juice. This is esteemed in France one of the best winter Pears, but in England it is seldom so good; though I am fully satisfied, if it were grafted on a free stock, and planted in a good soil, against a wall exposed to the south-east, and the branches trained at full length, it might be rendered more acceptable than it is at present in England.
74. PYRUS (*Catillac*) sativa, fructu brumali magno, cydoniæ facie, partim flavo, partim purpureo. Tourn. *Catillac*, Duh. n. 102. t. 58. f. 4. This is a large Pear, shaped somewhat like a Quince; the skin is for the most part of a yellow colour, but changes to a deep red on the side next the sun; the flesh is hard, and the juice austere, but it is a very good fruit for baking, and being a plentiful bearer, deserves a place in every good collection of fruit. It will be good from Christmas to april, or longer.
75. PYRUS (*Pastorale*) sativa, fructu brumali oblongo flavescente, punctis rubris consperso. *La Pastorale*, *Musette d'automne*. Duh. n. 100. t. 55. This Pear is of the size and shape of a fine Rouffolet; the stalk is short and crooked; the skin is somewhat rough, of a yellowish colour, spotted with red; the flesh is tender and buttery, and when it grows on a dry soil, the juice is very sweet; but on a wet soil, or in moist years, it is subject to have an austere taste. This Pear is in eating in february and march.
76. PYRUS (*Double Fleur*) sativa, fructu brumali sessili, partim flavescente, partim purpurascete. Tourn. *La Double Fleur*, Duh. n. 58. t. 28. the double-flowering Pear. This is so called, because the flowers have a double range of petals or leaves. It is a large short Pear; the stalk is long and straight; the skin

is very smooth, and of a yellowish colour, but the side next the sun is commonly of a fine red or purple colour. This is by some esteemed for eating, but it is generally too austere in this country for that purpose. It is the best Pear in the world for baking or comports. It is good from february to may.

77. PYRUS (*Saint Martial*) fativa, fructu brumali oblongo, partim flavescente, partim purpurascete. *Saint Martial*. It is also called in some places Poire Angelique, i. e. the Angelic Pear; and in the south of France, Poire douce. Angelique de Rome. Duh. n. 108. This Pear is oblong, in shape like the Boncrétien, but not so large, and a little flatter at the crown; it has a very long stalk; the skin is smooth and yellowish, but on the side next the sun it turns to a purplish colour; the flesh is tender and buttery, and the juice is very sweet. This is in eating in february and march.
78. PYRUS (*Befi Chaumontelle*) fativa, fructu brumali oblongo, partim albido, partim purpureo odorato, saccharato. *La Poire de Chaumontelle, or Bezi de Chaumontelle, or Beurre d'hiver*. Duh. n. 78. t. 40. This Pear is in shape somewhat like the Autumn Beurré, but is flatter at the crown; the skin is a little rough, of a pale green colour, but turns to a purplish colour next the sun; the flesh is melting; the juice is very rich, and a little perfumed. It is in eating from november to january, and is esteemed by some as the best late Pear yet known.
79. PYRUS (*Carmelite*) fativa, fructu brumali globoso sessili cinereo maculis amplis obscurioribus consperso. Tourn. *Carmelite*. This is a middle-sized Pear, of a roundish form; the skin is of a gray colour on one side, but is inclining to a red on the other, having some broad spots of a dark colour all over; the flesh is commonly hard and dry, so that it is not very much esteemed. It is in season in march.
80. PYRUS (*Union*) fativa, fructu brumali maximo pyramidato, dilute virente. *The Union Pear, otherwise called Dr. Uvedale's St. Germain*. This is a very large long Pear, of a deep green colour, but the side next the sun sometimes changes to a red as it ripens. This is not fit for eating, but bakes very well; and being a great bearer, and a very large fruit, deserves a place in every good collection. It is in season from Christmas to april.

There are many other sorts of Pears, which are still continued in some old gardens; but as those here mentioned are the best sorts known at present, it would be needless to enumerate a great quantity of ordinary fruit; since every one who intends to plant fruit-trees, would rather chuse those which are the most valued, the expence and trouble being the same for a bad sort of fruit as a good one. Indeed I have inserted many more than are really worth planting, in order to please such who are fond of great variety; but whoever has a mind to make choice of such only as are good, may easily distinguish them, by attending to the account given of each sort, and hereby every person is at liberty to please himself; for it is not every one who prefers a Beurré Pear, though that is generally esteemed the very best in its proper season; there are some who admire the Messire Jean, for the firmness of its flesh, which to others is a great objection against it; and as some esteem the breaking, and others the melting Pears, I have distinguished them by their descriptions in such a manner, that every one may make choice of the kinds of fruit which are agreeable to their palate; and the different seasons in which each kind is in eating, being exhibited (allowing a little for the difference of seasons, which are earlier some years than others) it is not very difficult for a person to make a collection of good Pears to succeed each other throughout the season of these fruits, both for eating and baking.

The time of each fruit ripening, as here set down, is taken at a medium for seven years, and in the neighbourhood of London, where all sorts of fruit generally ripen a fortnight or three weeks earlier than in almost any part of England; and it is very obvious to every person who will attend to the culture of fruit-trees, that their time of ripening is accelerated by

long cultivation; for many of the sorts of Pears, which some years past rarely became ripe in England, unless they grew against the best aspected walls, are now found to ripen extremely well on espaliers and dwarfs; and those Pears which seldom were in eating till january, are ripe two months earlier. There is also a very great difference in their time of ripening in different seasons, for I have known the fruit of a Pear-tree in one year all ripe and gone by the middle of october, and the very next year the fruit of the same tree has not been fit to eat till the end of december, so that allowance should be made for these accidents. The Befi de Chaumontelle Pear, about forty years past, was seldom fit to eat before february, and has continued good till the middle of april, but now this Pear is commonly ripe in november; and when it is planted on a warm soil, and against a good aspected wall, it is in eating the middle or end of october. This forwarding of the several kinds of Pears, may be in some measure owing to the stocks upon which they are grafted; for if they are grafted upon early summer Pear stocks, they will ripen much earlier than when they are upon hard winter Pear stocks; and if some of the very soft melting Pears were grafted upon such stocks as are raised from the most austere fruit, such as are never fit to eat, and of which the best Perry is made, it would improve those fruits, and continue them much longer good; or if the common free stocks were first grafted with any of these hard winter Pears, and when they have grown a year, then to graft or bud these soft melting Pears upon them, it would have the same effect; but the Pears so raised will require a year's more growth in the nursery, and consequently cannot be sold at the same price as those which are raised in the common method, these requiring to be twice budded or grafted, so that there is double labour, beside standing a full year longer; but this difference in the first expence of the trees, is not worth regarding by any person who is desirous to have good fruit; for the setting out in a right way is that which every one should be the most careful of, since by mistaking at first, much time is lost, and an after expence of new trees often attends it.

Another cause of fruits ripening earlier now than they formerly did, may be from the length of time they have been cultivated; for it is very certain, that most sorts of plants have been greatly forwarded and improved by culture, within the space of thirty or forty years, as may be known from the several sorts of esculent plants, which are cultivated in the kitchen-gardens, and of which sorts there are many which are annually improving: and if we look back to the best French authors who have written on the subject of fruit-trees, we shall find, that the times of ripening of many sorts of Pears are put down a month or six weeks later about fifty or sixty years ago, than they are now found to ripen about Paris; and here about London it is much the same, for I cannot find they are the least forwarder in the times of their ripening at Paris than at London.

[2. Leaves ovate, pubescent even on the upper surface, especially along the midrib. Peduncles tomentose. Corymb elongated, tomentose. Flowers very numerous, much smaller than in the common Pear^a.

Native of Germany. Introduced in 1786, by Mr. John Græfer^b.

3. Branchlets or twigs thickish. Leaves elliptic or oval, petioled, silky and whitish underneath. Flowers in terminating corymbs. Fruit globular, extremely acerb, but when ripe melting and very sweet.—Native of the mountains of Austria^c.

4. The Apple is a spreading tree, with the branches and twigs irregular and twisting, more horizontal than in the Pear. Leaves ovate, serrate, the younger ones pubescent underneath. Stipules linear. Flowers in terminating, sessile, villose umbels. Corollas white, but finely tinged with red on the outside. Fruit roundish, umbilicate at the base, acid^d.

^a Linn. mant.

^b Hort. kew.

^c Jacquin.

^d Smith.

The Apple in its wild state, then called the Crab or Wilding, is armed with thorns, as well as the wild Pear. The peduncles are rarely subdivided, and are mostly covered with soft down; as is the inside, and sometimes the outside of the calyx^c. According to Scopoli, the calyx is smooth on the outside, but lanuginose within, and wrinkled at the base. Probably these circumstances vary. Linneus distinguishes two varieties of the wild Apple: the common one, with a very acid fruit, and another with a bitter fruit, which becomes sweetish when ripe. This is more rare, and is found chiefly in Smoland. Perhaps it may be the same with the *nivalis* of Jacquin.]

Mr. Miller mentions two varieties in the fruit of the Crab, one white, the other purple towards the sun: [it is commonly yellowish green with a tinge of red.] He also speaks of a variety with variegated leaves; but when the trees grow vigorous, the leaves soon become plain.

[Haller thus discriminates the Apple tree. It has many things in common with the Pear tree, but the leaf is more shortly mucronate, less manifestly serrate, subhirsute underneath. The flowers tinged with red, and smelling very sweet. The peduncle shorter. The stamens usually from nineteen to twenty-five: (in the Pear twenty-two. Pollich assigns nineteen as the limit in the Apple, twenty-one in the Pear.) The fruit round, hollowed at the peduncle, depressed at top, less astringent but more acid than the Pear, of a softer texture. The Apple has woody threads passing through it from the peduncle, ten of which are regularly disposed round the capsules, and tend to the calyx. It is said that the fruit rots, when these are broken. The Pear also has them, but they are not so distinct, on account of the calculary or stony congeries.—In the Apple they are placed very regularly, one at the point of each cell of the capsule, and one in the middle between the other five. They are very apparent on a transverse section of the fruit. The cells are differently shaped in the two fruits: in the Apple they are narrow and pointed at both ends; in the Pear they are obovate, broad exteriorly, and drawing to a point at the end next the centre of the fruit. The Pear, however it may vary in shape, size, colour, taste, &c. by cultivation, is generally convex and lengthened out at the base: whereas in the Apple it is always concave there. Besides this, the leaves of the Apple are commonly wider in proportion to their length, of a yellower green above, and whitish underneath; whereas in the Pear, they are dark green above, and quite smooth on both sides: their vascular system is very different, being loose in the Apple, and very close in the Pear; hence the leaves of the latter are much stouter, and more permanent. Lastly the growth of these trees is quite different; the Pear being lofty and upright, the Apple low and spreading.

The wood of the wild Apple is tolerably hard: it turns very clean; and when made into cogs for wheels, acquires a polish, and lasts a long time. The bark affords a yellow dye. The acid juice of the fruit is called Verjuice, and is much used in recent sprains, and in other cases, as an astringent or repellent. With a proper addition of sugar, it is probable that a very grateful liquor might be made with the juice, little inferior to Rhenish wine^f. Lightfoot affirms, that the Crab mixed with cultivated Apples, or even alone, if thoroughly ripe, will make a sound masculine Syder. Every body knows that Syder is made from the juice of a variety of cultivated Apples pressed, and fermented. Pomatum is so called because the lard is or ought to be beat up with the pulp of Apples. This fruit, when ripe is laxative; the juice is excellent in the dysentery; boiled or roasted Apples fortify a weak stomach; Scopoli recovered from a weakness of the stomach and indigestion by using them; and they are equally efficacious in putrid and malignant fevers with juice of Lemons or Currants.

The Apple is a native of Europe; but whence and how we acquired the numerous cultivated varieties of this fruit is not known.

^c Engl. bot.

^f Withering.

Parkinson has fifty-seven varieties, besides Sweetings and Crabs. Ray has seventy-eight: he has selected the best of his time, (1688) and has distributed them into four sections.

First. *Early or Summer Apples.*

1. The Ginetting or Juneting.
2. The Margaret or Magdalene.
3. The King Apple.
4. The Aromatick or Golden Russetting.
5. The Flax Apple.
6. The Spice Apple.
7. The Summer Queening.
8. The Go-no-further, or Cat's-head.
9. The Golden Pippin.
10. The good Housewife or Bontradue.
11. The Giant Apple.
12. The Pomewater.
13. The Summer Pearmain.
14. The Kirton or Holland Pippin: In Suffex, Broad-eye.
15. The Orange Apple.
16. Summer Belleboon (Belle & Bonne.)
17. The Paradise Apple.
18. The Famagusta.
19. The Codling.
20. The Costard Apple. So much esteemed formerly that dealers in Apples were called Costard-mongers.
21. The Sops in Wine.

Secondly. *Provincial Apples.*

1. The Stokin or Stoken Apple. Probably from Stoke in Herefordshire.
2. The Golden Renet. Peculiar to Hertford.
3. The Darling. A nice fruit of Cheshire.
4. The Angel's-bit. Famous chiefly in Worcestershire.
5. The Harvey Apple. From the famous Dr. Gabriel Harvey. Esteemed at Cambridge. Large, of a whitish green colour, for the most part with black spots, scarcely lasting beyond Christmas.
6. The Quarrington of Devonshire.

Thirdly. *Winter or keeping Apples.*

1. The winter Queening.
2. The Quince Apple.
3. The winter Pearmain.
4. The Nonesuch.
5. The Pealing.
6. The Leather-coat, or winter John.
7. The Pome-roy, i. e. King of Apples.
8. The Lording.
9. The July-flower (Gilliflower) Apple.
10. The Pear Apple.
11. The Greening.
12. Lone's Pearmain.
13. The green Russetting.
14. The red Russetting.
15. The winter Fillet or Violet.
16. The winter Belle and Bonne.
17. The Oaken Pin.
18. The John Apple, or Deux Ans.
19. The Westbury.
20. The winter Reed.
21. The Flower of Kent.
22. The winter Chestnut.
23. The Maligar Apple.
24. The short Tart.
25. The Pelmell.
26. Thrift.
27. Winter Clary.
28. Fig Apple.
29. White Pippin; in Essex the Renet.
30. Kentish Pippin.
31. French Pippin.

Fourthly. *Syder Apples.*

1. The Red-streak.
2. The Bromsberry Crab.
3. The Golden Pippin.
4. The Gennet-moil.
5. The Westbury Apple.
6. The white and red Mast Apples.
7. The John Apple.
8. The Underleaf.
9. The winter Fillet.
10. Elliott's.

11. Stocken Apple.
12. Bitter Scale.
13. Claret-wine Apple.
14. Arrier Apple.
15. Richard's or Orange Apple.
16. Coling Apple.
17. Olive Apple.
18. Fox-whelp.
19. Pippins and Pearmain mixt.
20. The Gilliflower Apple.

The above list of Mr. Ray's, was furnished by his friend Tancred Robinson, from the information of the most skilful gardeners then about London. We cannot avoid observing how many of them have fallen into utter disuse within a century.

Rea enumerates only twenty choice fruits, grafted on the Paradise Apple, fit for walls, or dwarf hedge-trees in large gardens.

1. Juniting.
2. King Apple.
3. Margaret or Magdalen.
4. Famagusta.
5. Gyant.
6. Good Housewife.
7. Rome de Rambures.
8. Winter Queening.
9. Quince Apple.
10. Red Ruffet.
11. Round Ruffet Harvy.
12. Carlile Pippin.
13. Bridgewater Pippin.
14. Lincoln Renet.
15. Nonfuch.
16. Royal Pearmain.
17. Kirton Pippin.
18. Go-no-further.
19. Darling.
20. Angel's Bit.

He gives a list of sixty-two sorts proper for Orchards: and for Syder Apples refers to Mr. Evelyn's Pomona. This treatise gives no particular list, but they may be found among Mr. Ray's.

Mr. Hartlib speaks of one who had 200 sorts, and verily believes there are near 500 in this island.

Phillips, in his poem entitled Cyder, thus enumerates the most esteemed Apples—

"The Pippin burnisht o'er with gold, the *Moile*
 "Of sweetest hony'd taste, the fair *Permain*,
 "Temper'd, like comliest nymph, with red and white,
 "Salopian acres flourish with a growth
 "Peculiar, styl'd the *Ottley*: be thou first
 "This Apple to transplant; if to the name
 "Its merit answers, no where shalt thou find
 "A wine more priz'd, or laudable of taste.
 "Nor does the *Eliot* least deserve thy care,
 "Nor *John-Apple*, whose wither'd rind, entrencht
 "With many a furrow, aptly represents
 "Decrepid age; nor that from *Harvey* nam'd,
 "Quick-relishing: Why should we sing the *Thrift*,
 "Codling, or *Pomroy*, or of pimpled coat
 "The *Ruffet*, or the *Cat's-head's* weighty orb,
 "Enormous in its growth——
 "But how with equal numbers shall we match
 "The *Musk's* surpassing worth! that earliest gives
 "Sure hopes of racy wine, and in its youth,
 "Its tender nonage, loads the spreading boughs
 "With large and juicy offspring, that defies
 "The vernal nippings, and cold syderal blasts!
 "Yet let her to the *Red-streak* yield, that once
 "Was of the sylvan kind, unciviliz'd,
 "Of no regard, till *Scudamore's* skilful hand
 "Improv'd her, and by courtly discipline
 "Taught her the savage nature to forget:
 "Hence styl'd the *Scudamorean* plant; whose wine
 "Whoever tastes, let him with grateful heart
 "Respect that ancient loyal house——"

Mr. Knight affirms of these famous fruits, that the Moil and Redstreak, with the Musks and Golden Pippin, are in the last stage of decay; and the Stire and Fox-whelp are hastening rapidly after them. The Redstreak, so much celebrated by the writers of the last century, appears almost to have survived its fame as a Cider-fruit; and indeed if it never possessed greater excellence than it does at present, it has certainly been much over-rated. But Mr. Knight suspects that each

kind of Apple is best calculated for Cider, when the tree has attained its maturity, and before it decays. Not that he thinks the flavour of the fruit is necessarily debased by the age of the variety; but merely that the crop in the aggregate ripens less perfectly, owing to the weak state of some of the diseased branches.²]

Mr. Miller gives the following account of the varieties of Apples.

I shall first mention a few of those sorts of Apples which have been introduced from France, (Duham. 1. 322. t. 1—14.) which were most of them grafted on Paradise stocks, and were for some time much esteemed, and shall mention those of our own growth afterwards.

Pomme de Rambour, Duham. t. 10. The Rambour is a very large fruit, of a fine red next the sun, and striped with a pale or yellowish green. This ripens very early, commonly about the end of august, and soon grows mealy, therefore is not esteemed in England.

Pomme de Courpendu, Duham. t. 6. the hanging body. This is a very large Apple, of an oblong figure, having some irregular risings or angles, which run from the base to the crown; it is of a red cast on the side towards the sun, but pale on the other side; the foot-stalk is long and slender, so that the fruit is always hanging downward, which occasioned the French gardeners to give it this name.

The Rennette-blanche, or White Renette, or French Renette, Duham. n. 17. This is a large fine fruit, of a roundish figure, and of a pale green, changing a little yellowish when ripe, having some small gray spots; the juice is sugary, and it is good for eating or baking; it will keep till after Christmas sound.

The Rennette-grise, Duham. t. 9. This is a middle-sized fruit, shaped like the Golden Renette, but is of a deep gray colour on the side next the sun, but on the other side intermixed with yellow; it is a very juicy good Apple, of a quick flavour. It ripens in october, and will not keep long.

Pomme d'Api, Duham. t. 11. This is a small hard fruit, of a bright purple colour on the side next the sun, and of a yellowish green on the other side; it is a very firm fruit, but has not much flavour, so it is only preserved by some persons by way of curiosity. It keeps a long time sound, and makes a variety in a dish of fruit.

Le Calville d'Automne, the Autumn Calville. This is a large fruit of an oblong figure, of a fine red colour towards the sun. The juice is vinous, and much esteemed by the French.

Fenouillat ou Pomme d'Anis, Duham. t. 5. the Fennel, or Anise Apple. This is a middle-sized fruit, a little longer than a Golden Pippin, of a grayish colour. The pulp is tender, and has a spicy taste like Anise-feed; the wood and the leaves are whitish.

Pomme Violette, Duham. n. 7. the Violet Apple. This is a pretty large fruit, of a pale green, striped with deep red to the sun. The juice is sugary, and has a flavour of Violets, which occasioned the name.

There are not above two or three of these which are much esteemed in England, viz. the French Renette, the Rennette-grise, and the Violet Apple; the others being early fruit, which do not keep long, and their flesh generally mealy, do not deserve to be propagated, as we have many better fruits in England.

I shall next put down those sorts of Apples which are best esteemed in England, placing them in the order according to their time of ripening.

The first Apple which is brought to the markets, is the Codlin. This fruit is so well known in England, that it is needless to describe it.

The next is the Margaret Apple: this fruit is not so long as the Codlin, of a middling size; the size next the sun changes to a faint red, when ripe; the other side is of a pale green; the fruit is firm, of a quick pleasant taste, but does not keep long.

The Summer Pearmain is an oblong fruit, striped

² Treatise on the Culture of the Apple and Pear, 1797.

With red next the sun; the flesh is soft, and in a short time is meally, so that it is not greatly esteemed.

The Kentish Fill-Basket is a species of Codlin, of a large size, and somewhat longer shaped than the Codlin; this ripens a little later in the season, and is generally used for baking, &c.

The Transparent Apple: this was brought to England a few years since, and was esteemed a curiosity; it came from Petersburg, where it is affirmed to be so transparent, as that the kernels may be perfectly seen, when the Apple is held to the light; but, in this country, it is a meally insipid fruit, not worth propagating.

Loan's Pearmain: this is a beautiful fruit, being of a middling size; the side next the sun is of a beautiful red, and striped with the same colour on the other; the flesh is vinous, but as it soon grows meally, it is not greatly esteemed.

The Quince Apple: this is a small fruit, seldom larger than the Golden Pippin, but is in shape like the Quince, especially towards the stalk; the side next the sun is of a russet colour, on the other side inclining to yellow: this is an excellent Apple for about three weeks in september, but will not keep much longer.

The Golden Renette is a fruit so well known in England, as to need no description; this ripens about michaelmas, and for about a month is a very good fruit, either for eating raw or baking.

The Aromatic Pippin is also a very good Apple: it is about the size of a Nonpareil, but not so flat, it is a little longer; the side next the sun is of a bright russet colour; the flesh is breaking, and has an aromatic flavour. It ripens in october.

The Hertfordshire Pearmain, by some called the Winter Pearmain: this is a good sized fruit, rather long than round, of a fine red next the sun, and striped with the same colour on the other side; the flesh is juicy, and stewes well, but is not esteemed for eating by any nice palates. This is fit for use in november and december.

The Kentish Pippin is a large handsome fruit, of an oblong figure; the skin is of a pale green colour; the flesh is breaking, and full of juice, which is of a quick acid flavour. This is a very good kitchen fruit, and will keep till february.

The Holland Pippin is larger than the former; the fruit is somewhat longer, the skin of a darker green, and the flesh firm and juicy. This is a very good kitchen fruit, and will keep late in the season.

The Monstrous Renette is a very large Apple, of an oblong shape, turning red toward the sun, but of a dark green on the other side; the flesh is apt to be meally, so it is not much valued by those who are curious, and only preserved for the magnitude of the fruit.

The Embroidered Apple is a pretty large fruit, somewhat shaped like the Pearmain, but the stripes of red are very broad, from whence the gardeners have given it this title: it is a middling fruit, and is commonly used as a kitchen Apple, though there are many better.

The Royal Russet, by some called the Leather Coat Russet, on account of the deep russet colour of the skin; this is a large fair fruit, of an oblong figure, broad towards the base; the flesh is inclinable to yellow. This is one of the best kitchen Apples we have, and is a very great bearer: the trees grow large and handsome, and the fruit is in use from october till april, and is also a pleasant fruit to eat.

Wheeler's Russet is an Apple of a middling size, flat, and round; the stalk is slender, the side next the sun of a light russet colour, and the other side inclining to a pale yellow, when ripe; the flesh is firm, and the juice has a very quick acid flavour, but is an excellent kitchen fruit, and will keep a long time.

Pile's Russet is not quite so large as the former, but is of an oval figure, of a russet colour to the sun, and of a dark green on the other side; it is a very firm fruit, of a sharp acid flavour, but is much esteemed for baking, and will keep sound till april, or later, if they are well preserved.

The Nonpareil is a fruit pretty generally known in England, though there is another Apple which is frequently sold in the markets for it, which is what the French call Haute-bonne; this is a larger fairer fruit than the Nonpareil, more inclining to yellow; the russet colour brighter, and it is earlier ripe, and sooner gone; this is not so flat as the true Nonpareil, nor is the juice so sharp, though it is a good Apple in its season; but the Nonpareil is seldom ripe before Christmas; and where they are well preserved they will keep till may perfectly sound; this is justly esteemed one of the best Apples that have been yet known.

The Golden Pippin is a fruit almost peculiar to England; there are few countries abroad where this succeeds well, nor do they produce so good fruit in many parts of England as were to be wished; which, in some measure, is owing to their being grafted on free stocks, which enlarges the fruit, but renders it less valuable, because the flesh is not so firm, nor the flavour so quick, so is apt to be dry and meally; therefore this should always be grafted upon the Crab stock, which will not canker like the others, and though the fruit will not be so fair to the sight, yet it will be better flavoured and keep longer.

There are yet a great variety of Apples, which, being inferior to those here mentioned, I have omitted, as those which are here enumerated will be sufficient to furnish the table and the kitchen, during the whole season of these fruits; so that where these sorts can be had, no person of taste will eat the other.

I shall here mention some of the Apples which are chiefly preferred for the making of Cyder, though there are in every Cyder country, new sorts frequently obtained from the kernels; but these have, for some years, been in the greatest esteem.

The Red-streak.

Devonshire Royal Wilding.

The Whitsour.

Herefordshire Under Leaf.

John Apple, or Deux-annes.

Everlasting Hanger.

Gennet Moyle.

[In Herefordshire, according to Mr. Marshall^b, the *Stire* stands first in estimation as a Cider fruit. It is somewhat below the middle size; the form rather flat; the colour pale yellowish white, with sometimes a faint blush on one side; the flesh tolerably firm; the flavour, when fully ripe, fine. This celebrated fruit is going off.

The *Hagloe Crab* is at present next in esteem. It was produced about seventy years ago, (1719) in a nursery, among other stocks raised from the seed, by Mr. Bellamy, of Hagloe, in Gloucestershire, grandfather of the present Mr. Bellamy, near Ross in Herefordshire, who draws from trees grafted with scions from this stock a liquor, which for richness, flavour, and price on the spot, exceeds every other. The fruit is nearly white, with a yellowish cast when fully ripe, sometimes speckled with red on one side: more oblong than the *Stire* Apple; soft and woolly, but not dry; with a sheer, but when fully ripe, sweet juice; flavour like that of the Cashew Apple.

The *Golden Pippin* is in high estimation.

The old *Redstreak* is yet in being. Fruit small, roundish, pale-yellow with numerous faint-red streaks; flesh firm, full of juice, and when ripe finely flavoured. Little, if any genuine Red-streak Cider is now made; and it probably never was equal to that from either of the preceding. The tree is of a singularly awkward growth; crooked, reclining, ragged and unsightly.

The *Woodcock*, another old favourite, is now going off. Fruit above the middle size: form somewhat oblong, set on a long footstalk: colour of the Red-streak, with some dark blood-red streaks on one side: flesh remarkably fine. Tree large and strongly featured, forming large boughs in the Pear-tree manner.

Other favourite Cider Apples are—the *Must*, of which there are three varieties.

The *Paufon*: middle-sized and green.

The *Royal Wilding*: large and white.

^b Gloucestersh. 2. 251.

The *Dymmock Red*: middle-sized and red.

The *Cocagee*: above the middle size; greenish white with an orange blush; well fleshed and highly flavoured.

Russets of various kinds, particularly the *Longney*.

Bromley, *Foxwhelp*, *Red Crab*, *Queening*, all large red fruit.

These will yield in their turn to other varieties; and it is now a general opinion, that Apples which are the creatures of art and cultivation, cannot be preserved beyond a certain period.

Mr. Grimwood, a nurseryman of eminence at Kennington, is of opinion that it is not a decline in the quality of the fruit, but in the tree, owing either to want of health, the season, the soil, the mode of planting, or to the stock which they are grafted on, being too often raised from the seed of Apples in the same place or county. It appears, he says, from the ablest men in his profession, that they never found a real decline in any one kind of fruit, but from the above causes¹.

The law of nature, Mr. Marshall observes, though it suffer man to improve the fruits which are given us, appears to have set bounds to his art, and to have numbered the years of his creations. Artificial propagation cannot preserve the varieties in perpetuity. A time arrives, when they can be no longer propagated with success. All the old Cider-fruits are now lost, or else so far on the decline, as to be deemed irrecoverable.

The popular idea among orchard-men (in Herefordshire) is, that the decline of the old fruits is owing to a want of fresh grafts from abroad; under a notion that the highest-flavoured Apples grow there, in a state of nature, as the Crab does in this island. It scarcely needs to be observed that this is a gross error.

That the first improved fruits of our ancestors were fetched from the continent is highly probable^k. Mr. Lightfoot informs us that the Apple is remarkable for its longevity; and that it is said some trees in Herefordshire have lived a thousand years. This report is transcribed from Haller, without acknowledgment, as is usual with Mr. Lightfoot. Haller quotes *Hereford orchards*, a book or pamphlet, which I do not recollect having seen. But no one, I presume, will be disposed to admit such a report, unless we could have better evidence than mere tradition.

According to Stow, Carps and Pippins were brought into England by Mascall. It was the plain industry, says Mr. Evelyn^l, of one (Richard) Harris, a fruiterer to King Henry the Eighth, that the fields and environs of about thirty towns in Kent only, were planted with fruit, (from Flanders) to the universal benefit, and general improvement of that county to this day; as by the noble example of my Lord Scudamor, and of some other publick-spirited gentlemen in those parts, all Herefordshire is become, in a manner, but one intire orchard.

Lord Scudamor was ambassador to the court of France in the time of King Charles the First; and having collected in Normandy scions of Cyder-Apple trees, when he returned to England, encouraged the grafting them throughout the county of Hereford^m.

But these and others were partial introductions. There can be no doubt but that the Apple has been cultivated in England time immemorial, for deserts, for the kitchen, and for cyder.

It is probable that the sorts originally imported have long ago been lost, and though we have still some Apples by the same name with those in Parkinson, (1629) yet it is by no means certain that they are the same fruit; and many of the numerous varieties we are at present possessed of, were raised from seed in this countryⁿ.

Mr. Knight observes^o, that the existence of every variety of Apple appears to be confined to a certain

¹ Bath papers, 4. 242.

^k Gloucestersh. 2. 246.

^l Pomona, pref.

^m Gibson's View of the Churches of Dore and Home-Lacy.

ⁿ Marsh. Gloc. 2. 248.

^o Treatise on the Culture of the Apple and Pear, 1797. p. 7, 9.

period; that no one of them now cultivated seems to be more than two hundred years old; and that all efforts which have been hitherto made to propagate healthy trees of those varieties which have been long in cultivation, have been entirely unsuccessful: but of this more under the head of Propagation and Culture.

5. It is supposed that this may have sprung from the common Apple. The leaves are pubescent underneath. Peduncles one-flowered at the axils of the leaves towards the end of the branches, forming a sort of umbel. Petals yellowish green. Styles five, filiform, smooth; with club-shaped stigmas^p. Willdenow did not observe any stamens.

6. The Chinese Apple tree, when it blossoms in perfection, answers truly to the name of *spectabilis*; a more showy tree can scarcely be introduced to decorate the ornamental plantation. It blossoms about the end of april or beginning of may. The flowers are large, of a pale red when open, and semi-double; the buds are of a much deeper hue. The fruit is of little account, and but sparingly produced. Trees of this species are to be met with in some gardens twenty or thirty feet high^q. Cultivated in 1780, by John Fothergill, M.D.^r]

7. This has a strong woody stem, sending out many side branches, and covered with a smooth brown bark. The leaves are shaped like those of the Cherry-tree: they are of a deep green on their upper side, but paler on their under, slightly serrate, and on long footstalks. The flowers come out in bunches from the side of the branches on long slender peduncles; the petals are white, and shaped like those of the Pear-tree: they appear in april, and are succeeded by roundish fruit, about the size of large Duke Cherries, changing to a yellowish colour variegated with red, of a very austere taste, decaying like the fruit of the Medlar, and then more palatable.

It is supposed to be a native of Siberia; and bore fruit in the botanic garden at Chelsea before the year 1760^s.

[8. This is a tree with even branches. Leaves like those of Cornus, ovate, finely serrate, even on both sides. Petioles the length of the leaf, at the base connecting two linear-lanceolate stipules. Peduncles four, filiform, even, axillary, clustered, quite simple, one-flowered, the length of the petioles. Germ inferior, globular, smooth, small. Petals sessile, oval, concave, white, biggish. Stamens twenty, shorter than the pistils; which are shorter than the corolla. Fruit roundish, five-celled, red. Seeds in each cell two, callous. Calyx minute, deciduous^t.

Pallas describes the roots as striking deep, and throwing up abundance of suckers, the trunk scarcely three or four feet high, seldom thicker than the human arm, commonly twisted, covered with a rugged, ash-coloured bark, full of chinks; the wood whitish with gray stripes; the whole forming a spheroidal head, a fathom or a little more in height: the leaves ovate-acuminate, serrate, smooth, on long petioles, and somewhat pendulous; petioles subpubescent; stipules bristle-shaped, slender. Umbels from four to eight-flowered, accompanied with leaves, on very long slender even peduncles. Fruit a pome, the size of a small Cherry, on a long peduncle, globular, green but turning yellow and more or less tinged with red; five-celled, with two oblong sharp seeds in each cell: the pulp is reddish with an acid juice, which is used for making Quas and Punch in Siberia, where it grows naturally, and is common about the lake Baikal and in the country beyond it, in Dauria, and as far as Irkut; but not in other parts of that extensive country: it affects the banks of rivers, and low spots near them; flowering in may, and ripening its fruit in august and september^u. With us it flowers in april; and was introduced in 1784, by Mr. John Græfer^x.

9. Umbel on smooth peduncles. Calyxes smooth on the outside; tomentose within. Leaves like those of the Apple, but more smooth, and more finely serrate^y.]

^p Willdenow.

^q Curtis.

^r Hort. kew.

^s Miller's figures.

^t Linn. mant.

^u Fl. ross. p. 23.

^x Hort. kew.

^y Linn. spec.

The leaves of this are longer and narrower, and are cut into acute angles on their sides. The flowers have a fragrant odour, perfuming the North American woods in their season. The inhabitants plant them for stocks to graft other Apples upon.

[Kalm says, that this tree is rather scarce in New Jersey, but plentiful in Pennsylvania.

Gronovius first remarked it in Virginia. They frequently plant it near their farms, on account of the fine smell which the flowers afford, somewhat like the Raspberry. They expand in the beginning of may. The fruit is small, sour, and unfit for any thing but to make vinegar of. It lies under the trees all winter, acquires a yellow colour, and seldom begins to rot till spring comes on.

It flowers here in may; and appears by Furber's catalogue to have been cultivated here in 1724^z.

10. Native of North America. It flowers here in may; and was cultivated in 1750, by Mr. Christopher Gray^a, nursery-man at Fulham.

11. This is a shrub or small tree, wholly smooth. Branches and branchlets alternate, flexuose, even, ash-coloured, erect. Leaves many on the branchlets, from every other bud, subpetioled, ovate or wedge-shaped, blunt, sometimes emarginate, serrate, above nerved, deep green; underneath netted, pale; spreading, smooth, unequal, an inch long. Flowers on the branchlets alternate, subpeduncled, in pairs. Perianth one-third of the length of the corolla, green below, purple above. Corolla flesh-coloured. Stamens thirty and upwards. Styles about the length of the filaments; with trifid, reflex, yellow stigmas. Pome subglobular, smooth, the size of a Walnut, five-celled, with several seeds to each cell.—Native of Japan.

12. The Quince tree is a low crooked and distorted tree, covered with a brown bark, and much branched. Leaves roundish or ovate, entire, above dusky green, underneath whitish, on short petioles. Flowers large. Corolla pale red or white. Calyx spreading, serrate, the length of the corolla. Fruit a pome, varying in shape in the different varieties—globular, oblong or pear-shaped.]

Mr. Miller has three varieties: 1. *C. oblonga* or Pear Quince, with oblong-ovate leaves, and an oblong fruit lengthened at the base. 2. *C. maliformis* or Apple Quince, with ovate leaves and a rounder fruit. 3. *C. lusitanica* or Portugal Quince, with obovate leaves; and an oblong fruit which is more juicy and less harsh than the others, and therefore the most valuable.

[This agrees with the species immediately preceding in having several seeds in each cell^b.

The Quince has its Latin name *Cydonia Malus* and the Greek *Μηλεα Κυδωνια*, from Cydon in Crete, whence it is said to have been originally brought. It is now reputed to be a native of Austria, Germany, and some other parts of Europe. It flowers in may and june; and was cultivated here in the time of Gerarde; (1597) probably much earlier.

The Quince has a peculiar smell, and an austere taste when raw, but prepared is much esteemed. The expressed juice, repeatedly taken in small quantities, is said to be cooling, restraining and stomachic; useful in nausea, vomitings, nidorous eructations, and some alvine fluxes. Formerly this juice was ordered to be made into a syrup; but the only preparation of the Quince now directed is a mucilage of the seeds, made by boiling a dram of them in eight ounces of water, till it acquires a proper consistence. This has been recommended in apthous affections, and excoriations of the mouth and fauces. It may be a more pleasant mucilage, but it is certainly a less efficacious one, than that of the simple gums^c.

13. This is a low bushy tree, a fathom or a fathom and half in height, branched very much, and shooting up from the root. Trunk seldom more than an inch and half in diameter; with a thin brownish ash-coloured bark, and a white, uniform and very hard wood, polishing like bone. Leaves in bundles as it

were on the shoots, but scattered alternately on the thorny branches, attenuated into the petiole, lanceolate, stiffish, for the most part quite entire, subserrate towards the tip, covered with a smooth nap, dusky green above, glaucous-hoary underneath. Stipules none. Stamens about seventeen. Fruit solitary or two together, turbinate, subvillose, attenuated into a cylinder at the base, rounded above. Seeds in each of the five cells two, ovate-acute, flat on one side, of a yellow-testaceous colour. It flowers at the end of april, and perfects its fruit in june; but the fruit is small and of no value.

Native of Siberia, in the sandy desert between the rivers Terec and Cuma, &c. on Caucasus, and in Persia^d. Introduced in 1780, by Peter Simon Pallas, M. D.^e

Some modern authors have united to this genus several species of *Mespilus* and *Cratægus*; but I have followed Linneus, fully aware that there is no end to these changes in natural orders.]

PROPAGATION AND CULTURE.

The ripening of Pears may be accelerated by the method of pruning and managing these trees, which is greatly improved within the space of a few years past; for if we look into the directions which are given by the best writers on this subject, we shall soon discover how little they knew fifty years ago, of the true method of pruning and managing most sorts of fruit-trees, scarce one of them making any difference in the management of the different kinds of fruit.

Pears are propagated by budding or grafting them upon stocks of their own kind, which are commonly called free stocks, or upon Quince stocks, or White-thorn, upon all which these fruits will take; but the latter sort of stock is now seldom used, because they never keep pace in their growth with the fruit budded or grafted upon them; as also because the fruit upon such stocks are commonly drier, and more apt to be stony, than when they are upon Pear stocks. Quince stocks are greatly used in the nurseries for all sorts of Pears which are designed for dwarfs or walls, in order to check the luxuriancy of their growth, so that they may be kept within compass better than upon free stocks. But against the general use of these stocks, for all sorts of Pears indifferently, there are very great objections: 1st, Because some sorts of Pears will not thrive upon these stocks, but in two or three years decay, or at most will but just keep alive. 2dly, Most of the sorts of hard breaking Pears are rendered stony, and good for little; so that whenever any of these sorts are thus injudiciously raised, the fruit, although the kind be ever so good, is condemned as good for nothing by such as are not well acquainted with it, when the fault is entirely owing to the stock on which it was grafted. On the contrary, most melting buttery Pears are greatly improved by being upon Quince stocks, provided they are planted on a strong soil; but, if the ground be very dry and gravelly, no sort of Pear will do well upon Quince stocks.

These general directions being given, there is no occasion to repeat any part of the method in which these stocks are raised, and the fruits budded or grafted thereon, which has been already mentioned under the article of NURSERY.

The distance which these trees should be planted either against walls or espaliers, must not be less than forty feet; for if they have not room to spread on each side, it will be impossible to preserve them in good order, especially those on free stocks, for the more these trees are pruned, the more they will shoot; and, as I said before, many sorts of Pears produce their blossom-buds first at the extremity of the former year's shoots, so that when they are shortened, the fruit will be cut away, and this cannot be avoided, where the trees have not room allowed in their first planting.

This distance, I doubt not, will be objected to by many who have not fully attended to the growth of these trees, especially as it hath been the general

^z Hort. kew.

^a Idem.

^b Willdenow.

^c Woodville.

^d Pallas.

^e Hort. kew.

practice of most gardeners to plant these trees at less than half the distance which is here mentioned; but, whoever will be at the trouble to view any of these trees which have been some years standing, they will always find, if by accident, one of these trees has been planted against a building; where the branches have had room to spread, that this tree has produced more fruit than twelve trees which have been crowded close, and have not room for their branches to extend. There are some Pear-trees now growing, which spread more than fifty feet in length, and are upwards of twenty feet high, which produce a much greater quantity of fruit than if there had been three trees in the same room they would have done, as there are examples enough to prove, where trees are planted against houses and the ends of buildings at about twelve feet, or much less distance, because there is height of walling for them to grow, which is the reason commonly given by those who plant these trees so close together. But one tree will bear more fruit, when the branches are trained horizontally, than three or four trees, whose branches are led upright, and there never can be any danger of the upper part of the wall being left naked or unfurnished; for I have seen a Pear-tree which has spread more than fifty feet in width, and covered the wall upwards of thirty-six feet in height; this was a summer Boncrétien Pear, and was extremely fruitful, which rarely happens to this sort when they are not allowed a large share of room. The finest tree of this sort of Pear, which I have ever seen, was a large standard-tree in my own possession, whose stem was not more than ten feet high, where the branches came out regularly on every side, and extended near thirty feet from the trunk, many of which were by the weight of the fruit in summer brought down to the ground, so they were obliged to be supported with poles all around the tree towards the extremity of the branches, to prevent their lying upon the ground; and this tree had its branches so disposed as to form a natural parabola of forty feet in height, bearing from the lowest to the highest branches; so that in a kindly season, when the blossoms escaped the frost, it has produced upwards of two thousand Pears, which were much better flavoured than any of the same sort which I have yet tasted. This instance I mention, only to shew how much one of these trees will spread, if proper room be allowed it; and also to observe, that as the branches of this tree had never been shortened, they were fruitful to their extremities. This shews the absurdity of the French gardeners, who do not allow more than ten or twelve feet distance to these trees; and some of their most improved writers on this subject have advised the planting an Apple-tree between the Pear-trees, where they are allowed twelve feet; and yet these authors afterwards say, that a good Pear-tree will shoot three feet each way in one year; therefore, according to their own observation, the trees so planted will have their branches meet together in two or three years at most, and what must be the case with such trees in five or six years is not difficult to know. But this method of planting has not been peculiar to the French, for most of the gardens in England have been little better planted. Indeed, those persons who were intrusted with the making and planting most of the English gardens, had little skill of their own, so were obliged to follow the directions of the French gardeners; of whom they had so great an opinion, as to get their books translated, and to these have added some trifling notes, which rather betray their weakness; for, where they have objected to the little room which their authors had allowed to these trees, they have, at the most, allowed them but three feet more; from which it is plain, they had not considered the natural growth of the trees, and whoever departs from nature, may be justly pronounced an unskilful gardener.

As most of the English gardens have been made and planted by persons of little judgment, it is very rare to find any of them which produce much fruit; for although many of these gardens have been totally altered and new planted, yet they have seldom been

much altered for the better; and the possessors have been put to the expence of removing the old trees; also the earth of their borders, and to purchase new trees, which have been planted perhaps a foot or two farther asunder, than the old trees which were removed; so that when the young trees have grown a few years, they were in the same condition as the old; and it will be the loss of so many years to the owner; but this will constantly be the case, when it is the interest of the persons employed, who can sell so many young trees; and the planting of three times the number of trees in a garden, more than is proper, may in some measure be ascribed to the same, though in many instances I shall be inclinable to think they have proceeded from ignorance, rather than design.

But where fruit-trees have been thus injudiciously planted, if the stocks are healthy and good, the best way to recover this loss is to dig up two or three, and leave every third or fourth tree, according to the distance which they were planted, and spread down the branches of those which are left horizontally; I mean; all such as are capable of being so brought down: but those which are too stubborn for this, should be cut off near the stem, where there will be new shoots enough produced to furnish the wall or espalier; and if the sort of fruit is not the same as desired, the young branches may be budded the same summer, or grafted the following spring with any other sort of Pear, and hereby many years may be saved; for one of these old trees so budded or grafted, will spread to a much greater length, and produce more fruit, when thus managed, in three years, than a new tree will in ten or twelve, especially if the ground is mended. This is a method which I have practised with great success, where I have been employed to mend the blunders of these great gardeners, as they are stiled, and hereby the walls and espaliers have been well furnished in a few years.

But the next thing to be done, after being furnished with proper trees, is preparing the ground to receive them; in doing of which, there should be great regard had to the nature of the soil, where the trees are to grow; for, if it is a strong stiff land, and subject to wet in the winter, the borders should be raised as much above the level of the ground as you conveniently can. And if under the good soil there is a sufficient quantity of lime, rubbish, or stones laid to prevent the roots of the trees from running downward, it will be of great service to the trees. The borders for these should not be less than eight feet broad, but, if they are twelve, it will be still better. And as these borders may be planted with such sorts of esculent plants as do not grow large, or whose roots do not grow deep, or mat together on the surface, these will do no harm to the Pear-trees; for these are not so nice in their culture as Peach and Nectarine-trees, so the turning the ground, and mending it for these crops, will rather improve than injure the trees, provided the plants do not shade the trees, or are not suffered to stand too long upon the borders. But all the Cabbage kind, as also Beans, should be excluded from these borders, because they root deep in the ground, and draw much nourishment from the trees.

But if the soil is shallow, and the bottom is either gravel or chalk, there must be a sufficient depth of good earth laid upon the borders, so as to make them two feet and a half deep; for if the ground is not of this depth, the trees will not thrive well. And, in doing of this, I must caution every person not to dig out the gravel or chalk in a trench, (as is by some practised) and fill this trench with good earth; for by so doing, when the roots of the trees are extended to the width of the trench, they will meet with the gravel which will stop them, so that they will be confined, as if they were in tubs of earth, whereby the trees will soon shew their distress; therefore, when the gravel or chalk is removed, it should be entirely taken away over the whole border, otherwise it will be better to raise the whole border above it.

If the garden is to be new-made from a field, then all the good earth on the surface should be carefully preserved;

preserved; and; if the good ground is taken out where the walks are designed to be made, and laid upon the borders; or in the quarters, it will add to the depth of the soil, and save expence in bringing in new earth. If the ground can be prepared one year before it is planted, the trees will thrive the better; for by laying the ground in ridges, and turning it over two or three times, it will loosen the soil, and render it much better for planting; but in trenching or ploughing the ground, there should be great care taken not to go deeper than the ground is good, otherwise all the good soil will be buried below the roots, and the bad ground will be turned on the top, which is what I have known done at a great expence by persons, who have been at the top of their profession, and have thereby entirely ruined the gardens.

Where there is a necessity of bringing any fresh earth for the borders, it will be proper to do it as soon as possible, and to mix this with the surface of the earth of the borders, that it may be turned over two or three times, that the parts may be well mixed and incorporated before the trees are planted; and, if some very rotten dung is added to this, it will greatly improve it. In chusing the earth which is to be brought into the garden, there should be this care, viz. That if the natural soil of the garden is light and dry, then the new earth should be loamy and stiff; but where the natural soil is strong or loamy, then the new earth should be light and sandy, which will loosen the parts of the natural soil, and greatly mend it.

There are some persons who recommend laying the whole depth of the borders with what they call virgin earth, that is, such as is taken from a pasture where the land has not been ploughed; but if this is not brought into the garden at least one year before the trees are planted, that by turning it over often it may be sweetened, it will not be so good as that which is taken from a kitchen-garden, where the land is good, and has been well wrought; for by often turning and breaking the soil, it will be better prepared to receive the trees.

Others recommend mixing a great quantity of rotten dung with the earth of the borders, but this is not so proper; for, by making the ground too rich, it will only encourage the luxuriant growth of the trees; therefore it is always better to mend the borders from time to time as they may require, and not to add so much dung in the first making them.

Another care is required in making the borders on wet ground, which is to contrive some covered drains to convey off the water in winter, otherwise, by this being detained about the roots of the trees, it will greatly prejudice them; and in building the walls round a kitchen-garden, where the ground is inclinable to be wet, there should be some arches turned in the foundations of those walls which are in the lowest part of the garden, to let off the wet.

The manner of preparing these trees for planting is the same as has been directed for other fruit-trees, viz. to cut off all the small fibres from the roots, and to shorten some of the longest roots, and cut off all the bruised ones, or such as shoot downright; this being done, you should plant them in the places intended at the before-mentioned distance. The best time to plant these trees (if upon a middling or dry soil) is in october or november, leaving their heads on till spring, which should be fastened either to the walls or stakes, to prevent the wind from disturbing their roots; and in the beginning of march their heads should be cut off in the manner already directed for Peaches and other fruit-trees, observing also to lay some mulch upon the surface of the ground about their roots when they are planted, as has been several times already directed for other trees; but in wet ground the trees may be planted in february, or the beginning of march, at any time before the buds are much swelled, but these may be cut down when they are planted.

The first summer after planting, the branches should be trained to a wall or espalier (against which they are planted) in a horizontal position, as they are pro-

duced, without shortening them; and the michaelmas following, some of these shoots should be shortened down to five or six eyes, in order to obtain a sufficient quantity of branches; to furnish the lower part of the wall or espalier; but the shoots ought not to be shortened, unless where there is a want of branches to fill a vacancy; therefore the less a knife is used to these trees, the better they will succeed; for, whenever the shoots are stopped, it occasions the buds immediately below the cut to send forth two or more shoots, whereby there will be a confusion of branches, and rarely any fruit is produced with this management.

The distance which the branches of Pears should be trained, must be proportioned to the size of their fruit; therefore such sorts, whose fruit are small, may be allowed five or six inches, but the larger sorts must not be less than seven or eight inches asunder. If this be duly observed; and the branches carefully trained horizontally as they are produced, there will be no occasion for so much cutting as is commonly practised on these trees, which, instead of checking their growth, does, on the contrary, cause them to shoot the stronger.

It is very surprizing to read the tedious methods, which most of the writers on fruit-trees have directed for pruning these trees; for, by their prolix and perplexed methods, one would imagine they had endeavoured to render themselves as unintelligible as possible; and this, I am sure, may be affirmed, That it is next to impossible for a learner ever to arrive at any tolerable skill in pruning by the tedious and perplexed directions which are published by Monsieur Quintiny, and those who have copied from him; for, as these have all set out wrong in the beginning, by allowing their trees less than half the distance which they should be planted, they have prescribed rules to keep them within that compass, which are the most absurd, and contrary to all reason, therefore should not be practised by those persons who are desirous of having plenty of fruit.

I shall therefore only lay down a few necessary directions for pruning and managing these trees, which shall be done in as few words as possible, that a learner may the more easily understand it, and which (together with proper observations) will be sufficient to instruct any person in the right management of them.

Pear-trees generally produce their blossom-buds first at the extremity of the last year's shoots, so that if these are shortened, the blossoms are cut off; but this is not all the damage, for (as I before said) this occasions the buds immediately below the cut to put forth two or more shoots, whereby the number of branches will be increased, and the tree crowded too much with wood; besides, those buds, which by this management produce shoots, would have only produced cursons or spurs, upon which the blossom-buds are produced, if the leading branch had not been shortened; therefore these should never be stopped, unless to furnish wood to fill a vacancy.

It is not necessary to provide a new supply of wood in Pear-trees, as must be done for Peaches, Nectarines, &c. which only produce their fruit upon young wood; for Pears produce their fruit upon cursons or spurs, which are emitted from branches which are three or four years old; which cursons continue fruitful many years, so that, where these trees have been skilfully managed, I have seen branches which have been trained horizontally upwards of twenty feet from the trunk of the tree, and have been fruitful their whole length. And if we do but carefully observe the branches of a healthy standard-tree, which has been permitted to grow without pruning, we shall find many that are ten or twelve years old, or more, which are very full of these cursons, upon which a good number of fruit is annually produced.

During the summer season these trees should be often looked over to train in the shoots, as they are produced, regularly to the wall or espalier, and to displace fore-right and luxuriant branches as they shoot out, whereby the fruit will be equally exposed to the air and sun, which will render them more beautiful and better tasted than when they are shaded by the branches;

branches; and by thus managing the trees in summer, they will always appear beautiful, and in winter they will want but little pruning.

Where Pear-trees are thus regularly trained without stopping their shoots, and have full room for their branches to extend on each side, there will never be any occasion for disbarking the branches, or cutting off the roots (as hath been directed by several writers on gardening;) which methods, however they may answer the intention for the present, yet will certainly greatly injure the trees, as must all violent amputations, which should ever be avoided as much as possible on fruit-trees; and this, I am sure, can never be wanted, where trees have been rightly planted, and regularly trained, while young.

The season for pruning these trees is any time after the fruits are gathered, until the beginning of march; but the sooner it is done after the fruit is gathered, the better, for reasons already given for pruning of Peach-trees; though indeed the deferring of these until spring, where there are large quantities of trees to prune, is not so injurious to them, as to some tender fruits; but if the branches are regularly trained in summer, and the luxuriant shoots rubbed off, there will be little left to do to them in winter.

All the sorts of Summer Pears will ripen very well either on standards, dwarfs, or espaliers, as will all Autumn Pears upon dwarfs or espaliers; but, where a person is very curious in his fruit, I would always advise the planting them against espaliers, in which method they take up but little room in a garden, and, if they are well managed, appear very beautiful; and the fruit is larger and better tasted than those produced on dwarfs, as has been already observed; but some of the Winter Pears must be planted against east, south-east, or south-west walls, otherwise they will not ripen well in England in bad seasons.

But although this may be the case with some of the late Winter Pears in very bad seasons, yet, in general, most sorts of them will ripen extremely well in all warm situations, when they are planted in espalier, and the fruit will be better flavoured than that which grows against walls, and will keep much longer good; for, as the heat against walls which are exposed to the sun will be very great at some times, and at others there will be little warmth, all fruit which grow near them, will be hastened unequally, and therefore are never so well flavoured as the same sorts are which ripen in the open air; and all the fruit, which is ripened thus unequally, will decay much sooner than those which ripen gradually in the open air; therefore those Winter Pears which grow in espalier, may be kept six weeks longer than those which grow against walls, which is a very desirable thing; for to have plenty of these fruit at a season when it is very rare to find any other fruit to supply the table but Apples, is what all lovers of fruit must be greatly pleased to enjoy; which is what may be effected by planting many of the late sorts in espalier, where, although the fruit will not be so well coloured as those from the walls, yet they will be found exceeding good. When the *Besi de Chaumontelle* came first to England, the trees were planted in espalier, and some of them not on a very good soil, or in a warm situation, and yet from these trees I have eaten this Pear in great perfection in april, and sometimes it has kept till may; whereas, all those which have been since planted against walls ripen their fruit by the beginning of november, and are generally gone by the middle of december; nor are the latter so well tasted as those off the espaliers.

The *Virgoleuse* and *St. Germain*, as also the *Colmar*, are esteemed the most difficult sorts to ripen their fruit, yet these I have eaten in great perfection from espaliers, and often from standard-trees, where they grew upon a warm soil; but the fruit was much smaller on the standard-trees than those of the same sorts which grew against walls or espaliers, but they were full as well flavoured, and some of these sorts I have eaten good in april, which is two months later than they usually keep; but yet I would not advise the planting these late Pears in standard-trees, be-

cause they should hang very late on the trees in autumn, at which season the winds are generally very high; and these standard-trees being much exposed the fruit is often blown off the trees before they are ripe; and those of them, which may hang on the trees, are frequently bruised by being forced against the branches by the winds, so that they seldom keep well. What I mentioned this for, is to prove, that these Pears will ripen very well without the assistance of a wall; so that if they are planted in espaliers where the trees are kept low, the fruit will not be so much exposed to the strong winds in autumn as those on the standards, therefore can be in no danger of the fruit coming to perfection; and as the trees in espaliers will be constantly pruned, and managed in the same manner as those against walls, the fruit will be as large on those trees; therefore, where a person has a warm situation and a kindly soil, I would not advise the being at an expence to build walls on purpose for Pears, but to plant them against espaliers: and where there is any one who is very curious in having plenty of these fruit, and will be at the expence to procure them, I should advise having a sufficient quantity of Reed mats made to fix up against the back of the espalier in the spring, when the trees are in blossom, which will screen them from cold winds, and preserve the tender fruit until they are past danger, when the Reeds may be taken down, and put under a shed to preserve them from the weather; and if the autumn should prove bad, these Reeds may be fixed up again, which will forward the ripening of the fruit, and also prevent the winds from blowing down, and bruising it.

But after the fruit is set and growing, there will be farther care necessary in order to have the fruit good; for it is not enough to have preserved a good crop of fruit on the trees, and then leave them entirely to nature during the season of their growth, but there will require some skill and attendance on the trees to help nature, or supply the deficiency of seasons; for beside the pruning and training trees in the manner before directed, there will also be wanting some management of their roots, according to the nature of the soil, and the difference of seasons. In all strong land, where the ground is apt to bind very hard in dry weather, the surface of the borders should be now and then forked over to loosen the earth, which will admit the showers and dews to penetrate and moisten the ground, and be of great service to the trees and fruit, and also prevent the growth of weeds. And if the soil is light and dry, and the season should prove hot and dry, there should be large hollows made round the stems of the trees to hold water; and into each of these there should be poured eight or nine pots of water, which should be repeated once in a week or ten days during the months of june and july, if the season should continue dry. There should also be some mulch laid over the surface of these hollows, to prevent the sun and air from drying the ground. Where this is practised, the fruit will be kept constantly growing, and prove large and plump; whereas, if this is omitted, the fruit will often be small, grow crooked, crack, and fall off from the trees. For if the fruit is once stunted in their growth, and rain should fall plentifully after, it will occasion a great quantity of fruit to fall off the trees, and those which remain to ripen will not keep so long as those which never receive any check in their growth; and it is from this cause, that some years the fruit in general decays before the usual time. For after it has been for some time stunted in its growth, and then the season proves favourable, whereby it receives a sudden growth, it becomes so replete with juice, as to distend the vessels too suddenly, so that they will not be firm, which occasions their decay; therefore it is always best to keep the fruit constantly in a growing state, where it will acquire a proper size, and be rendered better flavoured.

There will also be required some dressing to the ground near the fruit-trees; but this should be laid on in autumn, after the trees are pruned. This dressing should be different, according to the nature of the

foil; if the land is warm and dry, then the dressing should be of very rotten dung, mixed with loam; and if this is mixed six or eight months before it is laid upon the borders, and three or four times turned over, it will be the better; as will also the mixture, if it is made with neat's or hog's dung, both which are colder than horse-dung, so more proper for hot land. But in cold stiff land, rotten horse dung, mixed with light sandy earth, or sea-coal ashes, will be the most proper, as this will loosen the ground and add a warmth to it.

These dressings should be repeated every other year, otherwise the trees will not thrive so well, nor will the fruit be so good. For, notwithstanding what many persons have advanced to the contrary, yet experience is against them; for the finest fruit in England, both as to size and flavour, is produced on land which is the most dunged and worked. Therefore I would advise trenching the ground about the fruit-trees very well every winter, for I am sure they will find it answer their expectations who shall practise this method. And where the ground in the quarters is well dressed and trenched, the fruit-trees will partake of the benefit; for as the trees advance in their growth, their roots are extended to a great distance from their stems; and it is chiefly from the distant roots that the trees are supplied with their nourishment: therefore dressing the borders only, will not be sufficient for fruit-trees which are old.

In gathering of Pears, great regard should be had to the bud which is formed at the bottom of the foot-stalk, for the next year's blossoms; which, by forcing off the Pear before it be mature, is many times spoiled; for while the fruit is growing, there is always a bud formed by the side of the foot-stalk upon the same spur, for the next year's fruit; but when the Pears are ripe, if they are gently turned upward, the foot-stalk will readily part from the spur, without injuring the bud.

The season for gathering all Summer Pears is just as they ripen, for none of these will remain good above a day or two after they are taken from the tree; nor will many of the Autumn Pears keep good above ten days or a fortnight after they are gathered. But the winter fruits should hang as long upon the trees as the season will permit; for they must not receive the frost, which will cause them to rot, and render their juices flat and ill tasted; but if the weather continue mild until the end of October, it will then be a good season for gathering them in, which must always be done in dry weather, and when the trees are perfectly dry.

In doing this you ought carefully to avoid bruising them, therefore you should have a broad flat basket to lay them in as they are gathered; and when they are carried into the store-room, they should be taken out singly, and each sort laid up in a close heap on a dry place, in order to sweat, where they may remain for ten days or a fortnight; during which time the windows should be open to admit the air, in order to carry off all the moisture which is perspired from the fruit: after this, the Pears should be taken singly, and wiped dry with a woollen cloth, and then packed up in close baskets, observing to put some Wheat straw in the bottoms, and round the sides of the baskets, to prevent their bruising against the baskets. And if some thick soft paper is laid double or treble all round the basket, between the straw and the Pears, this will prevent the Pears from imbibing the musty taste which is communicated to them by the straw, when they are contiguous; which taste often penetrates through the skin so strongly, that when the fruit is pared, the taste will remain. You should also observe to put but one sort of fruit into a basket, lest by their different fermentations, they should rot each other; but if you have enough of one sort to fill a basket which holds two or three bushels, it will be still better. After you have filled the baskets, you must cover them over with Wheat straw very close, first laying a covering of paper two or three times double over the fruit, and fasten them down; then place these baskets in a close room, where they may be kept dry and from frost;

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but the less air is let into the room, the better the fruit will keep. It will be very necessary to fix a label to each basket, denoting the sort of fruit therein contained, which will save the trouble of opening them, whenever you want to know the sorts of fruit; besides, they ought not to be opened before their season to be eaten, for the oftener they are opened and exposed to the air, the worse they will keep. I do not doubt but this will be objected to by many, who imagine fruit cannot be laid too thin; for which reason, they make shelves to dispose them singly upon, and are very fond of admitting fresh air, whenever the weather is mild, supposing it very necessary to preserve the fruit; but the contrary of this is found true, by those persons who have large stocks of fruit laid up in their store-houses in London, which remain closely shut up for several months, in the manner before related; and when these are opened, the fruit is always found plumper and sounder than any of those fruits which were preserved singly upon shelves, whose skins are always shrivelled and dry. For (as Mr. Boyle observes) the air is the cause of putrefaction; and, in order to prove this, that honourable person put fruits of several kinds into glasses where the air was exhausted, in which places they remained sound for several months, but, upon being exposed to the air, rotted in a very short time after; which plainly shews the absurdity of the common method now used, to preserve fruit.

All the sorts of Apples are propagated by grafting or budding upon the stocks of the same kind, for they will not take upon any other sort of fruit tree. In the nurseries there are three sorts of stocks generally used to graft Apples upon; the first are called free stocks; these are raised from the kernels of all sorts of Apples indifferently, and sometimes they are also termed Crab stocks; for all those trees which are produced from the seeds before they are grafted, are termed Crabs without any distinction; but, I should always prefer such stocks as are raised from the kernels of Crabs, where they are pressed for verjuice; and I find several of the old writers on this subject of the same mind. Mr. Auzan, who wrote above a hundred years ago, says, "The stock which he accounts best for Apple grafts is the Crab, which is better than sweeter Apple-trees to graft on, because they are usually free from canker, and will become very large trees; and, I conceive, will last longer than stocks of sweeter Apples, and will make fruits more strong and hardy to endure frost;" and it is very certain, that by frequently grafting some sorts of Apples upon free stocks, the fruits have been rendered less firm and poignant, and of shorter duration.

The second sort of stock is the Dutch Paradise Apple or Creeper; these are designed to stint the growth of the trees, and keep them within compass for dwarfs or espaliers.

The third sort is the Paradise Apple, which is a very low shrub, and only proper for trees which are kept in pots, by way of curiosity, for these do not continue long.

Some persons have made use of Codlin stocks for grafting Apples, in order to stint their growth; but as these are commonly propagated by suckers, I would by no means advise the using them; nor would I chuse to raise the Codlin-trees from suckers, but rather graft them upon Crab stocks, which will cause the fruit to be firmer, last longer, and have a sharper flavour; and these trees will last much longer sound, and never put out suckers, as the Codlins always do, which, if not constantly taken off, will weaken the trees, and cause them to canker: and it is not only from the roots, but from the knots of their stems; there are generally a great number of strong shoots produced, which fill the trees with useless shoots, and render them unsightly, and the fruit small and crumpled.

The method of raising stocks from the kernels of Crabs, or Apples, is, to procure them where they are pressed for verjuice or cyder, and after they are cleared of the pulp, they may be sown upon a bed of light earth, covering them over about half an inch

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thick with the same light earth; these may be sown in november or december, where the ground is dry, but in wet ground, it will be better to defer it till february; but then the seeds should be preserved in dry sand, and kept out of the reach of vermin, for if mice or rats can get at them, they will devour the seeds; there should also be care taken of the seeds, when they are sown, to protect them from these vermin, by setting traps to take them, &c. In the spring, when the plants begin to appear, they must be carefully weeded, and if the season should prove dry, it will be of great service to water them two or three times a week; and, during the summer, they must be kept clean from weeds, which, if suffered to grow, will soon over-top the plants, and spoil their growth; if these thrive well, they will be fit to transplant into the nursery the october following, at which time the ground should be carefully digged, and cleansed from the roots of all bad weeds; then the stocks should be planted in rows three feet asunder, and the plants one foot distance in the rows, closing the earth pretty fast to their roots; when the stocks are transplanted out of the seed-bed, the first autumn after sowing, they need not be headed, but where they are inclined to shoot downward, the tap root must be shortened, in order to force out horizontal roots; if the ground is pretty good in which these stocks are planted, and the weeds constantly cleared away, the stocks will make great progress, so that those which are intended for dwarfs, may be grafted the spring twelve months after they are planted out of the seed-bed; but those which are designed for standards will require two or three years more growth, before they will be fit to graft, by which time they will be upward of six feet high. The other necessary work to be observed in the culture of these trees, while they remain in the nursery, being exhibited under the article of NURSERY, I shall not repeat in this place.

I shall next treat of the manner of planting such of these trees as are designed for espaliers in the kitchen-garden, where, if there is an extent of ground, it will be proper to plant, not only such sorts as are for the use of the table, but also a quantity of trees to supply the kitchen; but where the kitchen-garden is small, the latter must be supplied from standard-trees, either from the orchard, or wherever they are planted; but as many of these kitchen Apples are large, and hang late in the autumn upon the trees, they will be much more exposed to the strong winds on standard trees than in espaliers, whereby many of the fruit will be blown down before they are ripe, and others bruised, so as to prevent their keeping; therefore where it can be done, I should always prefer the planting them in espaliers.

The distance which I should chuse to allow these trees, should not be less than thirty feet, for such sorts as are of moderate growth (if upon Crab or free stocks;) but the larger growing sorts should not be allowed less room than thirty-five or forty feet, which will be found full near enough, if the ground is good, and the trees properly trained; for as the branches of these trees should not be shortened, but trained at their full length, so in a few years they will be found to meet. Indeed, at the first planting, the distance will appear so great to those persons who have not observed the vigorous growth of these trees, that they will suppose they never can extend their branches so far, as to cover the espalier; but if these persons will but observe the growth of standard-trees of the same kinds, and see how wide their branches are extended on every side, they may be soon convinced, that as these espalier-trees are allowed to spread but on two sides, they will of course make more progress, as the whole nourishment of the root will be employed in these side branches, than where there is a greater number of branches on every side of the tree, which are to be supplied with the same nourishment.

The next thing to be observed is the making choice of such sorts of fruits as grow nearly alike, to plant in the same espalier. This is of great consequence,

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because of the distance they are to be placed, otherwise those sorts which make the largest shoots, may be allowed less room to spread than those of smaller growth; beside, when all the trees in one espalier are nearly equal in growth, they will have a better appearance than when some are tall, and others short; but for the better instruction of those persons who are not conversant in these things, I shall divide the sorts of Apples into three classes according to their different growths.

Largest growing tree.

All the sorts of Pearmains.
Kentish Pippin.
Holland Pippin.
Monstrous Renette.
Royal Russet.
Wheeler's Russet.
Pile's Russet.
Nonpareil.
Violet Apple.

Middle growing tree.

Margaret Apple.
Golden Renette.
Aromatic Pippin.
Embroidered Apple.
Renette Grise.
White Renette.
Codlin.

Smallest growing tree.

Quince Apple.
Transparent Apple.
Golden Pippin.
Pomme d'Api.
Fenouillet, or Anis Apple.

N. B. These are all supposed to be grafted on the same sort of stocks.

If these Apples are grafted upon Crab stocks, I would willingly place them at the following distance from each other, especially where the soil is good, viz. the largest growing trees at forty feet, the middle growing at thirty feet, and the small growing at twenty-five feet, which, from constant experience, I find to be full near enough; for in many places, where I have planted these trees at twenty-four feet distance, they have shot so strong, as that in seven years their branches have met; and in some places where every other tree has been taken up, the branches have almost joined in seven years after; therefore it will be much the better way to plant these trees at a proper distance at first, and between these to plant some Dwarf Cherries, Currants, or other sorts of fruit, to bear for a few years, which may be cut away when the Apple-trees have extended their branches to them; for when the Apple-trees are planted nearer together, few persons care to cut down the trees, when they are fruitful, so that they are obliged to use the knife, saw, and chisel, more than is proper for the future good of the trees; and many times, where persons are inclinable to take away part of their trees, the distances will be often so irregular (where there was not this consideration in their first planting,) as to render the espalier unsightly.

When the trees are upon the Dutch Dwarf stock, the distance should be for the larger growing trees thirty feet, for those of middle growth twenty-five, and the smallest twenty feet, which will be found full near where the trees thrive well.

The next is the choice of the trees, which should not be more than two years growth from the graft, but those of one year should be preferred; you should also be careful, that their stocks are young, sound, and smooth, free from canker, and which have not been cut down once or twice in the nursery; when they are taken up, all the small fibres should be entirely cut off from their roots, which, if left on, will turn mouldy and decay, so will obstruct the new fibres,

fibres, which will soon push out, in their growth; the extreme part of the roots must also be shortened, and all bruised roots cut off; and if there are any misplaced roots which cross each other, they should also be cut away. As to the pruning of the head of these trees, there need be nothing more done than to cut off any branches which are so situated, as that they cannot be trained to the line of the espalier: in the planting, there must be care taken not to place their roots too deep in the ground, especially if the soil is moist, but rather raise them on a little hill, which will be necessary to allow for the raising of the borders afterward. The best season for planting these trees (in all soils which are not very moist) is, from october, to the middle or latter end of november, according as the season continues mild; but so soon as the leaves fall, they may be removed with great safety. After the trees are planted, it will be proper to place down a stake to each tree, to which the branches should be fastened, to prevent the winds from shaking or loosening their roots, which will destroy the young fibres; for when these trees are planted pretty early in autumn, they will very soon push out a great number of new fibres, which, being very tender, are soon broken, by the wind shaking the trees, whereby they are greatly injured. If the winter should prove severe, it will be proper to lay some rotten dung, tanners bark, or some other sort of mulch about their roots, to prevent the frost from penetrating the ground, which might damage these tender fibres; but I would not advise the laying this mulch before the frost begins, for if it is laid over the surface of the ground about their roots, soon after the trees are planted (as is often practised,) it will prevent the moisture entering the ground, and do much more harm than good to the trees.

The following spring, before the trees begin to push, there should be two or three short stakes put down on each side every tree, to which the branches should be fastened down as horizontally as possible, never cutting them down, as is by some practised, for there will be no danger of their putting out branches enough to furnish the espalier, if the trees are once well established in their new quarters.

In the pruning of these trees, the chief point is, never to shorten any of the branches, unless there is an absolute want of shoots to fill the spaces of the espalier; for where the knife is much used, it only multiplies useless shoots, and prevents their fruiting; so that the best method to manage these trees is, to go over them three or four times in the growing season, and rub off all such shoots as are irregularly produced, and train the others down to the stakes in the position they are to remain: if this is carefully performed in summer, there will be little left to be done in the winter, and by bending their shoots from time to time, as they are produced, there will be no occasion to use force to bring them down, nor any danger of breaking the branches. The distance which these branches should be trained from each other, for the largest sorts of fruits, should be about seven or eight inches, and for the smaller four or five. If these plain instructions are followed, it will save much unnecessary labour of pruning, and the trees will, at all times, make a handsome appearance; whereas when they are suffered to grow rude in summer, there will be much greater difficulty to bring down their shoots, especially if they are grown stubborn, when it may become necessary to slit the branches to make them pliable. All the sorts of Apples produce their fruit upon cufions, or spurs, so that these should never be cut off, for they will continue fruitful a great number of years.

The method of making the espaliers having been already exhibited under that article, I need not repeat it here, but only observe, that it will be best to defer making the espalier till the trees have had three or four years growth; for before that time, the branches may be supported by a few upright stakes, so that there will be no necessity to make the espalier, until there are sufficient branches to furnish all the lower part.

I shall now treat of the method to plant orchards, so as to have them produce the greatest profit. And first, in the choice of the soil and situation for an orchard: the best situation for an orchard is, on the ascent of the gentle hills, facing the south, or south-east; but this ascent must not be too steep, lest the earth should be washed down by hasty rains. There are many persons who prefer low situations at the foot of hills, but I am thoroughly convinced from experience, that all bottoms where there are hills on each side, are very improper for this purpose; for the air is drawn down into these vallies in strong currents, which, being pent in renders these bottoms much colder than the open situations; and during the winter and spring, these bottoms are very damp and unhealthy to all vegetables; therefore the gentle rise of a hill, fully exposed to the sun and air, is by much the best situation. As to the soil, a gentle hazel loam, which is easy to work, and that does not detain the wet, is the best; if this happens to be three feet deep, it will be better for the growth of the trees, for although these trees will grow upon very strong land, yet they are seldom so thriving, nor are their fruit so well flavoured, as those which grow on a gentle soil; and on the other hand, these trees will not do well upon a very dry gravel or sand, therefore those soils should never be made choice of for orchards.

The ground intended to be planted should be well prepared the year before, by ploughing it thoroughly, and if some dung is laid upon it the year before, it will be of great service to the trees; if in the preceding spring a crop of Peas or Beans is planted on the ground (provided they are sown or planted in rows, at a proper distance, so as that the ground between them is horse-hoed,) it will destroy the weeds, and loosen the ground, so that it will be a good preparation for the trees, for the earth cannot be too much wrought, or pulverized for this purpose: these crops will be taken off the ground long before the season for planting these trees, which should be as soon as possible performed when the trees begin to shed their leaves.

In chusing the trees, I would advise the taking such as are but of two years growth from the graft, and never to plant old trees, or such as are grafted upon old stocks, for it is losing of time to plant these; young trees being always more certain to grow, and make a much greater progress than those which are old. As to pruning the roots, it must be done in the same manner as has been already directed for the espalier-trees; and in pruning their heads, little more is necessary than to cut out such branches as are ill placed, or that cross each other; for I do not approve the heading of them down, as is by some often practised to the loss of many of their trees.

The distance which these trees should be planted, where the soil is good, must be fifty or sixty feet; and where the soil is not so good, forty feet may be sufficient; but nothing can be of worse consequence, than the crowding trees too close together in orchards. And although there may be some who may imagine this distance too great, yet I am sure, when they have thoroughly considered the advantages attending this practice, they will agree with me. Nor is it my own opinion in this affair, for in many of the old writers on this subject, there is often mention made of the necessity for allowing a proper distance to the fruit-trees in orchards, particularly Austen, upon planting before quoted, who says, "He should chuse to pre-
"scribe the planting these trees fourteen or sixteen
"yards asunder; for both trees and fruits have many
"great advantages, if planted a good distance one
"from another." One advantage he mentions is,
"The sun refreshes every tree, the roots, body, and
"branches, with the blossoms and fruits; whereby
"trees bring forth more fruit, and those fairer and
"better." Another advantage he mentions is, "That
"when trees are planted at a large distance, much
"profit may be made of the ground under and about
"these trees, by cultivating garden-stuff, commo-
"dious as well for sale as housekeeping; as also
"Gooseberries, Raspberries, Currants, and Straw-
"berries."

“berries, may be there planted.” Again he says, “When trees have room to spread, they will grow very large and great; and the consequences of that will be, not only multitudes of fruits, but also long lasting, and these two are no small advantages.” For, says he, “Men are mistaken, when they say, the more trees in an orchard, the more fruits; for one or two large trees which have room to spread, will bear more fruits than six or ten (it may be) of those that grow near together, and crowd one another.” Again he says, “Let men but observe, and take notice of some Apple-trees, that grow a great distance from other trees, and have room enough to spread both their roots and branches, and they shall see, that one of those trees (being come to full growth) hath a larger head, and more boughs and branches, than (it may be) four, or six, or more, of those which grow near together, although of the same age.”

And Mr. Lawson, an ancient planter, advises to plant Apple-trees twenty yards asunder. As the two authors above quoted have written the best upon this subject, and seem to have had more experience than any of the writers I have yet seen, I have made use of them as authorities to confirm what I have advanced; though the fact is so obvious to every person who will make the least reflection, that there needs no proof.

When the trees are planted, they should be staked, to prevent their being shaken, or blown out of the ground by strong winds; but in doing this, there should be particular care taken, to put either straw, haybands, or woollen cloth, between the trees and the stakes, to prevent the trees from being rubbed and bruised, by the shaking against the stakes, for if their bark should be rubbed off, it will occasion such great wounds, as not to be healed over in several years, if they ever recover it.

If the winter should prove very severe, it will be proper to cover the surface of the ground about their roots with some mulch, to prevent the frost from penetrating the ground, which will destroy the young fibres; but this mulch should not be laid on too soon, as has been before mentioned, lest the moisture should be prevented from soaking down to the roots of the trees, nor should it lie on too long in the spring for the same reason; but where persons will be at the trouble to lay it on in frosty weather, and remove it again after the frost is over, that the wet in february may have free access to the roots of the trees it will do good; and if march should prove dry, with sharp north or east winds, which often happens, it will be proper to cover the ground again with the mulch, to prevent the winds from penetrating and drying the ground, and will be of singular service to the trees. But I am aware, that this will be objected to by many, on account of the trouble, which may appear to be great; but when it is considered, how much of this business may be done by a single person in a short time, it can have little force, and the benefit which the trees will receive by this management, will greatly recompense the trouble and expence.

As these trees must be constantly fenced from cattle, it will be the best way to keep the land in tillage for some years, that by constant ploughing or digging the ground, the roots of the trees will be more encouraged, and they will make the more progress in their growth: but where this is done, whatever crops are sown or planted, should not be too near the trees, lest the nourishment should be drawn away from the trees; and as in the ploughing of the ground where it is so tilled, there must be care taken not to go too near the stem of the trees, whereby their roots would be injured, or the bark of their stems rubbed off, so it will be of great service to dig the ground about the trees where the plough does not come, every autumn, for five or six years after planting, by which time their roots will have extended themselves to a greater distance.

It is a common practice in many parts of England, to lay the ground down for pasture, after the trees are grown pretty large in their orchards; but this is by no means adviseable, for I have frequently seen trees

of above twenty years growth, almost destroyed by horses, in the compass of one week; and if sheep are put into orchards, they will constantly rub their bodies against the stems of the trees, and their grease sticking to the bark, will stint their growth, and in time will spoil them; therefore wherever orchards are planted, it will be much the better method to keep the ground ploughed or dug annually, and such crops put on the ground as will not draw too much nourishment from the trees.

In pruning of orchard-trees, nothing more should be done, but to cut out all those branches which cross each other, and, if left, would rub and tear off the bark, as also decayed branches, but never shorten any of their shoots. If suckers, or shoots from their stems, should come out, they must be entirely taken off annually; and when any branches are broken by the wind, they should be cut off, either down to the division of the branch, or close to the stem from whence it was produced; the best time for this work is in november, for it should not be done in frosty weather, nor in the spring, when the sap begins to be in motion.

The best method to keep Apples for winter use is, to let them hang upon the trees until there is danger of frost, and to gather them in dry weather, laying them in large heaps to sweat for three weeks or a month; afterwards look them over carefully, taking out all such as have appearance of decay, wiping all the sound fruit dry, and pack them up in large oil-jars, which have been thoroughly scalded and dry, stopping them down close to exclude the external air: if this is duly observed, the fruit will keep sound a long time, and their flesh will be plump; for when they are exposed to the air, their skins will shrink, and their pulp will be soft.

[It has been lately made evident, particularly by the experiments and curious remarks of T. A. Knight, Esq; that those varieties of the Apple, of which the original trees had perished from old age, could not be made to grow to any purpose. The grafts, he says, grow well for two or three years; but after that become cankered and mossy. When he first observed the unhealthy state of all the young trees of these kinds, he suspected that it arose from the use of diseased grafts taken from old trees; and that he should be able to propagate all the valuable varieties by buds taken from young newly grafted trees: but to remove still farther every probability of defect which might be communicated from the old trees, he inserted the young shoots and buds, taken from newly grafted trees, on other young stocks, and repeated this process six times in as many years, each year taking his grafts and buds from those inserted in the year preceding. Stocks of different kinds were also used; some were double grafted, others were obtained from trees which grew from cuttings, and others from the seeds of each kind afterwards inserted in them, under the idea that there might be something congenial to the fruits in these. The grafts grew tolerably, and equally in all; but there was a want of hardness and elasticity in the wood, and at the end of three or four years all began to canker. This disease is always found in those varieties which have been long in cultivation; and in these it annually becomes more destructive, and evidently arises from the age of the variety; but it often appears to be hereditary. A gravelly or wet soil, a cold preceding summer, or a high exposed situation, add much to its virulence. It is most fatal to young free-growing trees of old varieties; and even the strong shoots of these will be totally destroyed by it, when the old trees growing in the same orchard, and from which the grafts had been taken, were nearly free from the disease. The young stocks, by affording the grafts a preternatural abundance of nourishment, seem to bring on the disease; and transplanting, or a heavy crop of fruit, which check the growth of the tree, diminish its disposition to canker. In middle-aged trees of very old varieties a succession of young shoots is annually produced by the vigour of the stock, and destroyed again in the succeeding winter: the quantity of fruit these produce

is in consequence very small. In this disease something more than a mere extinction of vegetable life appears to take place. The internal bark bears marks of something similar to erosion; and this is probably the original seat of the disease, though the wood of the annual shoots is soon tinged to the centre. The canker does not appear to be ever a primary or merely local disease, but to arise from the morbid habit of the plant, and to be incurable by any topical application.

Being after much unsuccessful experience satisfied, that those varieties of the Apple, of which the original trees had long perished from old age, could not be made to grow; Mr. Knight suspected, that grafts taken from very young seedling trees, not yet in a bearing state, could not by any means be made to produce fruit. Having taken cuttings from some of these of two years old, he inserted them in stocks of twenty, which had already produced fruit. He afterwards frequently transplanted, and took every means in his power to make them produce blossoms; but though they grew in rich ground, which probably tended to accelerate their maturity, he did not succeed till the seedling trees were twelve years old, the age at which they usually produce fruit; and then other grafts of the same kind, which had been inserted but three years before, readily blossomed. Other cuttings were inserted in very old stocks, which were regrafted; these grew with excessive vigour, but did not produce blossoms so soon as the others.

From the result of these experiments, and from the general failure of every attempt to propagate every old variety of the Apple, Mr. Knight thinks himself justified in the conclusion, that all Apples, however propagated from the same stock, partake in some degree of the same life, and will attend it in the habits of their youth, their maturity and decay; though they will not be any way affected by any incidental injuries the parent tree may sustain, after they are detached from it. The roots however, and the trunk adjoining them, appear to possess in all trees a greater degree of durability than the bearing branches, having a power of producing new ones, when the old have been destroyed by accident, or even by old age: and grafts taken from scions, which have sprung out of the trunks of old ungrafted Apple and Pear trees, will grow with much greater luxuriance than those taken at the same time from the extremities of the bearing branches. The former in their growth assume the appearance of young seedling stocks, and the shoots of the Pear are, like those covered with thorns. Those propagated from the bearing branches frequently produce fruit the second year, but the others remain long unproductive. It appears therefore extremely probable, that such trees as the Walnut and Mulberry, which do not produce fruit in less than twenty years, might be rendered fruitful in one third of that time, by being grafted with cuttings taken from the productive branches of an old tree.

Since then the valuable varieties of the Apple and Pear cannot be continued for ever, till new varieties can be raised equally valuable, let us see whether the duration of the old ones may not be considerably prolonged by art.

Now the life of every tree appears to be greatly prolonged, when its branches are frequently taken off; and there is not the least doubt but that the life of an Apple or Pear might be prolonged to thrice its natural period, by robbing it of its branches as soon as the qualities of its fruit are known; and retaining it as a pollard, or rather as a stool in a coppice, which is felled at regular periods: for these are known to possess a much greater degree of durability, than the same kind of tree left in the natural state; and to produce a vigorous succession of branches during several centuries. It is however probable that after a certain period, each effort of nature will be inferior to the preceding: for timber trees which spring from old stools, are observed to attain only a small stature, with an early maturity and decay. Should any valuable variety of the Apple be retained in the state here described, its branches should be taken off every third

or fourth year, and used for grafts, and it should never be suffered to produce fruit or blossoms. Under this mode of treatment, there is little doubt but that the same variety might be propagated through many centuries.

It appears also probable that the latter period of the existence of the Apple-tree would be considerably prolonged in a southern climate, for all the old varieties succeed best in warm situations, and the most diseased flourish with the greatest vigour when trained to a south wall. This mode of culture might probably be adopted with much advantage, when new varieties are to be obtained from seed; and the production of these must be the first thing to engage the attention of the planter of the present day^f.

For this purpose, Mr. Marshall recommends to elect among the varieties, individuals of the highest flavour: to sow the seeds in a highly enriched seed-bed: to select from among the seedlings the plants wherein the wood and leaves have the best appearance: to transplant these into a rich deep soil, in a good situation; at due distances: letting them remain in this nursery, until they begin to bear.

With the seeds of the fairest, richest and best-flavoured fruit, repeat this process: and at the same time; or in due season, engraft the wood which produced this fruit, on that of the richest, sweetest, best-flavoured Apple: repeating this operation, and transferring the subject under improvement, from one tree and sort to another, as richness, flavour or firmness may require. Continuing this double mode of improvement, until the desired fruit be obtained^g.

Such trials are doubly worth making; but it would be difficult to say what might be the issue of them until they are actually made.

When Mr. Knight began to suspect that his endeavours to propagate the old fruits would not be successful, he selected seeds of some of the best kinds, with an intention to propagate new ones: but he soon found that many of the young plants, particularly those from the Golden Pippin, were nearly as much diseased as the trees which produced them. He several times raised three or four plants from seeds taken from one Apple, and when this had been produced by a diseased tree, he had not only as many varieties as there were seeds, but some were much diseased, and others apparently healthy; though the seeds were sown in the same soil, and the plants afterwards grew within two feet of each other in the nursery. Grafts having been inserted from each, retained the habits of the tree from which they were taken. Few, however, if any, appeared to possess a sufficient degree of vigour to promise much success in their cultivation, except in very favourable situations, even should their fruit be good.

Having before observed that all the old fruits were free from disease when trained to a south wall, Mr. Knight thought it not improbable that seedling plants raised from them would be equally healthy; and that their blossoms being expanded before those of the neighbouring orchards, they would not be impregnated by the farina of inferior kinds. With a view to try this, he prepared stocks of the best kind of Apple which could be propagated by cuttings, planted them against a south wall, in extremely rich mould, and grafted them with the Stire, Golden Pippin, and a few other fruits, whose time of ripening suited the situation in which he wished to plant. In the course of the ensuing winter the young trees were dug up, and their roots having been retrenched, were planted again in the same places. This mode of treatment had the desired effect of making them produce blossoms at two years old. He suffered only one or two fruits to remain on each tree, which in consequence attained nearly three times their common size, with a very high degree of maturity and perfection; and the appearance of the plants he raised from their seeds so much excelled any he had formerly obtained from the same fruits taken from the orchard, that he thinks he can confidently recommend the method he adopted.

^f Treatise on the culture of the Apple and Pear, p. 10. to 23.

^g Gloucestersh. 4. 249.

He had chosen fruits possessing excellencies and defects of opposite kinds, with a wish to see, either through the industry of bees or his own, the effects of a process similar to what is called by breeders of animals, crossing the breed.

A few days before the blossoms expanded, he opened the petals and destroyed the males in all the blossoms which he suffered to remain of one kind, taking great care to leave the females uninjured: and when these blossoms were fully expanded, he impregnated half of them with farina taken from another kind of fruit, leaving the other half to the care of the bees, which collected about them in great numbers. Every fruit which he impregnated grew rapidly, whilst half of those on the other tree, which remained in their natural state failed, with every one of those left to the care of the bees. Whence we may conclude that these insects are not so good carriers of the farina of plants, as is generally supposed by naturalists. The plants he obtained from the fruits on which this experiment was made, were certainly the most promising of any, but whether they will remain free from hereditary disease and debility or not, remains to be proved. Every seed, though taken from the same Apple furnishes a distinct variety; and some of these will grow with more luxuriance than others, and the fruits produced by the different plants will possess different degrees of merit; but an estimate may be made of their good and bad qualities at the conclusion of the first summer, by the resemblance the leaves bear to the highly cultivated or wild kinds. The plants whose buds in the annual wood are full and prominent are usually more productive than those whose buds are small and shrunk into the bark; but their future produce will depend much on the power the blossoms possess of bearing cold, and this power varies in the different varieties, and can only be known from experience. Those which produce leaves and blossoms rather early in the spring are generally to be preferred, for though they are more exposed to injury from frost, they less frequently suffer from the attacks of insects, the more common cause of failure.

The Apple being most easily propagated by grafting, the means of obtaining proper Stocks must be among the first things to occupy the attention of the planter. A preference has generally, and justly been given to those raised from the seeds of the Crab, as being more hardy and durable than those produced from the Apple. The tree from which the seeds are taken should be large and of free growth; and rather in a growing state than one of maturity or decay. Crab trees that stand in cultivated grounds generally grow more freely, and attain a larger stature than those in woods, and therefore appear to claim a preference. The seeds should be taken from the fruit before it is ground, and sown in beds of rich mould an inch deep. From these the plants should be removed in the following autumn to the nursery, and planted in rows at three feet distance from each other, and eighteen inches between each plant. Being protected from cattle and hares, they may remain here till they become large enough to be planted out; but the ground must be regularly worked and kept free from weeds.

The Apple tree succeeds best in situations which are neither high nor remarkably low. In the former its blossoms are frequently injured by cold winds, and in the latter by spring-frosts, particularly when the trees are planted in the lowest part of a confined valley. A south or south-east aspect is generally preferred, on account of the turbulence of the west wind, and the coldness of the north wind; but Orchards succeed well in all, and where the violence of the west-wind is broken by an intervening rise of ground, a south-west aspect will be found equal to any. The trees attain their largest stature in a deep strong loam, but will grow well in all rich soils, which are neither very sandy nor wet. They are said to do best where the ground is much trod and manured by cattle in winter. Places where old Apple trees have grown are esteemed unfavourable to young ones; and where fruit trees are kept near a house for convenience;

Pears and Apples or other different sorts should be made to succeed each other.

Blights are produced by a variety of causes; by insects, by an excess of heat or cold, of drought or moisture; for these necessarily derange if they do not destroy the delicate organization of the blossom: but the common opinion that they arise from some latent noxious quality in the air, or from lightning, seems to be totally unfounded. The term *Blight* is frequently used by the gardener and farmer, without any defined idea being annexed to it. If the leaves of their trees be eaten by the caterpillar, or contracted by the aphid or plant-louse; if the blossoms fall from the ravages of insects, or without any apparent cause, the trees are said to be blighted: and if an east wind happen to have blown, the insects, or at least their eggs, whatever be their size, are supposed to have been brought by it. This opinion has probably been taken up from the hazy appearance of the air, which usually accompanies warm days and frosty nights with a north-east wind in the spring. This weather is injurious to the blossom of every tree, and particularly so to that of the Apple; for the warmth of the day hatches the eggs of the insect that breeds in it, whilst the coldness of the night, by checking the progress of the sap, retains the blossom in its half-expanded state, to form a nidus for it. This insect, which assumes the winged state in July, is a small brown beetle, and it then probably lays those eggs on the trees, which, if the succeeding season be unfavourable, prove destructive of the future crop of fruit. The leaves and blossoms are sometimes destroyed by numerous hosts of caterpillars, some kinds of which become flies in the summer and autumn, others in the succeeding spring. Several of the small birds, which are accused of injuring the blossoms of fruit-trees, do not injure them intentionally, but only accidentally in hunting after the above-named noxious little animals.

These however do not exclusively belong to the Apple tree; but there is an extremely minute insect of the cochineal tribe, which has lately appeared on the Apple trees near London, and has done incredible damage to them. Small downy spots appear on the stems and branches of the trees, each of which covers a multitude of these insects, which are attached to the bark by their suckers, and fed by its juices. The trees on which they abound appear like tender exotics, the points of whose branches have been killed by the preceding winter. The insects were first observed about Kennington in the year 1788, and were said to have been imported from France. They have since gradually extended themselves, and no means of destroying them have been yet discovered. It is the opinion of the most experienced nurserymen round London, that all the Apple trees in that neighbourhood will be destroyed in a few years, if the insects increase as rapidly as they have lately done.

The blossoms of the Apple appear also to fail not unfrequently from the want of impregnation, when the weather is unusually hot and dry, or when cold winds prevail; the farina withering and dying on the anthers in such seasons. In each of these cases, those trees are always most productive, which having had the good fortune to escape the desolating hand of the pruner, are moderately full of wood, and capable of affording their blossoms some protection from frost and cold winds, or excessive heat. Not that judicious pruning is to be reprobated, on the contrary it ought very frequently to be done; but every Apple tree ought to retain much of the close branchy growth which nature gives it. The pruning-knife may however be used with some degree of freedom on young trees, for the branches of these soon repair any breaches which may be made in them; but if an old tree, or one which has ceased to grow larger, be so thinned as to admit a free current of air through it, the tree is ruined for ever. It has been supposed that the fruit, which stands exposed to the sun and air on the outsides of the branches, is alone capable of making fine Cider, but experience by no means justifies this conclusion^b.

^b Culture of the Apple and Pear, 36 to 92.

Mr. Bucknall is nearly of the same opinion with Mr. Knight respecting *Blight*. He supposes, that whatever has a tendency to prevent the due impregnation of the blossoms, or injure the foliage of the tree, will in a certain degree cause blight. Some imagine that insects are brought over in thick hazy clouds; but they do not come over with winds from the continent, but are bred at home from eggs deposited about the tree in summer and autumn. And respecting cold, it is not so much that which does the mischief, as an alternate succession of cold and heat. Cold under-water, or land springs stunt the tree, and cause blight. Long drought, with drying winds, injure the farina, so that it performs its office imperfectly. Other causes may predispose the tree to blight, as an overabundant crop the preceding year, a want of free circulation of air, &c. but insects for the most part produce the mischief.

As a remedy to this disease, Mr. Bucknall principally recommends cleanliness. Should the trees be old, says he, in a declining state of health, or the branches covered with rotten bark, moss, &c. under which insects may deposit their eggs, swarms of depredators will issue forth to destroy the weakly foliage and blossoms. On the contrary, where trees are clean and in health, insects are not so numerous, neither are they capable of being so destructive: for should they even devour part of the opening buds and leaves, a healthy tree will have sufficient strength to produce at least a slight crop of fruit. For cleansing trees from insects oil has a good effect, or oil mixed with a little sulphur or tobacco dust, or bitter aloes, to give the oil the consistence of a thin paint; or washing them well with soap-suds will answer the purpose¹. For farther particulars on this subject, see the articles *BLIGHT* and *ORCHARD*.

6. The Chinese Apple tree, though perfectly hardy, should be planted in a sheltered situation; it is usually increased by grafting it on the Crab stock^k.]

9. The Virginian Crab tree with sweet flowers is also increased by grafting or budding on the common Crab; but it is somewhat tender whilst young, and therefore should be planted in a warm situation.

12. The Portugal Quince is the most valuable, the pulp of it turning to a fine purple when stewed or baked, and becoming much softer and less austere than the others, is much better for making marmalade.

They are all easily propagated either by layers,

¹ Transact. Soc. Arts for 1799, p. 274.

^k Curtis.

suckers, or cuttings, which must be planted in a moist soil. Those raised from suckers are seldom so well rooted as those which are obtained from cuttings or layers, and are subject to produce suckers again in greater plenty, which is not so proper for fruit-bearing trees. The cuttings should be planted early in the autumn, and in very dry weather must be often watered to encourage their rooting. The second year after they should be removed into a nursery at three feet distance row from row, and one foot asunder in the rows, where they must be managed as was directed for Apples. In two or three years time these trees will be fit to transplant, where they are to remain, which should be either by the side of a ditch, river, or in some other moist place, where they will produce a greater plenty, and much larger fruit than in a dry soil; though those in a dry soil will be better tasted, and earlier ripe. These trees require very little pruning; the chief thing to be observed is, to keep their stems clear from suckers, and to cut off such branches as cross each other; likewise all upright luxuriant shoots from the middle of the tree should be taken entirely out, that the head may not be too much crowded with wood, which is of ill consequence to all sorts of fruit-trees. They may also be propagated by budding or grafting upon stocks raised by cuttings, so that the best sorts may be cultivated in greater plenty this way, than by any other method: and these trees will bear fruit much sooner, and be more fruitful than those which come from suckers or layers.

These are also in great esteem for stocks to graft and bud Pears on, which for summer and autumn fruits are a great improvement to them, especially those designed for walls and espaliers; for the trees upon these stocks do not shoot so vigorously as those upon free stocks, and therefore may be kept in less compass, and are sooner disposed to bear fruit: but hard winter fruits do not succeed so well upon these stocks, their fruit being very subject to crack, and are commonly stony, especially all the breaking Pears; therefore these stocks are only proper for the melting Pears, and for a moist soil. The best stocks are those which are raised from cuttings or layers.

As the Pear will take upon the Quince by grafting or budding, and so vice versa, we may conclude there is a near alliance between them; but neither of these will take upon the Apple, nor that upon either of these.

[PYRUS. See *Cratægus*, *Mespilus*.

PYXIDARIA. See *Lindernia*.

